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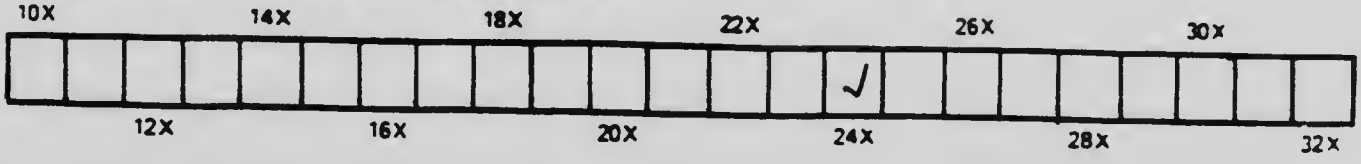

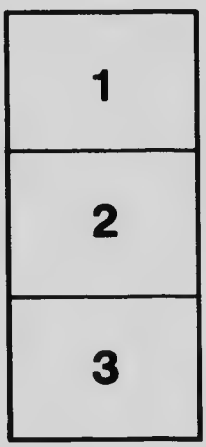

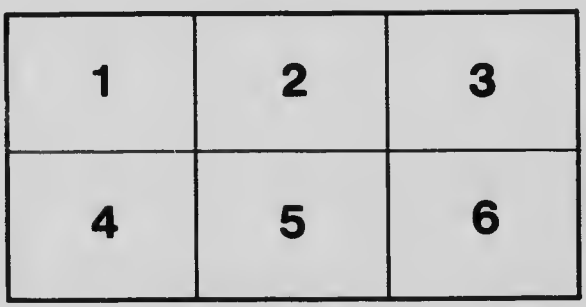

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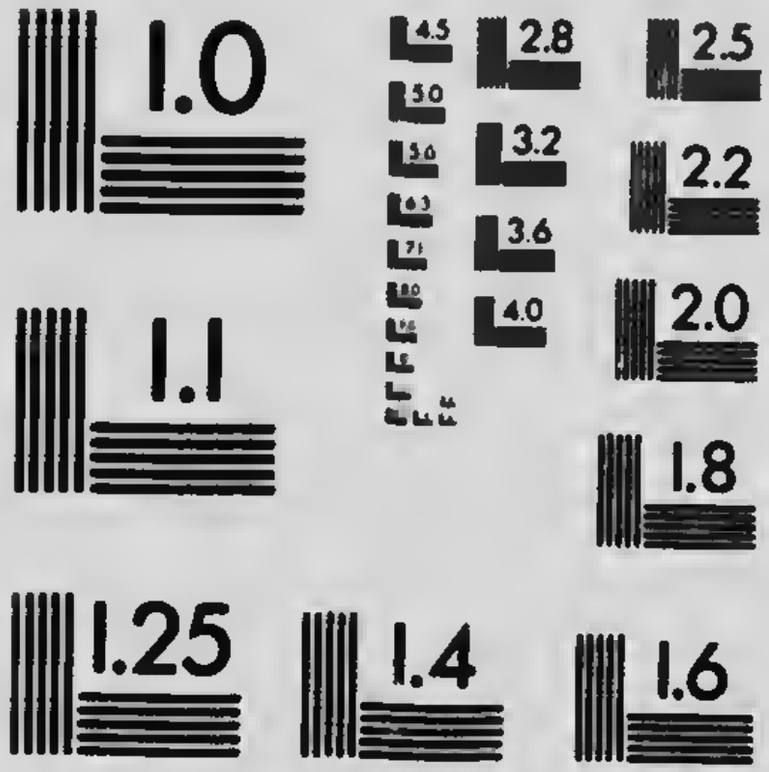

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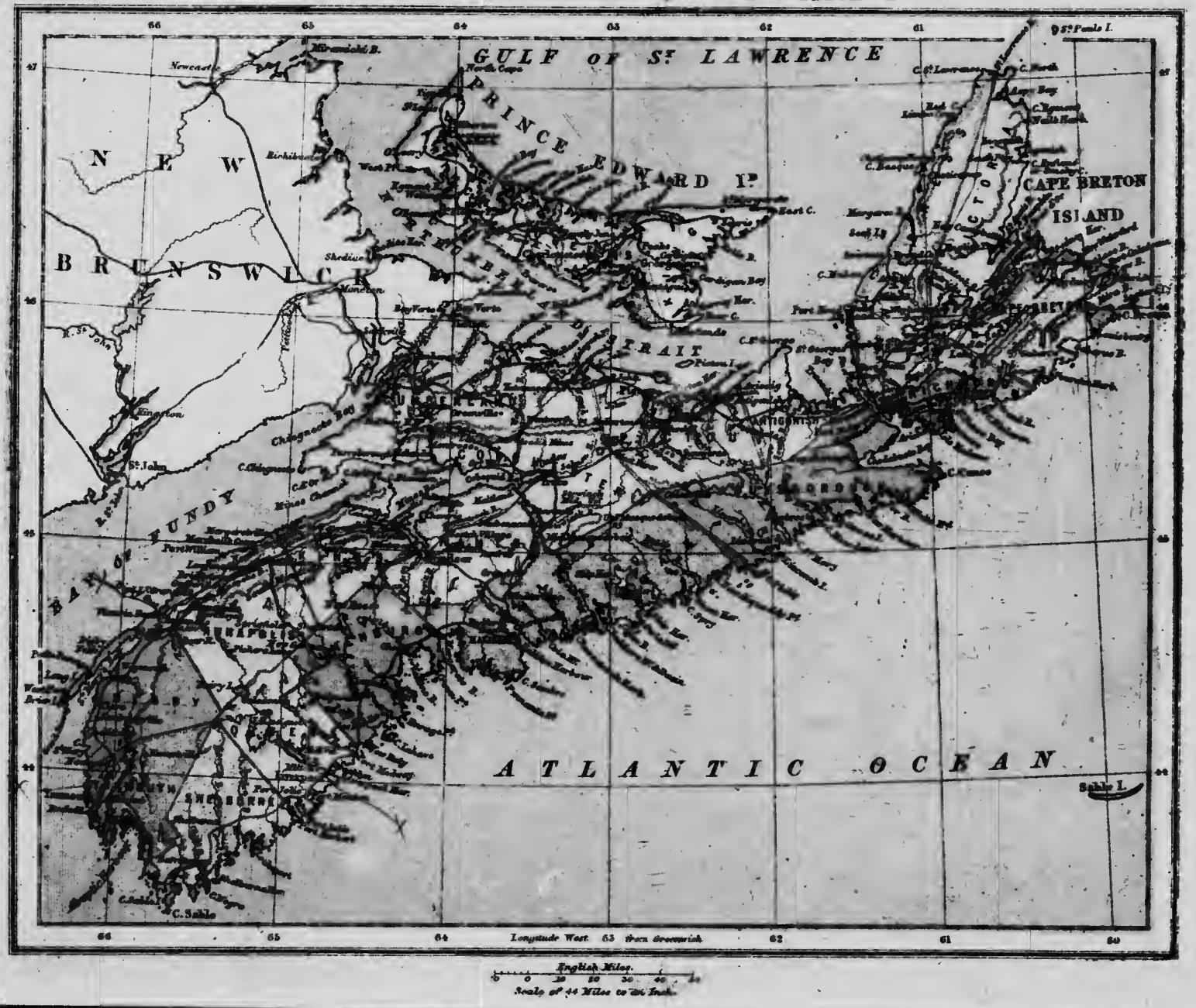

SCHOOL GEOGRAPHY

OF

THE WORLD

BY

J. B. CALKIN, M.A.

NEW AND REVISED EDITION

London
T. NELSON AND SONS, LTD., PATERNOSTER ROW
EDINBURGH AND NEW YORK
A. & W. MACKINLAY, LTD., HALIFAX, N.S.
1918

PREFACE.

About a third of a century has passed since the first edition of this book was published. From time to time during this period, as the progress of knowledge and the changed condition of various countries required, many minor changes have been made in the text and maps. Much care, however, has always been exercised to make no such radical alterations as might seriously interfere with the using by the same class of old and new issues of the book. On taking a survey of the ground preparatory to the making of this edition, so many important changes were called for that revision seemed inadequate, and it has consequently been thought advisable to re-write the whole book.

The important subject of Physical Geography, which should receive more attention than has hitherto been accorded to it, is in this edition discussed with more minuteness of detail. This fullness will, it is believed, render any special text-book on this topic in the hands of the pupils unnecessary.

With the exception, possibly, of some portions of the British Empire, the descriptive geography of the various countries has been somewhat abbreviated, so that, on the whole, the text occupies about the same place as in the former edition.

More illustrations are given in this edition, and many of those in the former edition have been exchanged for others that have been considered more suitable.

It will possibly be thought by some teachers that the work is too large for a school text-book. Anticipating this criticism, the Author respectfully submits the following considerations:—The book, as may reasonably be expected, should serve other ends than the requirements of the schoolroom. In the majority of cases, in the homes of the pupils no other work will be found to meet the constantly recurring geographical questions that arise in the family from the reading of the newspapers and from other sources. Indeed, with this thought in mind, it has been difficult to keep the book within its present limits.

Again, it should by no means be thought necessary to prescribe the whole text for class work. While the book, as a whole, has a certain completeness for use in the home, school lessons may be restricted to such portions of it as may be deemed most important.

To render the book more useful as a work of reference, the Pronouncing Vocabulary has been made to serve the purpose of an Index.

Truro, N.S., 1902.

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The horizon as seen from the top of the cliff.

The horizon as seen from the beach.

FIG. 1.—CURVATURE OF THE OCEAN.

SCHOOL GEOGRAPHY.

The Earth as a Planet.

1. **The Form of the Earth.**—The ancients had singular ideas in regard to the Earth's form. According to one notion, it was an immense plane surrounded by an interminable ocean. Some thought that it was in the form of a cylinder, of which only the upper side was inhabited. The Hindoos represented it as a hemisphere resting on the heads of four elephants which stood on the back of a tortoise. It is now known to be a vast ball, or sphere. The following are the most obvious proofs of the Earth's spherical form :—

(1.) Navigators have often, by sailing constantly in the same direction, arrived at the place from which they set out.

The first voyage around the world was made between 1519 and 1522, under the command of Magellan.

(2.) When a ship comes in sight, we first see the topmasts and the rigging, then the lower masts, and lastly the hull, as if it were coming over a convex surface; and when the sailor leaves the shore, low objects are the first to disappear —the last seen are the mountain tops.

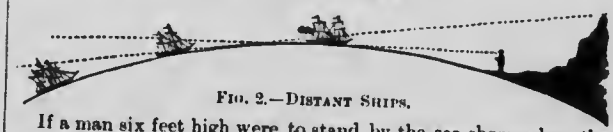


FIG. 2.—DISTANT SHIPS.

If a man six feet high were to stand by the sea-shore when the water is smooth, he could see a boat three miles distant; if he were to stand on a high rock, so as to be elevated twenty-four feet, a boat would be visible six miles distant; and so on, as in the following table :—

Elevation.	Distance seen.	Elevation.	Distance seen.
8 inches	1 mile.	10 feet 8 inches	4 miles.
1 foot 6 inches	1½ miles.	24 ,, 0 ,,	6 ,,
2 feet 8 ,,	2 ,,	42 ,, 8 ,,	8 ,,
6 ,, 0 ,,	3 ,,	93 ,, 0 ,,	12 ,,

(3.) An observer on the Earth's surface, or at any elevation above it, always finds that his view is bounded by a

circle, and that this circle, which is called the **sensible horizon**, is enlarged in proportion to his elevation. Could he rise sufficiently high, he would see nearly half the Earth's surface. A great circle parallel to the sensible horizon, dividing the Earth into the upper and lower hemispheres, is called the **rational horizon.**

(4.) At places east or west of us, the sun rises proportionally earlier or later; and as we go north or south, new stars come in view, whilst those behind us disappear below the horizon.

(5.) The Earth always casts a circular shadow.

(6.) In cuttings for canals, a curve on the bottom of eight inches in the mile is required, to keep the water at a uniform level.

2. The Earth does not appear round, because it is so large that there is but little curvature in any portion of the surface which we can see at one time.

The surface of the Earth is very irregular, rising and falling in hills and hollows. The deepest depressions in the solid Earth are occupied by the waters of the ocean, and the greatest elevations form the mountains. The total measurement between these extremes is about 57,000 feet. These irregularities, however, when compared with the size of the Earth, are very slight, and interfere no more with the roundness of the Earth than does the roughness of the rind with the general shape of an orange.

3. It is found, as one approaches either Pole, that the stars in that quarter of the heavens do not rise uniformly according to the distance travelled. In the vicinity of the Pole a greater distance must be passed over to obtain the same increase in the elevation of any star, showing that the curvature of the Earth in high latitudes forms the arc of a larger sphere than it does near the Equator. The Earth is thus shown to be slightly flattened at the Poles. The term *oblate spheroid* expresses the exact form of the Earth.

4. The difference between the polar and the equatorial diameters of the Earth is about 27 miles. So slightly does the Earth vary from a perfect sphere, if we correctly represent its form by an artificial globe two feet in diameter, the flattening of the Poles would not diminish the polar diameter one-twelfth of an inch.

5. **Attraction of the Earth.**—In lifting a stone from the Earth, we must use our strength to overcome the resistance which it makes to a change of place. This resistance, which we call weight, is the result of the Earth's *attraction*—a force by which everything on the surface of the Earth is drawn towards its centre. If we raise the stone and leave it unsupported, it falls, because it is pulled down by this force.

6. The weight of a body is the measure of the force with which it is attracted by the Earth. Attraction is mutual in all bodies, and in proportion to the quantity of matter they contain. Thus the stone, in proportion to its matter, attracts the Earth, as well as the Earth the stone.

7. The attractive power of the Earth acts in a right line drawn from the centre of the Earth to the body attracted; and this power diminishes as the square of the distance from the centre increases. Thus, if a body weighing one pound at the surface of the Earth were removed to twice its present distance from the centre of the Earth, or to a height of about 4,000 miles, it would there weigh only one-fourth of a pound; if removed to three times its original distance from the centre, it would weigh only one-ninth of a pound.

8. As a body weighs nearly the same in all places on the Earth, the surface must be everywhere nearly the same distance from the centre. Hence we have an additional proof of the Earth's spherical form.

9. A body weighs slightly more near the Poles, which is another proof that these parts of the Earth are flattened. Also, a pendulum clock, keeping correct time in high latitudes, is found to lose time, with the same length of pendulum, when taken to the Equator. As the centrifugal force near the Equator tends to lessen the weight of a body, this is not conclusive proof of the flattening of the poles.

10. **Cause of the Spheroidal Form.**—When we pour water upon a revolving grindstone, the water flies off in proportion to the rapidity of the motion; also, a waggon-wheel throws more mud when we drive rapidly. If a piece of soft putty, in the form of a sphere, be made to revolve rapidly on an axis, the poles will become flattened, while the middle, or equator, will bulge out.

By supposing that the Earth, whilst in a semi-fluid state, revolved around a line passing from one Pole to the other, we can account for its spheroidal form.

11. **Size of the Earth.**—The circumference of the Earth is nearly 25,000 miles. A railway train, moving at the rate of sixty miles an hour, would go around the Earth in about seventeen days.

Stated more exactly, the circumference of the Earth is 24,902 miles; the polar diameter is 7899.58 miles, and the equatorial diameter 7926.59 miles. The area of the surface is about 197,000,000 of square miles.

12. **Day and Night.**—The Sun is the great source of light and heat. To illustrate the regular succession of day and night, place a lighted lamp beside the globe, so that it will shine from pole to pole; then turn the globe upon its axis. A fly standing on any part of the globe will have light and darkness in succession. In like manner, day and night follow each other in turn, by the rotation of the Earth around an imaginary line called the *axis*. The *North Pole* is at one extremity of the axis, the *South Pole* at the other.

13. A light shining upon a distant spherical body illuminates just one-half of its surface at once. The sun is always shining upon the Earth; therefore one-half the Earth's surface is in the light, the other in the dark. The boundary line between the light and dark hemispheres is called the *Circle of Illumination*. As the Earth rotates, this circle is ever changing its position.

14. When moving rapidly in a rail-car, we seem to be at rest, and the objects along the track to be gliding past us in the opposite direction. The rotation of the Earth from west to east gives the Sun an apparent motion from east to west.

15. **Proofs of the Earth's Rotation.**—It was once thought that the Earth was stationary, and that the Sun revolved around it daily. According to this theory, the Sun must, every twenty-four hours, describe a circle having a diameter equal to twice the

distance of the Sun from the Earth; and the stars, which are inconceivably more remote, must travel correspondingly faster in order to complete their revolution in the same time.

The following are some of the proofs of the Earth's rotation:—

(1.) A stone let fall from the top of a high tower, or from a projecting cliff, reaches the ground slightly to the east of the point at which a vertical line would fall. The top of the tower, being farther from the centre of motion than the base, moves more rapidly towards the east, and the stone while falling is moving easterly with the same velocity as the point from which it fell.

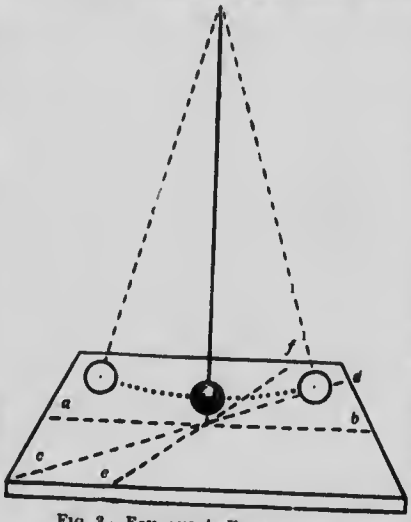


FIG. 3.—FOUCAULT'S EXPERIMENT.

(2.) If a cannon be fired due north in the northern hemisphere, the ball will fall considerably to the east of the object at which it was aimed.

(3.) Another proof of the Earth's rotation is furnished by what is known as Foucault's experiment. A heavy ball attached to a small cord is made to swing north and south over a table. The ball appears, for a time, to swing in the same direction, as shown by a line *a b* (Fig. 3) on the table; but if observed for a few minutes, it will be found to deviate more and more from its original direction, as *c d*, *e f*. This change of direction is due to the rotation of the Earth. The direction of the swing of the ball, if tested by its relation to some heavenly body, would be found unchanged. The cord must be a long one, and the attachment at the top should be adjusted in such a manner that the movement of the building caused by the Earth's rotation shall not be communicated to the pendulum. At the Equator there would be no deviation of the pendulum from the meridional line.

This experiment may be made on a large globe. The pendulum should be attached to the globe by a bent arm, so that the point of suspension is directly over the pole. The pendulum is made to vibrate while the globe is turned slowly and steadily on its axis. It will be found that the pendulum will swing towards the same points in the walls of the room, but with constant change of direction as compared with the meridians on the globe.

(4.) Other evidences of the rotary motion of the Earth from west to east are seen in the movement of the currents of the ocean and of the atmosphere.

16. **Location of Circles.**—The ends of the Earth's axis—that is, the Poles—have a fixed position on the Earth's surface from which the position of the Equator can be determined. The position of the Equator, as also that of the Tropics and Arctic Circles, are also determined by their relation to the Sun at different times of the year.

17. **Unequal Length of Day.**—In the summer we have long days and short nights; in the winter, the reverse; so that light and darkness in the course of the year are exactly equal. The longest day is the 21st of June, the shortest the 21st of December. Twice in the year—the 21st of March and the 22nd of September—day and night are equal, twelve hours each. At the Equator day and night are always equal, and the inequality is greatest near the poles.

18. At midsummer, when the day is longest, the Sun at noon is high up in the heavens, and much more nearly overhead than in winter. This is only an apparent shifting of the Sun's position; the real change is in the Earth. The Earth not only rotates upon its axis, it also moves around the Sun in a vast circle. The path in which the Earth revolves around the Sun is called the *Earth's Orbit*.

19. **Illustration.**—Place a lamp on the floor to represent the Sun, and with the chalk draw a large circle around it for the Earth's orbit. Place the globe in this orbit, on the west side of the lamp, with the north pole pointing to the ceiling in the northern part of the room, in such a manner that the axis shall be parallel to the west side of the room, and inclined towards the northern wall about one-fourth the distance between a vertical line and a horizontal—that is, 23½ degrees from the perpendicular. The lamp will now shine from pole to pole, and if the globe be turned on its axis, it will illustrate the equality of day and night in the spring.

Without changing the inclination of the axis or its parallel position with respect to the west wall, move the globe through one-fourth the orbit, so that it shall stand on the south side of the lamp. The rays of light will extend beyond the north pole, illuminating more than half the northern hemisphere, and less than half the southern. We have here the position of the Earth at midsummer. By moving the globe in the same manner to the east and north sides, we shall have the Earth's position in the autumn and at midwinter.

20. The Earth thus makes a revolution around the Sun once a year, during which it presents different parts of its surface directly to the Sun. The accompanying diagrams represent the Earth in its relation to the Sun at different times of the year. In figure 4, the Sun is vertical at the Equator; in figure 5, it is vertical at the Tropic of Cancer; and in figure 6, at the Tropic of Capricorn. In figure 5, the whole space within the Arctic Circle has constant day; in figure 6, it has constant night.

FIG. 4.—DAY AND NIGHT EQUAL.
March 21st and September 22nd.

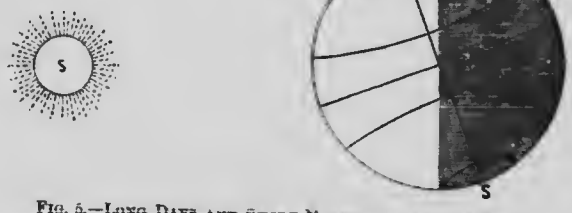


FIG. 5.—LONG DAYS AND SHORT NIGHTS IN THE NORTHERN HEMISPHERE. *June 21st.*

21. It will be seen from these figures that as the Earth moves around the Sun, the circle of illumination always divides the Equator into two equal parts, one-half being in the direct light

of the Sun; and that when the Earth is in the position represented by figure 4, all the parallels are divided equally by the circle of illumination. Under such conditions day and night must be of equal length—twelve hours each. It will be seen also, that when the Earth is in the position represented by figure 5 or figure 6, as well as in any other position than that represented by figure 4, the parallels are divided unequally by this circle, causing unequal day and night.

An imaginary plane, extending from all parts of the Earth's orbit to the centre of the Sun, is called the *Plane of the Earth's Orbit*. If the Earth revolved around the Sun with its axis perpendicular to the plane, the plane would cut the Earth at the Equator, and the Sun would always be vertical at the Equator, as in figure 4. But the axis is inclined 23½ degrees from the perpendicular, and this inclination causes the circle described on the Earth by the plane to cut the Equator at an angle of 23½ degrees. The revolution of the Earth around the Sun gives the Sun an apparent motion in the same plane, and the annual path that the Sun thus appears to follow is called the *Ecliptic*.

22. The axis of the Earth always maintains the same inclination and direction, so that in any part of the orbit it is parallel with

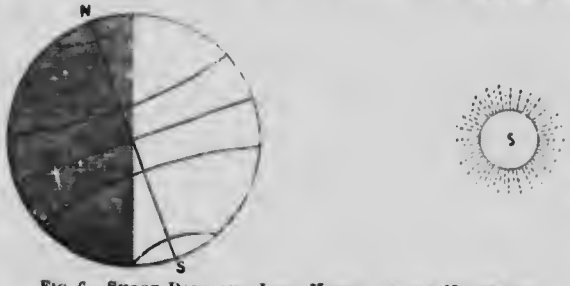


FIG. 6.—SHORT DAYS AND LONG NIGHTS IN THE NORTHERN HEMISPHERE. *December 21st.*

itself in every other part. A star situated in the northern heavens, near the spot to which the North Pole points, is called the *north star*.

23. The plane of the Earth's orbit may be illustrated by a large circular sheet of tin with a hole in the middle, through which a lamp is placed so that half the flame is above the plate and half below. A ball with a wire through the middle, representing the Earth and its axis, can now be carried round the outer edge of the tin, keeping the proper inclination of the axis.

24. **Apparent Motion of the Sun.**—In the spring and autumn the Sun is vertical at the Equator. At these seasons it appears to describe a circle in the heavens directly over the Equator. This circle is called the *Equinoctial* (*equa nox*, equal night), because day and night are then equal at all places. In pursuing its apparent annual path, the Sun during our summer is north of the Equinoctial; during our winter, south. The Sun, therefore, crosses the Equinoctial twice during the year. The points in which the Ecliptic and Equinoctial cut each other are called *Equinoxes*—the *Vernal* and *Autumnal* Equinox. The Sun's distance north or south of the Equinoctial is called his *Declination*.

25. During the three months succeeding the Vernal Equinox the Sun's northern declination is constantly increasing, acquiring its maximum on the 21st of June—23½ degrees. The Sun now appears to be stationary for a little; then to turn back towards the Equator. The northern point in the Ecliptic is called the *Summer Solstice* (*Sol*, the Sun; and *sto*, I stand). In like manner, the point marking the greatest declination south is called the *Winter Solstice*. The circles which the Sun describes 23½ degrees each side of the Equator are called *Tropics* (*trepo*, I turn)—the *Tropic of Cancer* on the north, and the *Tropic of Capricorn* on the south.

26. When the Sun is vertical at either Tropic, the rays fall 23½ degrees beyond the Pole on the same side of the Equator. The Polar Circles are supposed to be drawn at this distance from the Poles—the *Arctic Circle* at the north, and the *Antarctic Circle* at the south.

27. **Change of Seasons.**—If we hold a board upright before the fire, so that the rays fall perpendicularly upon its

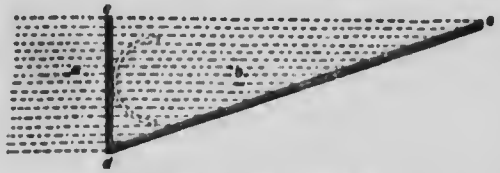


FIG. 7.—VERTICAL AND OBLIQUE RAYS.

surface, it will receive much more heat than when we incline it away from the fire. In the former case more rays fall upon a given space than in the latter. This is illustrated in the diagram. The rays *a b*, which fall perpendicularly on *c d*, are spread over a space three times as long by falling obliquely on *d e*. If *c d* were bent to a semicircle, as in the dotted line, a similar effect would be produced.

28. If the Earth were an extended plane, all parts of its surface would receive an equal quantity of the Sun's rays. Its spherical form causes the surface to incline away from the Sun, and so to receive less heat, as we go north or south of that part where the Sun is vertical. Now, as the Sun is ever apparently moving from one Tropic to the other, the inclination of the rays at any given place must be constantly changing, and consequently the temperature, at different times of year, is very unequal.

29. The altitude of the Sun at mid-day on the 21st of June in the latitude of Halifax is about 69°, whereas its altitude on the 21st of December is only about 22°. Thus the directness of the Sun's rays is varying throughout the year. Hence we have *Spring*, *Summer*, *Autumn*, and *Winter*.

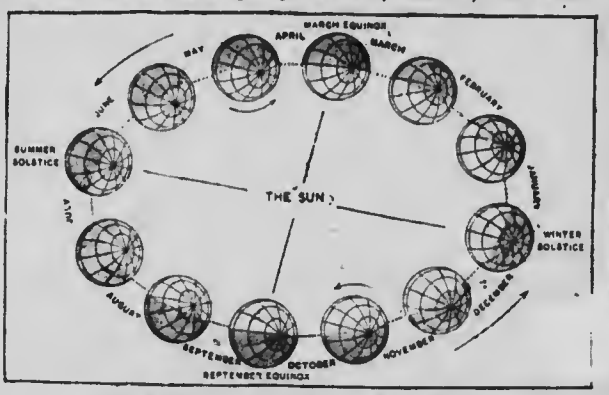


FIG. 8.—POSITION OF EARTH IN EACH MONTH.

It should be noted also that the change of seasons is in part due to the difference in the length of day and night at different times of year. The Sun is much longer above the horizon in our summer than he is in the winter.

The difference of temperature, at different times of year, is much less within the Tropics, where the Sun is always nearly vertical, than near the Poles.

30. **Cause of the Annual Motion of the Earth.**—The principles which govern the movement of the Earth in its orbit around the Sun are expressed in two laws of motion discovered by Sir Isaac Newton:—

(1.) A body in motion, not acted on by any external force, will go on in a straight line with uniform velocity for ever.

(2.) If a body in motion be acted on by an external force, its motion will be deviated in the direction of and proportionately to this force.

FIG. 9.—CIRCULAR MOTION.

31. If we whirl a stone at the end of a string, as illustrated in the diagram (Fig. 9), we first give it a throw forward. Now, neglecting gravity and friction, unless acted on by some external force, the stone will move with uniform speed in a straight line for ever. In order, then, to make the stone move in a circle, it is necessary to act on it with a force directed to the centre of the circle, and at an angle of 90° with its original motion. This is done by the hand exerting a tension through the string. This centripetal influence, which is called the *centripetal force*, is the only force now acting on the stone. In a rough way this illustrates the manner in which the Earth's annual motion around the Sun is brought about.

32. In setting out on its career, the Earth was projected into space in a certain direction. According to the first law given above, its tendency

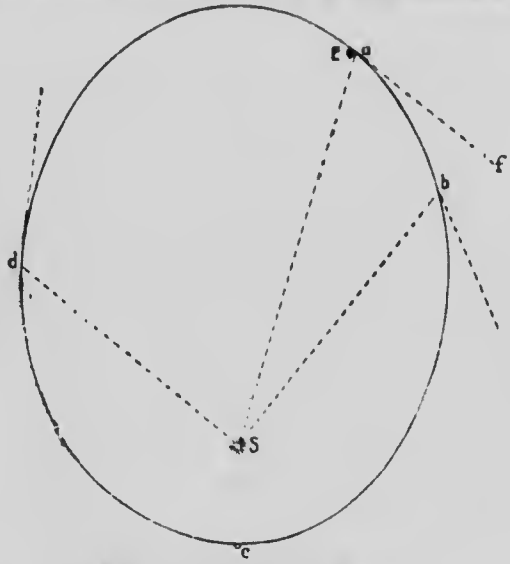


FIG. 10.—EARTH'S ANNUAL MOTION.

would be to continue for ever moving with uniform velocity in that direction. But now, through the gravitational attraction of the Sun, the Earth is made constantly to deviate from a straight line, and is carried along a nearly circular path. More exactly, its orbit describes the figure called an *ellipse*, the elliptical form being due entirely to the way in which it was projected in setting out on its career. This pull towards the Sun is the only force now acting on the Earth, and, as in the case of the stone, is the central or centripetal force.

In the accompanying diagram (Fig. 10) let S represent the Sun, and E the Earth in its orbit *a b c d*. The orbit is not so elliptical as it appears in the figure, the greater diameter being only about one-sixtieth part longer than the shorter. In setting out in its orbit at the point of projection *a*, the tendency of direction is along the dotted straight line *a f*; but the attraction of the Sun, acting athwart this line at an angle of less than 90°, tends to carry the Earth along the line *a* S. The result is the curve line *a b*, along which the Earth moves. In a similar manner other portions of the Earth's revolution may be illustrated.

In that part of the orbit *a b c*, the continuous attraction of the Sun, acting in general harmony with the direction of movement, increases the Earth's velocity; but along the other side of the orbit, as at *d*, the force of attraction has the opposite effect, and the Earth ... arrives at its starting-point, moving with its original speed.

When nearest the Sun, ... said ... be in perihelion; when farthest from the Sun, in aphelion. ... perihelion in winter. As it moves more rapidly in ... at, the time ... autumnal to the vernal equinox is about ... less than that ... the vernal to the autumnal equinox.

33. **Circles.**—As ... is a sphere, ... lines drawn around it are circ... circle which ... sure the circumference of the ... divides its surface into two equal portions, are ... circles, those which ... vide the surface unequ... lesser circles. The Equator and Ecliptic are great ..., the Tropics and Polar ... are lesser circles.

34. Every circle is ... posed to ... into 360 equal parts, called degrees; each degree ... ; and each minute into 60 seconds. ... grees, min... ds have their appropriate signs—thus, ... 25′ 30″ ... grees, 25 minutes, and 30 seconds.

The length of a d... varies ... size of the circle of which it forms a part.

35. **Zones.** The Tropics ... Circles divide the Earth into ... belts or ... vary in temperature according to ... r distance ... the Equator. (*See* 28.) The belt between the Tropics ... ing the most directly exposed to the Sun's rays, is the hottest portion of the Earth, and is therefore called the *Torrid Zone*.

The Sun's rays fall very obliquely upon the portions within the Polar Circles, and the cold is intense; consequently they are called *frigid zones*—the *North Frigid* and the *South Frigid Zone*.

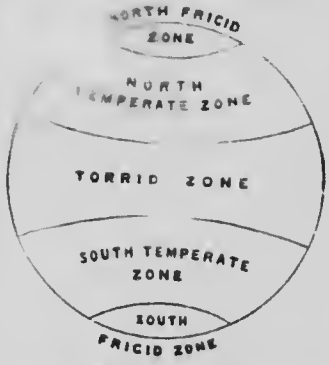


FIG. 11.—ZONES.

Those belts which are situated between the Tropics and the Polar Circles are free from the extremes of heat and cold, and are called *temperate zones*—the *North Temperate* and the *South Temperate Zone*.

36. If the Earth's surface were divided into 100 equal parts, these parts would be distributed among the zones nearly as follows:—40 in the Torrid Zone, 26 in each Temperate Zone, and 4 in each Frigid Zone.

37. **Latitude.**—The position of a place may be given by stating the zone in which it is situated. We often wish to be more definite, and it is both natural and convenient to give the distance from the Equator. This distance is called

latitude. If a place is on the north of the Equator, it has *north latitude;* if on the south, *south latitude.*

The distance from the Equator to either Pole is 90°, which is the highest latitude any place can have.

38. Latitude is indicated on maps and globes by lines or circles, called *parallels of latitude*, which are drawn east and west between the Equator and the Poles. Degrees of latitude are numbered on lines running north and south, or along the sides of the map.

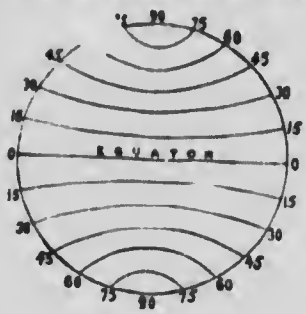


FIG. 12.—PARALLELS.

39. The simplest mode of finding latitude in the northern hemisphere is by taking the altitude of the north star. At the Equator this star is always in the northern horizon, and as we travel north it rises regularly in proportion to the distance travelled, until at the North Pole it is directly overhead—that is, at the Equator the altitude is 0; at the Pole, 90°; and at all intermediate places it is exactly equal to the latitude of the place. Thus, at Halifax the altitude of the north star is 44° 38′, which is the latitude.

40. Latitude can also be determined from the meridian altitude of the Sun—that is, the height at noon. When the Sun is in the Equinoctial, the meridian altitude at the Equator is 90°, and the altitude becomes less as the latitude increases, until at the Pole the Sun appears in the horizon. Therefore, to obtain the latitude, we subtract the altitude from 90°.

41. When the Sun is not in the Equinoctial, and we are on the opposite side, we add the declination to the altitude, and subtract the sum from 90° for the latitude; if we are on the same side as the Sun, we first subtract the declination from the altitude, and then subtract the remainder from 90°. The Sun's altitude at Halifax on the 21st of June is 68° 52′; from this subtract 23½°, the declination north on that day, and we have 45° 22′; subtract this from 90°, and the remainder, 44° 38′, is the latitude.

42. **Measurement of the Earth.** By observation, we should find that the elevation of the polar star at Halifax is 44° 38′; if we go due north until the star has an elevation of 45° 38′, we shall have travelled one degree of the Earth's circumference. We should find by measurement that the distance travelled was 69⅛ English miles, which, multiplied by 360—the number of degrees around the Earth—would give 24,902 miles for the Earth's circumference.

43. Near the Poles, a greater distance must be passed over to obtain the same increase of elevation in the polar star; hence a degree of latitude is slightly greater in high latitudes. (*See Form of the Earth*, 3.)

Instead of actually measuring the distance between two points exactly one degree apart, astronomers are accustomed to measure a short base line along a level tract of country, from which, with the aid of a theodolite, they proceed by a system of triangulation to calculate the distance between two remote points on the same meridian. The difference in polar elevation and the distance between the two places being known, the length of a degree can be readily determined.

44. **Longitude.**—All places due north or south of each other have noon at precisely the same time; hence, lines drawn north and south from Pole to Pole are called *meridians* or *noon lines.* Every place is supposed to have a meridian passing through it.

45. We say that Halifax is in north latitude 44° 38′, by which we state that it is situated somewhere on a circle passing round the Earth at that distance from the Equator. How shall we determine the precise point which the city occupies in the circle?

46. We naturally commence at the Equator in estimating latitude; but there is no such natural line at which we can begin in reckoning distance east and west. We therefore fix upon some one meridian, and name it the *first meridian.* Distance from this first meridian is called *longitude*, which is either *east* or *west.*

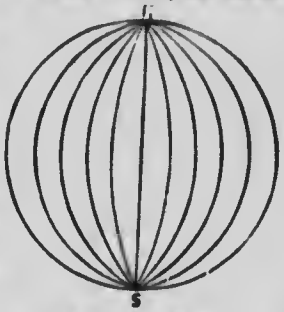


FIG. 13.—MERIDIANS.

47. It is convenient that all reckon from the same meridian. Accordingly, throughout the British Empire, and generally in the United States, that which passes through the Royal Observatory at Greenwich, London, is taken as the first, and a place is said to have east or west longitude according as the meridian which passes through it is east or west of that which passes through London.

48. Meridians are counted by semicircles; thus, the first meridian terminates at the Poles, and the other half of the circle, on the opposite side of the Earth, is 180° distant, which is the greatest longitude a place can have. Degrees of longitude are marked on the equator of globes and hemisphere maps; at the top and bottom of other maps.

49. As the meridians all meet at the Poles, it will be seen that they are converging lines, and that a degree of longitude becomes constantly less as we approach the Poles.

The Earth's circumference east and west being rather greater than from north to south, a degree of longitude at the Equator slightly exceeds a degree of latitude.

50. The Earth's revolution upon its axis from west to east, once in twenty-four hours, causes an apparent motion of the Sun around the Earth in the same time, but in the opposite direction. The Sun thus traverses 360′ in twenty-four hours, or 15° in one hour, or 1° in four minutes. Therefore, for every degree we travel west, the Sun will be four minutes later in coming to our meridian—that is, noon, as well as every other hour in the day, will be that much later. If we travel east, the time will be earlier.

51. **To Find Longitude.**—To determine our distance east or west of London—that is, our longitude—we compare London time with our own. A nicely constructed timepiece, called a chronometer, shows the time at London, and we are one degree east or west of London for every four minutes by which our time is faster or slower than the chronometer.

52. The following table shows the length of a degree of longitude in different latitudes:—

Degree of latitude.	Geographical miles.	English miles.	Degree of latitude.	Geographical miles.	English miles.
0	60.00	69.07	50	38.57	44.35
5	59.77	68.81	55	34.41	39.58
10	59.09	67.95	60	30.00	34.50
15	57.95	66.65	65	25.36	29.15
20	56.38	64.84	70	20.52	23.60
25	54.38	62.53	75	15.53	17.86
30	51.96	59.75	80	10.42	11.98
35	49.15	56.51	85	5.23	6.00
40	45.96	52.85	90	0.00	0.00
45	42.43	48.78			

THE SOLAR SYSTEM.

53. The Solar System consists of the Sun and the various heavenly bodies which revolve around it as a common centre, comprising the planets, the asteroids, the moons, and the comets.

54. The Sun is an immense body, having a cubic measurement about 1,200,000 times larger than the Earth. As its density is much less than that of the Earth, its weight is only about 330,000 times greater. Some conception of the immense distance of the Sun from the Earth may be formed from the fact that, at the rate of sixty miles an hour, it would require one hundred and eighty years to travel from the one body to the other. The Sun, together with the bodies which revolve around it, moves forward through space towards a remote group of stars known as the constellation of Hercules.

55. **The Earth a Heavenly Body.**—During a portion of the year a large and beautiful star may be seen in the western heavens, shortly after sunset. This evening star is the planet Venus. The Earth is very much such a body as this star. It is about the same size, and, if viewed from the same distance, would probably look much like it. Astronomers inform us that Venus, like the Earth, rotates upon its axis and revolves around the Sun.

56. **Planets and Asteroids.**—There are several other celestial bodies similar to the Earth and Venus, which revolve around the Sun. All such bodies are called *Planets*. Some of the planets are smaller than the Earth, and some are very much larger; some are much nearer the Sun, others are greatly more remote. All are opaque bodies.

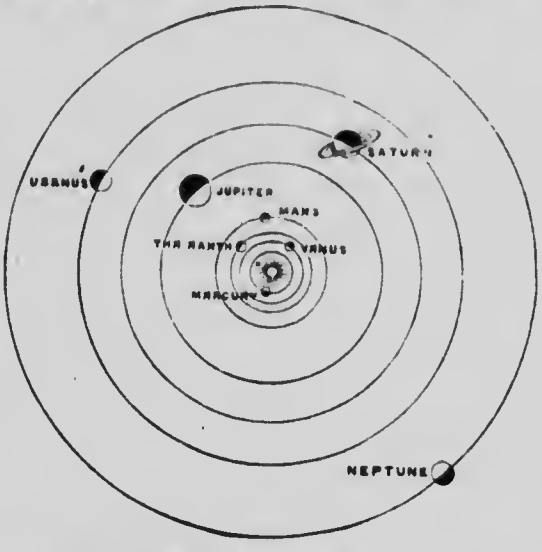


FIG. 14.—SOLAR SYSTEM.

The following are the eight planets, in the order of their distance from the Sun:—*Mercury*, *Venus*, the *Earth*, *Mars*, *Jupiter*, *Saturn*, *Uranus*, and *Neptune*.

Uranus and Neptune cannot be seen without the aid of a telescope.

The orbits of the planets form concentric circles, or rather ellipses, as in the preceding diagram, but not all in the same plane.

Between the orbits of Mars and Jupiter are many small planets, usually called *Planetoids* or *Asteroids*. The number now known is about four hundred: all have been discovered within the present century.

57. **Moons.**—The Moon is an opaque body, and it shines by reflecting the light of the Sun. It accompanies the Earth around the Sun, and whilst making this revolution it revolves thirteen times around the Earth. It thus makes a revolution round the Earth in 27 days 7¾ hours; and as it turns upon its own axis in the same time, it always presents the same face to us. It is about 240,000 miles distant from the Earth, and its diameter is 2,160 miles.

58. As bodies attract each other in proportion to the matter they contain, the Moon attracts the Earth as well as the Earth the Moon. Hence, it is more exact to say that both of these bodies revolve around their common centre of gravity. But the Earth being eighty times as heavy as the Moon, this centre of gravity is within the body of the Earth, at a point about 3,000 miles from its centre, on the side next the Moon. The distance of the Moon from this centre is therefore about 237,000 miles.

59. The Moon being a spherical body, the Sun shines upon only half of its surface at once. It appears in different phases, according to the extent of the illuminated surface presented to us. When the Moon is on the opposite side of the Earth from the Sun, the whole illuminated hemisphere is turned towards us. This phase is called *full moon*. When the Moon is so situated between the Earth and the Sun that we only see the edge of the illuminated hemisphere, we call it *new moon*.

60. When the Moon passes immediately between the Earth and the Sun, it cuts off the light of the Sun from a portion of the Earth's surface, causing an eclipse of the Sun.

Again, when the Earth, in a similar manner, intercepts the Sun's rays, and throws the Moon in shadow, we have an eclipse of the Moon. An eclipse of the Sun can take place only at new moon; an eclipse of the Moon only at full moon.

Eclipses do not occur at every new and full moon, because the orbits of the Earth and Moon not being in the same plane, these bodies and the Sun are seldom in a straight line.

61. Mars, Jupiter, Saturn, Uranus, and Neptune are also accompanied by moons. The moons are sometimes called *satellites* and *secondary planets*. By observing the eclipses of Jupiter's satellites, London time can be ascertained in any part of the world where the eclipse is visible. The observer requires a nautical almanac in which the calculation for the eclipse is made for London.

62. **Origin of the Solar System.**—All the planets revolve around the Sun in the same direction, which is also the direction in which the Sun turns on its axis: their orbits are elliptical, with the Sun in one of the foci; and their orbits are in nearly the same plane. Further, as far as it is known, the planets have other points of agreement—such as, flattening at the poles, decrease in temperature as the bodies are smaller, and decrease in density as the bodies are more remote from the Sun. It is known also that the Earth and Sun are composed of like constituents. As this condition of things cannot be supposed to result from chance or mere accidental agreement, and as it cannot be accounted for by any existing connection of the various bodies, scientists are led to seek an explanation in the origin of these bodies. The conclusion arrived at is known as the *Nebular Hypothesis*. This scheme, for which no higher value than probability is claimed, is briefly described as follows:—

The entire space now occupied by the solar system, including the Sun, the planets, and their satellites, was originally filled by a molten mass of matter or a highly-heated vapour, of which, by

cooling and other physical processes, these bodies were formed. This fiery nebulous mass of matter, extending beyond the farthest limits of the present orbit of the most remote planet, had a rotary motion about a central axis. As the mass cooled and contracted in size, its rotary motion became more rapid, until the centrifugal force at the circumference overbalanced the central force of attraction, causing the outer portion of the whirling vapour to separate in the form of a ring from the mass at the centre. This vast ring, in form resembling the rings seen floating away from the escaping steam of a locomotive as it leaves the station, setting out on a circuit of its own, went whirling around the central mass to which it was still bound by the law of gravitation. But as it went on its way, of unequal density in different parts, in obedience to the same law of gravity, it drew itself together around the denser core, and assumed the form of a sphere.

Moreover, through further contraction, other rings in turn broke loose from the main body, and in due time became other spheres. These spheres again, or some of them, still highly heated, also threw off rings, which also assumed spherical forms, and went on revolving around their parent spheres. These bodies, *primaries* and *secondaries*, at length cooled, became solid, at least at the outer crust, and are now the *planets* and their *satellites*.

Planets.	Diameter in Eng. miles.	Distance from the Sun in Eng. miles.	Length of Year.	No. of Moons.
Mercury	2,992	35,750,000	88 dys.	....
Venus.	7,660	66,750,000	225 dys.	....
Earth	7,918	92,500,000	365.26 dys.	1
Mars	4,211	141,000,000	687 dys.	2
Jupiter	86,000	480,000,000	11.86 yrs.	4
Saturn.....	70,500	881,000,000	29½ yrs.	8
Uranus.....	31,700	1,771,000,000	84 yrs.	4
Neptune....	34,500	2,775,000,000	164.78 yrs.	1

63. **Fixed Stars.**—The Solar System comprises only a few of the celestial bodies. The others are called *Fixed Stars*, because they do not change their positions with reference to each other. They are distinguished by their silvery, twinkling light. They are supposed to be suns, forming centres of systems like the solar system. Light comes from the Sun to us in about eight minutes; but the nearest fixed star is so remote that light is three and a quarter years in travelling from it to the Earth.

64. To give an idea of the relative distances of the heavenly bodies from each other, Professor Simon Newcomb supposes a voyager on a journey from the Sun across the orbits of the planets to the stars. The traveller is represented as moving with such velocity as would take him from New York to Liverpool, England, in less than one-tenth of a second. At this rate of speed, he would cross the orbits of all the eight planets in the course of twenty-four hours. After he left Neptune, moving with the same velocity, he would fall in with no heavenly body until, at the end of eighteen or twenty years, he arrived at the nearest fixed star; and if he kept on, an equally long period would elapse before he reached the next star. In the meantime all the planets of the solar system would have vanished from his view, and the Sun would now appear only as a small star in the heavens.

EXERCISES.

The following Exercises will test the pupil's knowledge of some of the principles explained in the preceding sections:—

1. Why should the sailor climb to the topmast when he wishes to see the distant shore?

2. How much does the Earth curve in a mile?

3. At what elevation above the Earth would one be able to see half its surface?

4. What are the two theories by which day and night can be explained? and give the principal arguments in favour of the true theory.

5. Just as the 9 o'clock gun was fired at Halifax, I observed by the chronometer that it was 14 minutes past 1 on the following morning at London. What is the longitude of Halifax?

6. Find in the Northern Hemisphere a city at which the altitude of the Sun on the 21st of June is 83° 30′, the chronometer showing London time to be 5 minutes to 10 a.m. when it is noon in the city.

7. Find a city in which one has no shadow on the longest day in the year, and on every other day the shadow falls to the north; and at which it is 32 minutes past 7 p.m. when it is noon at London.

8. When it is noon at London, what is the time at St. John, Quebec, Ottawa, Toronto, Winnipeg, and Victoria?

9. It is said that at the Poles the year is divided into two periods, six months day, and six months night; also, that when the Sun is vertical at the Equator, the days and nights are twelve hours long over all parts of the Earth. Explain these contradictory statements.

10. Find a cape in the Northern Hemisphere at which, on the longest day in the year, the Sun sets, and, without any intervening night, rises immediately in the same part of the horizon; and also where it is 20 minutes to 1 a.m. when it is noon at London.

11. Two sailors left St. John on a voyage round the world, the one going east, the other west. On the following Christmas they met at the same place. The one who had travelled east asserted that the preceding day was Christmas; the one who had travelled west, that the next day was Christmas. Explain the causes of the mistake.

12. Suppose that the travellers, in the preceding case, went round the world on the parallel of 45°, how many miles did each travel?

13. What advantage in respect to the Sun's rays has the Northern Hemisphere over the Southern, and why?

14. Explain why an eclipse of the Sun can take place only at new moon, and an eclipse of the Moon only at full moon.

15. Why are the extremes of heat and cold greater in the Southern Hemisphere than in the Northern?

THE TERRESTRIAL GLOBE.

65. The Terrestrial Globe is a representation of the Earth, showing its form, rotary motion, the parallels, meridians, and relative situation of places. It also enables us to illustrate many important principles respecting the Earth in its relations to the Sun.

66. **The Wooden Horizon.**—The globe is suspended in a wooden ring called the *Wooden Horizon*, which represents the rational horizon, and divides the globe into the upper and lower hemispheres. The upper surface of the wooden horizon is divided into six concentric circles.

67. The innermost circle of the wooden horizon shows the *amplitude* of the heavenly bodies—that is, the arc of the horizon lying between the point where a body rises or sets and the east or west point of the horizon.

The second circle shows the *azimuth* of the celestial bodies, or the arc of

ths horizon between a vertical circle passing through the body and the north and south points of the horizon.

The third circle gives the points of the compass; the fourth, the twelve signs of the zodiac; the fifth, the months and days corresponding to the signs and degrees; and the sixth, the twelve calendar months.

68. **The Brazen Meridian.**—A circle of brass, passing round the globe at right angles to the Equator, is called the *Brazen Meridian*, and sometimes the *Universal Meridian*. It is divided into four equal parts or quadrants, each graduated from 0 to 90°. Two of the quadrants are numbered from the Equator to the Poles, for showing the latitude; and two from the Poles to the Equator, enabling us to elevate the Poles to any required height.

69. **The Quadrant of Altitude.**—A thin slip of brass, corresponding in its graduation to the brazen meridian, is called the *Quadrant of Altitude*. It is numbered from 0 to 90°, to enable us to find the distance between places; and also from 0 to 18°, for finding the duration of twilight.

70. **The Hour Circle.**—A circle, either of brass or marked upon the globe, around the North Pole, is called the *Hour Circle*. It is divided into twenty-four equal parts, representing hours. It enables us to find the difference of time between places, and also the length of the day.

PROBLEMS.

I. To find the latitude and longitude of any place.

Bring the given place to the graduated edge of the brazen meridian: the degree marked over it is the latitude; and the degree on the equator, cut by the same edge of the brazen meridian, is the longitude.

EXERCISES.—Find the latitude and longitude of the following places:—

	Latitude.	Longitude.
1. Halifax ..... *Ans.*	44° 38′ N.;	63° 36′ W.
2. Ottawa.	45° 25′ N.;	75° 45′ W.
3. Charlottetown	46° 14′ N.;	63° 10′ W.
4. Quebec.....	46° 49′ N.;	71° 13′ W.
5. St. John..	45° 14′ N.;	66° 3′ W.
6. London.....	51° 30′ N.;	0 Lond.
7. Paris.	48° 50′ N.;	2° 20′ E.
8. Cairo	30° 2′ N.;	31° 15′ E.
9. Cape Town	33° 56′ S.;	18° 28′ E.
10. Calcutta..	22° 33′ N.;	88° 19′ E.

11. Washington; Jerusalem; North Pole; New Orleans; Quito; Melbourne.

II. The latitude and longitude being given, to find the place.

Find the given meridian on the equator, and bring it to the brazen meridian; find the given latitude on the brazen meridian, and beneath it is the required place.

When the place is found, all others having the same longitude can be found, by tracing along the edge of the brazen meridian from pole to pole; and by turning the globe, all places having the same latitude will pass under the same degree on the brazen meridian.

EXERCISES.—Find the places situated as follows:—

1. N. lat. 41° 54′ and E. lon. 12° 27′ .....*Ans.* Rome.
2. N. lat. 39° and W. lon. 28°.....Azores.
3. S. lat. 55° 58′ and W. lon. 67° 11′ .....Cape Horn.
4. S. lat. 33° 56′ and E. lon. 18° 28′.. .....Cape Town.
5. N. lat. 43° 39′ and W. lon. 79° 23′.....
6. N. lat. 45° 31′ and W. lon. 73° 35′.....

III. To find the distance between two places.

Find the number of degrees between the places with the quadrant of altitude, and multiply by 60 for geographical miles, or by 69½ for English miles.

If the distance is more than 90°, measure it with a thread, and find the number of degrees by applying the thread to the equator.

EXERCISES.—Find the distance in English miles between the following places:—

1. Halifax and Montreal .....*Ans.* 490 Eng. miles.
2. Cape Horn and Cape of Good Hope.....4,146 ,,
3. Newfoundland and Ireland.....1,830 ,,
4. Newfoundland and Vancouver Island.....2,900 ,,
5. A ship sails from Halifax to Liverpool in England; thence to New York; thence to Rio Janeiro; then to St. John: what is the whole distance?
6. Find the distance between Anticosti and Hamilton

IV. Two places given, and the time at one, to find the time at the other.

Bring the place at which the time is given to the brazen meridian; set the hour circle or index to the given time; turn the globe until the other place is brought to the brazen meridian: the hour circle will show the required time.

EXERCISES.—The following can be verified by calculation:—

1. When it is 12 o'clock noon at London, what is the time at Halifax? *Ans.* 7h. 46m. a.m.
2. When it is 1 o'clock in the afternoon at Alexandria, what time is it at Philadelphia? *Ans.* 6 a.m.
3. When it is 9 o'clock in the morning at Halifax, what is the time at Ottawa? *Ans.* 8h. 12m. a.m.
4. When it is noon at London, what is the time at Fredericton?
5. What is the difference in the time at Victoria and that at each of the following places:—Winnipeg, London, Hamilton, Toronto, Montreal, Quebec, St. John, Halifax?
6. When it is 4 o'clock in the afternoon at London, what is the time at Petrograd? *Ans.* 6 p.m.
7. When it is noon at Halifax, what time is it at Melbourne? *Ans.* 1h. 54m. a.m.

V. To find the antipodes, or place directly opposite.

Set the poles of the globe on the horizon; turn the globe until the given place comes to the eastern horizon; observe the number of degrees the place is north or south of the eastern point of the horizon: the antipodes will be the same number of degrees on the opposite side of the western point.

EXERCISES.—Find the antipodes of the following places:—

1. London .....*Ans.* Antipodes Island (nearly).
2. Halifax.....45° 22′ S. lat. ; 116° 24′ E. lon.
3. The Bermudas..... ...The south-west of Australia.
4. Cape Horn.....The east of Lake Baikal.

VI. To rectify the globe for a given place.

Elevate the pole on the same side of the equator, as many degrees above the wooden horizon as are equal to the latitude of the place.

When the globe is rectified, if the given place be brought to the brazen meridian, it will be at the highest part of the globe, and the wooden horizon will become the true horizon of the place.

EXERCISES.—Rectify the globe for the following places:—

Halifax, St. John, Quebec, Ottawa, Toronto, Winnipeg, Mexico, Juan Fernandez, St. Helena, Quito, Calcutta.

VII. To illustrate the three positions of the sphere, or the aspect of the heavens at the equator, the poles, and any intermediate place.

1. **At the Equator.**—Place the poles in the horison. It will be seen, hy turning the globe, that the equator and parallels always cnt the horizon at right angles; that whatever may be the Snn's declination, he will cut the horizon at right angles at sunrise and sunset; and that, as ths parallels are all divided equally hy the horizon, day and night must be equal throughout the year.

This is the aspect to one situated at the Equator, and is called the *right sphere.*

2. **At the Pole.**—Elevate the north pole 90°. The equator now corresponds with the horizon, and all the parallels are parallel with it. It is manifest that all the celestial bodies north of the equinoctial must be constantly visible, and move around in circles, as the Earth revolves, the size of the circle depending on their elevation. The Sun will come above the horizon at the vernal equinos, and will move around the horizon In a kind of spiral, rising higher every day, until he attains his extreme elevation at the summer solstice, when he will descend, until he sets at the autumnal equinox, not to appear again for six months.

Such is the aspect of the North Pole. It is called the *parallel sphere.*

3. **Between the Equator and the Pole.**—By taking different positions on the globe, as 10°, 20°, 30°, and rectifying the globe e several latitndes, we shall find that, as we approach the pole, the eq paralliels of latitude, and the Sun at his rising and setting, cnt the ison more obliquely. Any snch position is called an *oblique sphere.*

To illustrate further: elevate the north pole 45°, the latitude of the middle of Nova Scotia, the south of New Brunswick and Quebec, and the middle of Lake Huron. The polar star has here an elevation of 45°, and all the stars within that distance of the polar star will be constantly above the horison, moving around in circles. It will be seen that the horison divides the equator equally, and all the parallels unequally, and hence that, when the Sun is in the equinoctial, day and night must be equal, and at all other times unequal; also, that from the vernal to the autumnal equinox, when the Sun is in the Northern Hemisphere, the days will be longer than the nights, and during the other half of the year shorter.

We can see, too, how twilight is longer in high latitudes than near the Equator, for a place can have twiHght only when the Sun is within 18° of the horizon.

VIII. To find the length of a degree of longitude in any given latitude.

With the quadrant of altitude take the distance between any two consecutive meridians along the given parallel, and multiply by 4 for geographical miles. To convert geographical to English miles, multiply by 69·17, and divide by 60.

The meridians are laid down upon the globe 15° apart, making 24 in all, one for each hour in the difference of time.

Exercises can be taken from the table, section 52.

IX. To find the Sun's place on the ecliptic on any given day.

Find the day of the month on the wooden horizon, and opposite to it, in the circle containing the signs of the zodiac, are the sign and degree in which the Sun is situated on that day; find the same sign and degree of the ecliptic on the globe, which is the Sun's place.

EXERCISES.—Find the Sun's place on the following days:—

1. March 20 ..... *Ans.* Aries.
2. May 11 ..... *Ans.* 21st degree of Taurus.
3. August 10 .....
4. December 21.....
5. February 4 .....

X. To find the Sun's declination on any given day.

Find the Sun's place in the ecliptic for the given day, and bring that place to the brazen meridian: the degree marked over it is the declination.

By tnrning the globe, all places to which the Sun is then vertical will pass nnder that degree.

EXERCISES.—Find the Sun's declination on the following days, and the places to which he will then be vertical:—

1. May 10 ..... *Ans.* 17° 30′.
2. June 21 ..... *Ans.* 23° 27′.
3. September 21.....
4. January 10 .....

XI. To find the hour at which the Sun rises and sets at a given place on a given day.

Rectify the globe for the latitude of the place; find the Sun's place in the ecliptic, and bring it to the brazen meridian. Set the hour circle to 12; turn the globe till the Sun's place comes to the eastern edge of the wooden horizon, and the hour circle will show the time at which the Sun rises. Turn the globe till the Sun's place comes to the western horizon, and the hour circle will show the time of sunset.

He g the time of sunrise and sunset, the length of the day can readily he found. Aiso, the amplitude of the Sun can he found by observing the point cut in the horizon hy the Sun's place in the ecliptic.

EXERCISES.—Find the time at which the Sun rises and sets; also the length of the day and the amplitude of the Sun on the 21st of June and the 21st of December, at the following places:—

1. Halifax; 2. St. John; 3. Quebec; 4. Montreal; 5. Ottawa; 6. Toronto; 7. Winnipeg; 8. London; 9. Canton; 10. Cape Town.

Ans. (1.) Rises, 21st June, 4h. 14m.; sets, 7h. 48m.

Ans. (8.) Rises, 21st December, 7h. 45m.; sets, 4h. 15m.

XII. To find the duration of twilight at a given place on a given day.

Rectify the globe for the latitude of the place; bring the Sun's place in the ecliptic, on the given day, to the brazen meridian; set the hour circle to 12; fasten the quadrant of altitude upon the brazen meridian, over the given latitude; turn the globe till the Sun's place comes to the western edge of the wooden horizon. The hour circle will now show the time of the Sun's setting, or the beginning of twilight. Continue the motion of the globe westward until the Sun's place coincides with 18° on the quadrant of altitude below the horizon, and the hour circle will then show the time at which twilight ends.

EXERCISES.—Find the duration of twilight on the 20th March, 21st June, 23rd September, and 21st December, at the following places:—

1. Dominion of Canada (parallel of 45°); 2. Orkney Islands; 3. Norway (66° 30′); 4. The Equator.

Ans. The length of twilight at the above places, on 20th March and 23rd September, is—(1.) 1h. 30m.; (2.) 2h. 45m.; (3.) 3h. 15m.; (4.) 1h. 12m.

XIII. To find the length of the longest day and the longest night at any given place in the North Frigid Zone.

Rectify the globe to the latitude of the place; bring the ascending signs of the ecliptic—that is, those going before Cancer—to the north point of the horizon, and observe what degree of the ecliptic is cut by that point; find on the wooden horizon the day and month correeponding to that degree, which will be the commencement of the longest day. Bring the descending signs—those after Cancer—to the north point of the horizon, and observe what degree of the ecliptic is cut by that point; the corresponding day on the wooden horizon will show the time of sunset.

The beginning and end of the longest night can be found by proceeding in the same manner with the southern point of the horizon.

EXERCISE.—Find the length of the longest day at Cape North, 71° 30′ N. lat.

Ans. Seventy-seven days. The Snn rises on the 14th of May, and sets on the 30th of July.


WESTERN HEMISPHERE
NORTH PACIFIC OCEAN
NORTH ATLANTIC OCEAN
SOUTH PACIFIC OCEAN
SOUTH ATLANTIC OCEAN
ANTARCTIC OCEAN
POLYNESIA
NORTH AMERICA
SOUTH AMERICA
Greenland
Equator
Tropic of Cancer
Tropic of Capricorn
Antarctic Circle
South Pole

THE WO

WORLD

EASTERN HEMISPHERE

Physical Geography.

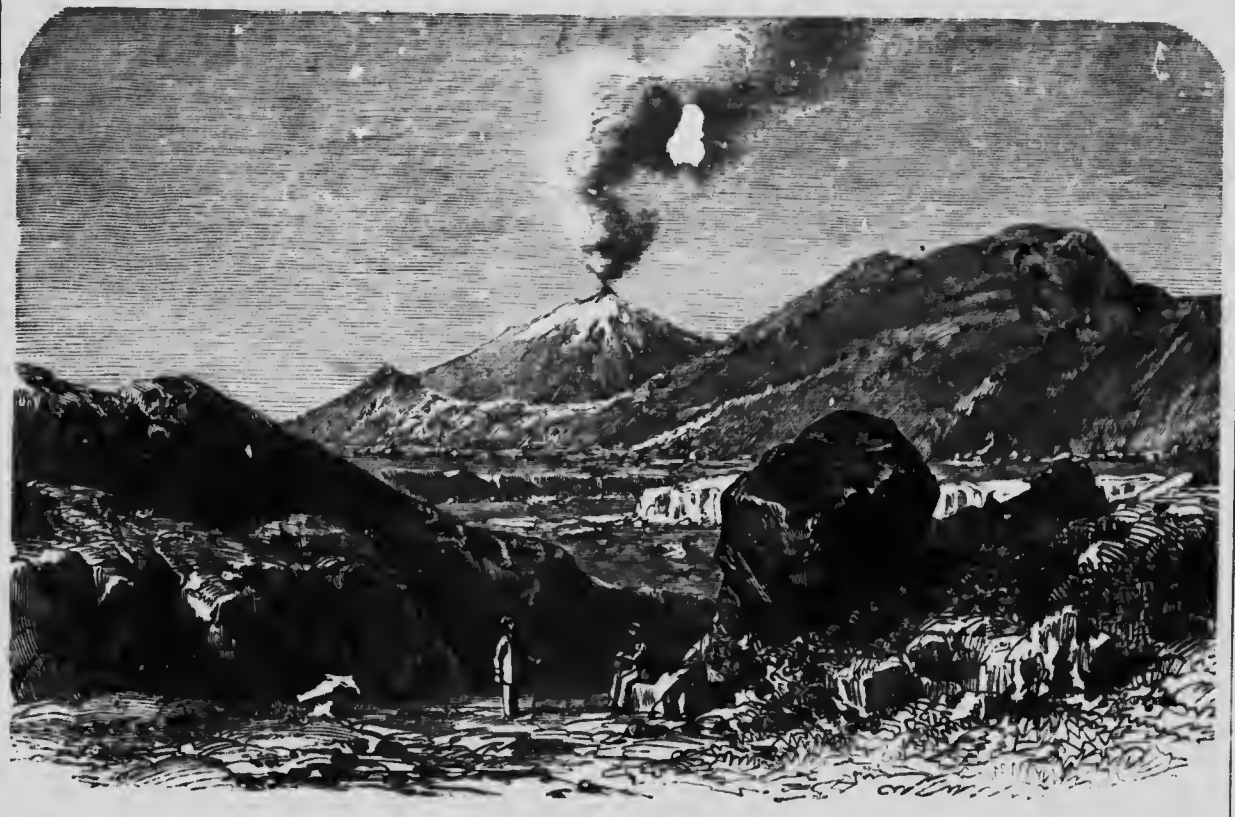


Fig. 15.—Mount Hecla.

71. **The Earth a Magnet.**—A magnet is a body which has the power of attracting iron. This property was first discovered in an iron ore called loadstone, found abundantly near the city of Magnesia, in Asia Minor. The two opposite ends of a magnet, called the poles of the magnet—the north or *positive* pole, and the south or *negative* pole—possess different kinds of magnetic influence. Thus, like poles of two magnets—the two positive poles, or the two negative poles—repel each other; and the unlike poles—one positive pole and one negative—attract each other. The magnetic force is greatest at the extremities or poles of the magnet; and it diminishes towards the centre, where it disappears. When a magnet is broken in two, each half becomes a distinct magnet, having both positive and negative poles. Magnets are either natural or artificial. A bar of iron, a knife-blade, or other piece of steel, may be converted into a magnet by rubbing it with a magnet. The needle of a compass is an artificial magnet.

72. The Earth is a natural magnet, having a positive and a negative pole, and having the same sort of magnetic force as any other magnet. It thus happens that when a magnetic needle is freely suspended on a pivot, as in the compass, it turns its negative

(*north-seeking*) pole towards the positive or north magnetic pole of the Earth. It is this property of the magnet which makes the magnetic needle of so much value to the mariner, enabling him to determine the north and all other points of the compass. The magnetic poles of the Earth do not coincide with the poles of the Earth's rotation, but are about 20° distant from them; hence the compass needle throughout most parts of the Earth does not point due north. The deviation of the needle from the north, which is called the *declination* or *variation* of the needle, is not the same over all parts of the Earth, having in some places an easterly variation, and in some places a westerly variation. The Earth is divided into two unequal divisions, according as the variation is east or west of the pole of the Earth's rotation. The region of westerly variation includes Turkey, Arabia, all Europe except the north-east of Russia, all Africa, the Atlantic Ocean, and the eastern side of America. The region of easterly variation comprises the remaining portion of the Earth, except an oval-shaped district, including Japan and a part of China.

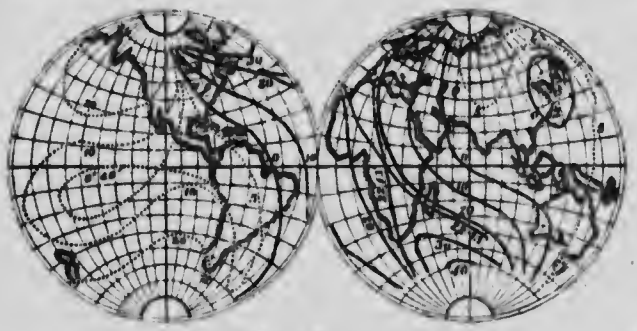


FIG. 16.—LINES OF EQUAL DECLINATION.

The dotted lines indicate easterly variation, the black lines indicate westerly variation.

73. The dividing lines between these regions of easterly and westerly variation are called the *lines of no variation*. The easterly line passes through the western part of Australia, thence runs north-westerly near the west coast of India, and crosses the Caspian Sea and the White Sea. The westerly line passes through Rio Janeiro, the mouth of the Amazon, Washington, Lake Huron, and Hudson Bay. The magnetic pole is in Boothia Felix, 70° north latitude.

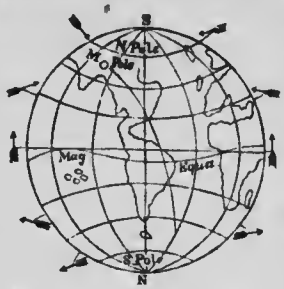


FIG. 17.—INCLINATION OF THE MAGNETIC NEEDLE.

The arrows show the dip of the needle in the northern and southern hemispheres.

74. It is a singular fact that the variation of the needle is not the same in any one place at all times. The magnetic pole of the Earth is found to move slowly for many years towards the west, and then many years towards the east. Thus the variation of the needle in Western Europe is now several degrees west of the pole of the Earth's rotation; three hundred years ago it was several degrees east.

75. Another curious feature of the magnet is its deviation from a horizontal position, as shown by a magnetic needle suspended so as to move freely up and down. This is called the *inclination* of the needle. In the Northern Hemisphere the negative pole of the needle dips; in the Southern Hemisphere it is the positive pole that dips. Between these two regions is a *line of no inclination*, called the *Magnetic Equator*. At the magnetic pole the needle stands vertically, the positive pole of the needle being turned away from the Earth.

76. **The Crust of the Earth.**—Until quite recently, the opinion prevailed that the interior of the Earth was a seething mass of liquid matter, surrounded on the outside by a solid crust of a few miles in thickness. While this opinion is now abandoned by all scientists, the term crust is still given to that outer portion of the Earth which can in any way, by observation or definite reasoning, be made a subject of investigation.

Near the surface we usually find loose materials, called soil, earths, gravel, and loose stones. On digging through these we come to solid rock. The materials forming the Earth's crust are divided into simple and compound substances. Gold is a simple substance; water is a compound substance, being composed of the elements oxygen and hydrogen. All compound bodies can be separated into two or more simple bodies. The number of elements, or simple substances, so far as discovery has determined, is about seventy. They are sometimes found in their simple state, but more frequently two or more are combined, thus forming the material of which every mineral, vegetable, and animal are composed. It seems strange that the beautiful and fragrant flower, the delicious fruit, and even our own bodies, should be identical in substance with the earth and gases; but such is the fact. The full investigation of the elementary composition of bodies belongs to the science of chemistry.

77. **Soil.**—The loose earth called soil is formed from particles of rocks broken up by rain, frost, and other atmospheric influences, mingled with decayed vegetable and animal matter. Soils are of three principal kinds—*silicious* or sandy, *calcareous* or limy, and *argillaceous* or clayey, according to the prevailing rock in their composition.

78. **Rocks.**—The rocks of the Earth's crust may be classified according to their content, their structure, or in various other ways. The geologist classifies them according to the conditions under which they have been formed. Some rocks, as granite, have been formed under great pressure, at considerable depth in the Earth's crust, and are sometimes called *nether-formed* (hypogene) rocks. Others, as sandstones, have been formed near the surface of the Earth, and are called *surface-formed* (epigene) rocks. Again, each of these classes is subdivided into two divisions. The nether-formed rocks include those which, under pressure, have crystallized from a molten state, called *plutonic* rocks, and those which have been changed by the action of heat since their formation, as gneiss or schist, and are called *metamorphic* rocks. The surface-formed rocks are divided into *aqueous* rocks, which have been formed under water, and have a stratified structure, and *volcanic* or unstratified rocks, which, like the lava of volcanoes, have been formed by the cooling of melted matter on the Earth's surface.

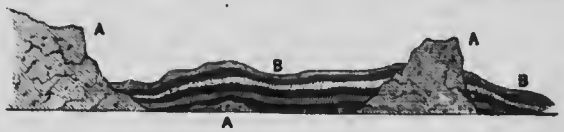


FIG. 18.—A A UNSTRATIFIED ROCKS. B B STRATIFIED ROCKS.

79. **Aqueous Rocks.**—The materials of which aqueous rocks are composed were once held in suspension in rivers, lakes, or seas. They were carried along by the force of water in rapid

motion, until they reached places so quiet that they were allowed to settle to the bottom. Hence they are often called *sedimentary rocks*. We see the same process going on at the present time. The rocks on the Earth's surface are being broken up by the action of the oxygen of the air, by water and by frost, and the small particles are carried by brooks and rivers to the sea, where they mingle with similar particles worn from the land by the action of the waves. The deposits are in *strata* or layers, and these strata are at first in the same plane as the bed of the lake or ocean in which the rock is formed—that is, if the bed is horizontal, the strata are horizontal; if the bed is inclined, the strata have the same inclination. It often happens, however, that rocks have been displaced by earthquakes or by some movement of the rocks beneath them since their formation. Hence we find them tilted up at various angles with the horizon.

80. **Fossils.**—Aqueous rocks often contain remains or traces of animal or vegetable matter which have been embedded in them during their formation. Such remains are called *fossils*. These fossils afford an interesting record of the history of animal and plant life which existed on the Earth during long ages before man was created. The first pages of this record—that is, the oldest rocks—show that at first the animals were of a very low type, and that they advanced from the lower to the higher ranks in regular succession. The invertebrates came first; then followed, in order, fishes, reptiles, birds, and mammals.

81. **The Interior of the Earth.**—In mining operations, and in boring artesian wells, men have penetrated a few thousand feet into the Earth; but beyond about a mile from the surface, the condition of the interior is not accurately known. Various facts, however, tend to establish the opinion that the interior is in a highly-heated state. The outer portion of the Earth's crust, varying in depth according to the climate, differs in temperature at different seasons of the year. Below this depth of variable temperature, which in the Temperate Zone is from sixty to eighty feet, the temperature increases about 1° Fahrenheit for every sixty feet of descent. At this rate of increase, the heat at the depth of two miles would be equal to that of boiling water, and at thirty miles it would be sufficient to melt the hardest known substances. It is, however, held by scientists that the pressure of the superincumbent masses of the outer portion of the Earth maintains the interior in the most rigidly solid state.

The fact that at various places melted rock is ejected from the craters of volcanoes would seem to prove that the interior of the Earth is in a liquid state. It is probable, however, that this molten matter does not come from any great depths, but rather from pockets comparatively near the surface.

82. **The Terraqueous Globe.**—If we could rise a few miles above the Earth and look down upon it, one of the first aspects to catch the eye would be the division of the surface into land and water. An examination of the map of the world will show that the water covers about three-fourths of the surface, and the land about one-fourth; or, more exactly, it is found by calculation that the ocean occupies about 142,000,000 of square miles, and the land about 55,000,000. It may also be stated that about three-fourths of the land are on the north of the Equator. Further, by properly adjusting a globe, it will be seen that the Earth's surface may be so divided that nearly all the land will be in one hemisphere and the water in the other. The city of London, in England, is near the centre of the land hemisphere.

83. **Relief.**—The boundary line between the land and the water—that is, the coast-line—is very irregular, the land jutting out into the sea, and the water running into the land, forming bays and gulfs. The coast-line is dependent on the height of the land compared with the sea-level—elevations above that level causing a land surface, and depressions a water surface. So far as known, the greatest height of the land above the sea-level is about 29,000 feet, and the greatest depression below the sea-level is about 30,930 feet. The bed of the ocean is much more uniformly level than is the surface of the land. The average depth of the ocean is estimated at 12,000 feet, while the average elevation of the land surface above the level of the sea is only about 2,000 feet.

The coast-line in many places is undergoing changes, according to the qualities of the rock or land adjoining it—softer parts being worn away by the ever-active and intruding sea, the more durable parts standing out in sharp points. Again, in other places, where earthy matter brought down from the interior is deposited at the mouth of rivers, the land is encroaching on the sea.

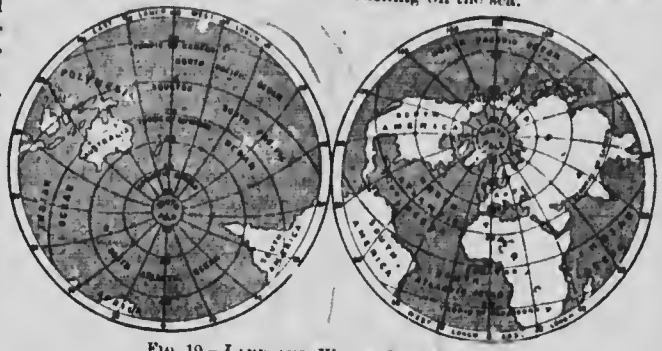


FIG. 19.—LAND AND WATER HEMISPHERES.

The relations of the land and water surface are also affected by changes of altitude in the land from internal causes. On the coast of Sweden it is found that the land is being elevated at the rate of two or three feet in a century. A similar elevation is going on along the coast of Chile. Elevations of this kind often take place during earthquakes. Similar movements have occurred on a much grander scale in remote ages, as shown by geologic records. Fossil remains of animals—such as sea-shells that once had their home in the sea—are often found far in the interior of the land, and even on high mountains. Also, certain landmarks, as old buildings which once stood near the sea, and at nearly the same level, are now farther inland and more elevated.

In other places, again, there are evidences of depression of the land below its former level, as shown by submerged forests.

84. **How the Earth is Warmed.**—The heat by which the Earth is warmed comes from the Sun. It is supposed to travel by the rapidly-vibrating waves of an invisible fluid, called ether, which pervades all space. Some bodies, as air and glass, transmit heat without receiving any warmth from it, on account of which they are said to be *diathermanous*. Other bodies, especially those of smooth surface and light color, throw back or reflect the heat that falls upon them, and hence have little or no increase of temperature. A third class, again, take in or absorb heat that comes to them. Bodies possess these properties of transmitting, reflecting, and absorbing in different degrees, and probably no body disposes of all the heat that falls upon it in any one of these three ways.

While the solid land reflects a portion of the heat which comes to it, it also absorbs a part, and becomes warm in this way. The color of the soil has something to do with this matter—a dark-

colored soil being the best absorber, and a light-colored one the best reflector. The quantity of water in a soil also affects the temperature, as heat is used up in the process of evaporation, and passes off in latent form with the vapor. When the surface of the land becomes warm, the heat passes down from one particle of earthy matter to another, by a process called conduction. The Earth is thus warmed to the depth of a few feet from the surface.

The surface of the Earth is constantly parting with its heat by throwing it off in straight lines into the air. This way of sending off heat is called radiation. The Earth radiates heat most freely when the atmosphere is perfectly clear, as fog, mist, or clouds overhanging the Earth act as a blanket in preventing the escape of heat by radiation. Hence frost is most likely to occur, and dew is most readily formed, on clear nights.

THE LAND.

85. **Distribution of Land.**—The irregularities of elevation in the Earth's surface, although very slight as compared with the size of the Earth, are of great consequence in the distribution of land and water. If the Earth were evenly curved, without hills and hollows, the waters of the ocean would overspread the whole surface to the depth of ten or twelve hundred feet.

Looking at the land in a general way, we find it in two great masses, known as the *Eastern Continent* and the *Western Continent*, which, based on each other at the north, lie near together around the North Pole, and extend southerly in triangular tongues far apart.

86. **The Western Continent** has an area of 15,500,000 square miles, or it equals a square of 3,937 miles. It has its greatest length north and south, extending from Point Barrow, 72° north, to Cape Froward, 54° south latitude, a distance of about 9,000 miles.

87. **The Eastern Continent,** the larger of the two divisions, has an area of 32,800,000 square miles, being equal to a square of 5,727 miles. Its greatest length is east and west, from Cape Verd, on the west of Africa, to East Cape, on the north-east of Asia.

88. These continents, again, are divided transversely by obtruding waters, giving four great divisions of land—*North America*, *South America*, *Eurasia* (*Europe-Asia*), and *Africa*. The island continent *Australia* forms a fifth and detached division.

89. Looking at these land divisions in a somewhat different way, we get three double continents, each having a northerly and a southerly division :—

(1.) *North America* and *South America*, separated in the main by the Gulf of Mexico, and joined by the narrow isthmus of Darien.

(2.) *Europe* and *Africa*, wholly separated by the Mediterranean Sea.

(3.) *Asia* and *Australia*, wholly separated by the Indian Ocean.

The greater part of the land surface is thus comprised in six divisions—*North America*, *South America*, *Europe*, *Asia*, *Africa*, and *Australia*. Each of these is sometimes called a continent. A portion of land of unknown extent, towards the South Pole, is called the *Antarctic Continent*.

90. By reference to the map several interesting features may be noted respecting the great divisions of land :—

(1.) The eastern and western continents spread out in broad masses towards the north, approaching near to each other and terminating abruptly near the parallel of 70° north latitude; while in the south they taper to points at Cape Horn and the Cape of Good Hope, which are far apart.

America approaches to within fifty miles of Asia at Bering Strait.

(2.) With the exception of a small portion of South America, no portion of the great land divisions extends southerly beyond 40° south latitude.

(3.) The chief part of the land on the north of the Equator is in the North Temperate Zone, while on the south of the Equator the greater portion is in the Torrid Zone.

(4.) The irregularities of the east coast of America conform generally to those of the west coast of the Eastern Continent, the projections of the one corresponding somewhat to the indentations of the other.

(5.) Both continents have their greatest extent east and west near the parallel of 50° north latitude, and their greatest extent north and south nearly corresponds with meridians.

(6.) The peninsulas, with the exception of Yucatan in America, Jutland in Europe, and two or three others, project towards the south.

(7.) South America, Africa, and Australia, on the south, have much greater regularity of coast-line than North America, Europe, and Asia, on the north.

(8.) Europe and Asia both terminate in three peninsulas on the south—Spain, Italy, and Greece, in the one; Arabia, Hindustan, and Further India, in the other.

91. **Islands.**—Islands differ from continents in being of smaller area. It is estimated that the islands comprise about one-seventeenth of the land surface of the Earth. They usually occur in groups, as the West Indies, the Sandwich Islands, the Japan Islands.

Islands lying near continents, as the West Indies and the British Isles, are called *continental islands;* those situated in mid-ocean, far from any continent, are called *oceanic islands.*

92. **Continental islands**, except such as are of volcanic origin, once formed a part of the mainland, from which they have been separated by the submergence or wearing away of portions of the coast. Some of them are found in lines parallel with the coast, as may be seen in the numerous small islands along the coast of Nova Scotia, New Brunswick, and the New England States; others seem to be the broken remnant of a mountain ridge of the mainland. The largest and most important islands of the globe belong to this class, including the British Isles, Japan Islands, East India Islands, West Indies, and Madagascar.

93. **Oceanic islands** are generally of small size, and occur in groups. Many of these islands are of volcanic origin, and are elevated, often rising abruptly to great heights. Of this class are Hawaii, in the Sandwich Islands, and the Canaries. Some of these islands still have active volcanoes. New islands of this kind are sometimes formed in the sea. One was thrown up in 1783 off the

coast of Iceland, and one in 1831 off the coast of Sicily. Both subsequently disappeared.

Other oceanic islands owe their origin to small marine animals known as polyps or zoophytes. Such islands are generally quite low, rising but little above the sea-level. Coral islands in the form of a ring, enclosing a lagoon or lake in the centre, are called *atolls*. Whitsunday Island, near the Fiji Islands, is of this description. The Caroline Islands are groups of atolls. Some coral islands are surrounded by coral reefs, which separate them from the ocean, a narrow channel of still water lying within the reef. Tahiti, the principal island in the Society Group, is encircled by a reef enclosing a lagoon from half a mile to three miles in breadth. A barrier reef stretches for over a thousand miles along the north-east coast of Australia.

94. The polyps inhabiting these waters secrete lime and other substances which are held in solution, and form them into solid matter, layer above layer, until the whole becomes like a mass of rock. As these little creatures cannot live in cold or deep water, or on dry land, they are found only within 120 feet of the surface in tropical seas, and they build on foundations raised to within that distance from the surface of the water by volcanic action. The islands are subsequently elevated by *debris* washed upon them by high waves, and many of them also by volcanic action. Many of the islands are supposed to have subsided slowly after the building process had begun, thus giving a greater depth of coral formation.

95. The following are the ten largest islands in the world:—*Greenland*, *Papua*, *Borneo*, *Madagascar*, *Sumatra*, *Great Britain*, *Honshu* (*Japan*), *Java*, *Newfoundland*, *Luzon*.

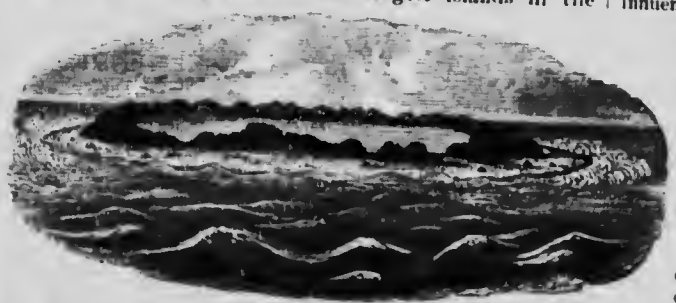


FIG. 20.—AN ATOLL.

96. **Relief.**—The elevation of the land is determined by comparing it with the sea-level. Sometimes the ascent from the water's edge is by a gentle slope; in other places it is precipitous, forming a rocky wall, varying from a few feet to several hundred feet in height. The most elevated land is generally in the interior of the continents. Although the land is generally higher than the level of the sea, there are districts in which it is otherwise. The most remarkable depressions are in Western Asia, near the Caspian and Dead Seas. The valley of the Jordan is the lowest land known, being, near the mouth of the river, 1,312 feet below the sea-level. Asia also contains the most elevated land. Mount Everest, a peak of the Himalayas, 29,002 feet above the sea, is the highest point yet discovered.

Lands not exceeding a thousand feet are called lowlands; those of greater elevation are highlands. Highlands are either mountains or plateaus.

97. **Mountains.**—Mountains are elevations which rise abruptly from the surrounding country, sometimes in isolated peaks, but more commonly in extended ridges. A mountain system is generally composed of a number of parallel ranges, separated by valleys or plateaus.

The most important mountain systems are: the *Rocky Mountains*, in North America; the *Andes*, in South America; the *Alps*, in Europe; and the *Himalayas*, in Asia.

Mountain ranges generally run in the direction of the greatest length of the land. They are also frequently on one side of the country, presenting a long and gentle slope towards the more distant ocean, and an abrupt descent to that which is nearer. Observe the Andes in this regard.

98. **Origin of Mountains.**—It is a common mistake to suppose that, in so far as natural causes are concerned, the Earth is a finished product. The sea is thought to be the seat of restlessness and unceasing fluctuation; the solid Earth is regarded as being always the same—the very type of stability. In truth, however, the Earth is as changeful as the unstable ocean, though its movements are less obvious to our senses. Two great classes of natural forces are ever at work in modifying the Earth's surface. One is a building up or elevating influence, tending to diversify the surface with mountain and lowland; the other is an erosive influence, wearing down the hill, and reducing the surface to uniform level. There are many evidences of an elevating force beneath the crust of the Earth. That great changes of level have taken place in the geologic history of the Earth is shown by the remains of marine animals found on the summits of high mountains. Such remains are found on the Alps, at the height of 10,000 feet; on the Rocky Mountains, at the height of 11,000 feet; and on the Himalayas, at the height of 16,500 feet. The chalk cliffs of England are made of sea-shells. There are evidences, too, that the process of upheaval is still going on. (See 83.)

The origin of mountains has been assigned to two opposite causes. Some persons have supposed that their upheaval is caused by the expansive power of heat on the matter in the interior of the Earth. Others say it is due to the shrinkage of the interior, brought about by the loss of heat which the Earth is constantly throwing off into space. According to this theory, as the rocks of the interior part[illegible] their heat and shrink into smaller dimensions, the outer portion, undergoing no shrinkage, forms too large a covering for the interior, and is thrown into wrinkles, like the skin of a wilted apple. The principle of their formation, according to this theory, may be illustrated by lateral pressure on cloth lying on a table, raising it in long waves or folds. Where there has been moderate pressure, the rocks have been raised in great arches, and the mountains have curved or rounded summits, as in the Alleghanies. In other cases the pressure has resulted in fracture of the rocks, causing jagged summits and isolated peaks, as found in the Sierra Nevadas. In the folding process the fractured edges sometimes slide past each other, producing what is known as *a fault*. It is quite possible that both of the influences indicated may be at work in elevating certain portions of the Earth's crust. The work is going on so slowly and silently that, without special attention, it escapes notice. By the aid of a small and delicate instrument called the microphone, which greatly magnifies sound, a crackling and snapping noise may often be heard in the Earth, indicating the movements which are taking place. During volcanic action there are more sudden and manifest elevations of land.

99. **Effects of Mountains.**—The effects of mountains upon other portions of the Earth, and upon man, are many and of great importance. The following are some of the more obvious:—

(1.) They condense the vapors of the atmosphere, and thus cause rain and snow. (*See* 184, and 210 (2).)

(2.) By the gradual melting of the snow and ice stored up on their slopes, they regulate the supply of water to many of the rivers of the world, giving them a more equable volume throughout the year than if all the moisture fell in the form of rain. On the lower slopes, also, much of the rain sinks into the ground, and afterwards reappears farther down their sides in springs which feed perennial streams.

(3.) They form the parting ground or *water-shed* between streams flowing in opposite directions. The Rocky Mountains, the Alleghanies, and the Andes are water-sheds.

Some important water-sheds are quite low ridges or mere swells in the surface. For example, the Mississippi, the Red River, and the Volga take their rise in water-sheds of slight elevation. Streams often make their way by deep gorges through mountain ranges. Peace River, in the North-West, is an example.

(4.) By erosion caused by atmospheric influences, and through the transporting power of streams of water, mountains furnish earthy matter for the building up of lowlands, the filling up of lakes, and the formation of deltas at the mouth of rivers. (*See Deltas*, 129.)

(5.) They exercise an important influence on man. In ancient times men were accustomed to regard high mountains with a certain degree of awe. This was in part due to their majestic scenery and to the wild storms by which they are often visited. Mountains thus became associated with a feeling of power and mystery, and were fit scenes for the imagination to picture and to people with gods and other supernatural beings.

Mountains also tend to develop hardihood, bravery, and a spirit of independence in their inhabitants, as found, for example, in the Highlands of Scotland and in Switzerland.

100. **Plateaus.**—Plateaus, or table-lands, are highlands usually forming the base of mountains. They are found between parallel mountain ranges, or they lie on the margins of mountain systems, between them and the sea, or the low-lying plains in the interior of the continent. Highlands of this kind lie between the parallel ranges of the Andes, between the Rocky Mountains and the Sierra Nevadas, on the east of the Rocky Mountains, and on the north of the Himalayas.

Plateaus are often covered with loose, shifting sand, or they have a rocky surface; they generally have little rain, the bordering mountain ranges taking all the moisture from the air; and they are lacking in fertility, except when watered by irrigation.

Plateaus in some instances, as in Arizona and South Africa, form a series of terraces, rising one above another by abrupt slopes.

101. **Plains.**—Plains are the undulating or comparatively level portions of the Earth's surface, ranging in altitude from the sea-level to about 600 feet above that level. They comprise a large part—some say nearly one-half—of the land surface of the Earth. They are divided, according to their origin, into two great classes—*alluvial*, which have been formed by the sediment of rivers; and *marine*, which have been formed on the bed of the ocean. Alluvial plains are generally very fertile. Some of them, as the plains of the Amazon, are covered with dense forests; others, as the prairies of North America and the llanos of South America, are, in their natural state, destitute of trees, but yield a luxuriant growth of grass and herbaceous plants. Marine plains are sandy, and are lacking in fertility, as the plains of the Baltic coast and of the Atlantic coast of North America.

102. The most noted plains of the world are the following:—

The *Central Plain* of North America, extending from the Arctic Ocean to the Gulf of Mexico; the plains on the east side of South America, including the *Llanos*, the *Selvas*, and the *Pampas*; the *Great Plain* of Europe, comprising the north-eastern part of Europe; the plains of Asia, comprising Siberia, a large part of China, Further India, and Hindostan, and the plains of the Euphrates; the *Sahara* of Africa (some part of which is below the sea-level), Egypt, and the coast country of Africa; the interior of Australia.

103. **Glaciers.**—On high mountains and in arctic regions snow remains on the ground throughout the year. It thus accumulates from year to year, until, by the great pressure from above, the lower portion is changed to ice. The immense pressure also sets the ice in motion, causing it to flow somewhat in the manner of a river, though much more slowly. This moving ice is called a glacier. Mountain glaciers, sometimes called *Alpine glaciers*, are found in the

Fig. 21.—Glacier with Moraines.

valleys along the sides of high mountains, into which vast quantities of snow have been hurled by avalanches from the surrounding heights, on which it has accumulated during many successive winters.

A glacier moves down the valley until, reaching a level

where the temperature is above the freezing-point, it begins to melt. A little farther down, varying somewhat from year to year as to its exact limit, the glacier ends, and a stream of muddy water, often the head of a river, takes its place. The Rhine, the Rhone, the Ganges, and many other rivers, have their origin in glaciers. Several small glaciers, starting at different parts of a mountain side, often combine, like branches of a river, and form a large glacier. The largest glaciers of the Alps are about ten miles in length, and those of the Himalayas are about four times that length. Some of the most remarkable glaciers in the world are found on the mountain slopes in the Western Highlands of North America—as in Washington, British Columbia, and Alaska.

104. **Moraines and Crevasses.**—Vast masses of rock which have fallen from overhanging cliff[illegible] carried along the surface of these ice streams. Rocks and detritus are also swept along the bed of the glacier under the ice. These rocks and the earthy matter carried down are in part thrown out of the current, and are left along the margin of the glacier, and in part they are borne forward and dumped at its terminus. The deposits at the sides of the glacier are called *lateral* moraines; those at the end are called *terminal* moraines.

Glaciers in rough and irregular valleys are much broken, and can be crossed by mountain explorers only with great difficulty. Sometimes, too, there are cracks or fissures, called *crevasses*, in the ice, which add greatly to the danger of the Alpine traveller.

105. **Continental Glaciers.**—In Greenland and other arctic regions glaciers are formed on lowlands. They cover vast areas, and they acquire such thickness as to rise to the proportions of mountains. These are called *continental glaciers*. A glacier of this kind in Greenland is computed to cover an area of 320,000 square miles. A continental glacier of the Antarctic Continent, towards the South Pole, has a much larger area than that of Greenland, and a depth of over a mile.

106. **Icebergs.**—The continental glaciers move slowly towards the sea. At the coast huge masses are broken off from time to time, and are launched into the water, floating away as *icebergs*. These icebergs stand from one hundred to two hundred feet out of the water, and they have been met with even five hundred feet high. As in a regularly-formed block of ice nearly nine-tenths of the depth sink below the surface of the water, some idea as to the size of an iceberg can be formed. Icebergs are brought by ocean currents to the warmer seas of the Temperate Zone, where they are soon changed to water. They are sources of great danger to the mariner, and they also have an important influence on the climate of the countries within their neighborhood.

107. **The Glacial Epoch.**—In long ages gone by, during what is known as the *glacial epoch*, the northern parts of Europe and America were occupied by continental glaciers of much larger area than any which now exist on the Earth. Geologists have discovered evidences of such a glacier in North America, which extended from Hudson Bay southerly beyond the limits of the Great Lakes. Huge bowlders, unlike any neighboring rock, brought long distances by the moving ice, are scattered over this portion of the continent; the exposed rocks are covered with scratches and grooves made in them by the glacial drift; and there are also within the same regions rounded hills, saucer-shaped valleys, and irregular ridges, formed by glacial deposits.

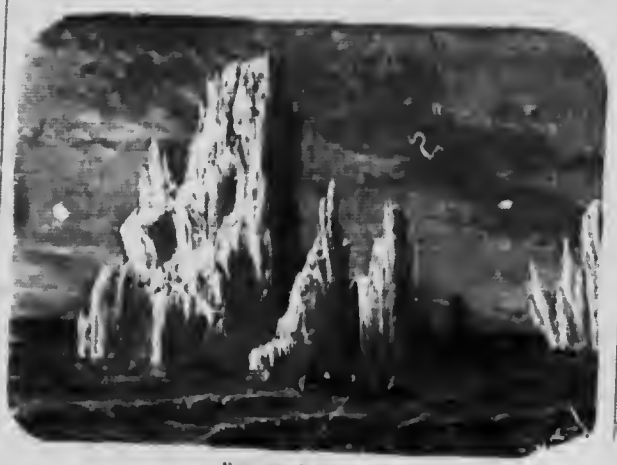


FIG. 22.—ICEBERGS.

108. **Volcanoes.**—Volcanoes are generally of [illegible] form, with a circular basin, called the *crater*, at the [illegible] From the crater, as a sort of chimney, during the [illegible] state of the volcano, are ejected lava or melted rock, [illegible] and steam, sometimes mistaken for smoke. Lava, when it flows from the crater, resembles melted iron as it issues from a furnace. Volcanic ash is simply finely-powdered lava. Pumice is a spongy lava, the cells being caused by bubbles of steam which it contained when in a liquid state. The steam thrown from volcanoes is soon condensed after its ejection, often causing heavy falls of rain in the vicinity of the volcano. The floods of water, carrying immense masses of ash, and the streams of lava which issue from the crater, pouring down the slopes of the mountain, sometimes cause great damage to the surrounding country. Large portions of Iceland have thus been covered with lava in recent times.

109. One of the most violent and destructive volcanic eruptions on record was that of Krakatoa, a small island between Sumatra and Java, in the Straits of Sunda, occurring in 1883. Thirty thousand people are said to have lost their lives. It has been estimated that the ash was thrown to the height of 50,000 feet. For months this volcanic dust floated in the atmosphere, and it was carried far and wide over the earth.

110. During an eruption of Vesuvius in the year 79, the neighboring cities of Herculaneum and Pompeii were completely buried in lava and ash. So closely entombed were these cities by the liquid mass—which encased every object and filled every vacant space—that for eighteen centuries they were preserved from decay. The excavations of Pompeii have given the people of our age an exact knowledge of life among the ancient Romans.

111. Volcanoes are generally found near the sea-coast, and in connection with mountains or islands now in process of formation. They are more numerous in the neighborhood of the Pacific Ocean than in that of the Atlantic. The most extensive volcanic

belt in the world lies along the west side of America. It crosses the Pacific Ocean by way of the Sandwich Islands, and extends along the east and south of Asia, including Japan and the East Indies.

112. In regard to their present conditions, volcanoes may be classed as *active*, *dormant*, and *extinct*—terms which are self-explanatory. A volcano which, from long-continued inaction, is supposed to be extinct, may be only dormant, for sometimes a volcano after a long rest breaks out afresh. Many countries—as portions of Canada, the United States, and Great Britain—in which

Fig. 23.—Vesuvius in Eruption.

there are now no volcanoes, were once scenes of great volcanic activity.

113. Some of the most noted volcanoes in the world are Etna, in Sicily; Vesuvius, in Italy; Cotopaxi, in South America; Kilauea, on the island of Hawaii; and Fusiyama, in Japan.

114. Volcanoes are supposed to be caused by highly-heated steam forcing its way from within the Earth's crust. The interior of the Earth, as stated in preceding pages, is intensely hot. Water, of which there are large quantities within the Earth's crust, is thus converted into steam, which is for the time confined by the superincumbent rocks and liquid matter. At length, by its expansive force, with intense violence, like the bursting of a boiler, it sets itself free, and carries with it the pent-up molten rock of the interior.

115. **Earthquakes.**—Earthquakes are movements of the Earth's crust, varying in degree from slight tremors barely perceptible, to violent concussions which cause the ground to rock like the waves of the sea. They sometimes produce landslides, cause the sea to recede far from the shore and return in high waves, and throw down buildings, working untold destruction of property and life.

Among the most violent earthquakes of which we have record is that at Lisbon, Portugal, in 1755. It occurred on All Saints' Day, when multitudes of people were assembled in the churches. About 60,000 persons are said to have perished, of whom 30,000 were buried under the ruins of fallen buildings, and 3,000, who were standing on the banks of the Tagus, were overwhelmed by a high wave which swept in from the sea.

116. Earthquakes are most frequent and violent in volcanic regions, and they are supposed to have their origin in the same cause as have volcanoes. They are, no doubt, often due to the breaking and sliding of rocks occasioned by changes in elevation of portions of the Earth's crust.

The shock of an earthquake originates at a point called the *focus*, from which, as a centre, the movements proceed in all directions. If the rocks were of uniform texture, the waves would be propagated in ever-widening spheres, reaching points equidistant from the focus on all sides at the same time; but as they differ in degrees of hardness and elasticity, the regularity of the movement is greatly disturbed.

117. **Denudation.**—Many agents are at work in the erosive or levelling processes going on upon the Earth's surface. Some of these forces are mechanical, and some are chemical, the two kinds often acting together. Water and frost are the two principal mechanical agencies thus employed; of the other class, oxygen and carbonic acid may be named as chief in importance. The term *weathering* is often applied, without regard to the kind of agency, to the breaking up of rock exposed to the influence of the weather.

Every drop of rain has a wearing effect on the rock upon which it falls; and the little rills, as well as the larger streams, in which the water collects, furrow the softer earth and the rocks more or less readily according to the force with which they flow and the hardness of the material. (*See Rivers*, 121.)

Water also penetrates the rocks through pores and seams, and by the expansive power of frost forces the rock asunder.

Many rocks contain iron or some other mineral substance which is easily acted on by the oxygen of the air to which they are exposed. The element thus acted on leaves the other constituents less firmly bound together, and the rock then readily yields to mechanical agencies. Action of this kind can take place only upon the surface; but as the outer portion is removed the process is repeated.

While the disintegrating forces are at work, the levelling-down agencies are actively engaged in transporting their products to other places. The chief of these agencies are the streams and the ocean waves. (*See Rivers.*) Winds also have considerable influence in changing the face of the Earth. In some places, as in Colorado, rocks are worn away by sand blown against them; in other places, as along the shores of Lake Michigan, the sand is piled up by the wind into great ridges called *dunes*.

118. **Underground Movement of Water.**—When rain falls, part of it flows along the surface, part evaporates into the atmosphere, and part sinks into the ground. Water which sinks into the Earth may, if it fall upon a hillside, shortly appear again at the surface farther down the slope; or it may penetrate to a great depth into the Earth, making its way through porous rocks or through the seams of those of firmer structure. It thus often makes its way beneath compact rocks through which it cannot pass. By boring through this impervious rock, an artificial outlet, called an *artesian well*, is provided, through which the water comes to the surface. Water, on passing through the Earth, dissolves various mineral substances. It also dissolves organic matter which it meets with near the surface. Its solvent power is also greatly increased either by becoming charged with

FIG. 24.—ARTESIAN WELLS.
C and C¹ indicate borings into water-bearing strata.

carbonic acid or other substance which it meets with on its way, or by becoming intensely heated at great depths in the Earth's crust.

119. **Mineral Springs.**—Water thus impregnated with dissolved mineral substances, in many cases finds its way to the surface again in mineral springs. Some of these springs are hot, others are cold. Many of them have medicinal properties, and become the resort of invalids. A large portion of this dissolved organic and mineral matter is carried forward by the rivers, and is finally deposited in the sea.

120. **Caverns.**—In passing through beds of limestone, water surcharged with carbonic acid dissolves so much of the rock that, in the course of long ages, it forms subterranean caverns. Such caverns are often found in countries abounding in limestone. The largest and most remarkable is Mammoth Cave in Kentucky. It occupies an area of eight or ten miles in diameter, and comprises several chambers connected by narrow passages. In it also are lakes and streams of water which are the home of animals of great interest to the naturalist.

Other objects of interest are the stalactite formations found in these caves. Some of the water from the surface above the cave sinks into the earth through basin-shaped depressions known as *sink-holes*. On its way it takes up carbonic acid and lime, which it holds in solution. As it trickles through the roof of the cave, a portion of the carbonic acid escapes. This lessens the solvent power of the water, and the lime assumes the solid form—a portion of it hanging like icicles from the roof, and a portion, which in its liquid form has fallen to the bottom, standing up in turrets from the floor. The pendants are called *stalactites*, and the turrets *stalagmites*.

121. **Rivers and Valleys.**—Rivers carry off the surplus waters from the land to the ocean. Some rivers are formed by the melting of ice and snow aloug the slopes on high mountains. Some have their origin in little rills which unite and form brooks, and these in their turn, as they move onward, come together and form rivers; others again issue full-grown from lakes.

In its early history a stream may be supposed to take the course provided for it by the building-up forces which originally shaped the Earth's surface. Immediately, however, it began to carve a course for itself, making its own channels and moulding its valleys in accordance with the laws which govern its action. These laws, for the most part, may be studied in the little streams which flow through every school section.

122. In the working out of river development there may be reckoned three distinct processes:—

(1.) The furrowing of the channel through which the stream flows. This erosive work the current, aided by stones and gravel which it sweeps along its bed, carries on for itself.

(2.) The weathering of the banks, by which they are changed from steep walls to gradually sloping acclivities, forming the broad river valleys. This is the work of atmospheric influences, and especially of water which comes in over the river banks.

(3.) The carrying down by the current of immense quantities of detritus worn from the bed and sides of the channel, and the depositing of this matter either at the mouth of the river or along its lower course, where the movement is more sluggish.

123. The leading conditions which favor the forming of the channel are soft material to work in, large volume of water, and rapid current, or (which comes to the same thing) steep incline of the river bed. The velocity of a river depends on the slope along which it flows, on the depth of its water, and on its freedom from windings. A very deep stream, impelled by its own pressure, will flow rapidly even where there is little descent. The Amazon is said to have a fall of only 12 feet in the last 700 miles of its course, and the Volga of only 633 feet through its whole length. A curve in the stream retards the velocity. Generally rivers flow most rapidly along their upper course, where they descend from the highlands to the lowlands. Here we generally find deep ravines and gorges which have been formed by rapid currents. A time comes in the history of most streams when, in their lower course, having worn the channel to the level of the sea, further deepening must cease.

124. The changing of steep banks into sloping river valleys is dependent on the rainfall in the region through which the river flows, and on the readiness with which the banks yield to weathering influences. The Mississippi River and the Colorado illustrate two opposite conditions in this regard. In such rivers as the Mississippi and the Amazon, the humidity of the atmosphere favors rapid weathering; hence the valleys slope gently from the river far away on either hand to the distant highlands from which the tributaries flow.

125. Some of the rivers on the Pacific slope of North America are noted for the deep gorges or canyons which they have formed in the solid rock. The canyon of the Colorado is 300 miles in length, and the height of its precipitous walls is from three to five thousand feet. Owing to the dryness of the climate in this region, the weathering of the rocks along the banks of this river is very slow, so that the channel remains through the ages much as it was when first carved out by the current.

126. A *river system* comprises a river and its tributaries, including all the subordinate branches of brooks and rills which contribute to the making up of the main stream. The territory thus drained is called a *river basin*. By

noting the direction of the flow of the various streams of a river basin, it may be observed that, while there is a primary slope which gives direction to the main stream of the system, there are many secondary slopes giving direc-

Fig. 25.—General View of a River Basin.

tion to the tributaries, and other slopes of remoter degree for their tributaries, and so on for the farthest-off brook and rill.

127. The **parting-ground** between rivers, or river systems, is called the divide, or *water-shed*. The divide may be a narrow ridge or swell forming the crest of opposite slopes, or it may be a broad, flat district of imperfect drainage, and hence of swampy character. The tendency in such places is for the streams on opposite sides of the flat to cut their way back to a common parting-ground, and thus secure perfect drainage. When this stage is reached, the softer slope, or that which, from its exposure to rain-winds, is weathered most rapidly, encroaches on the other, reducing the elevation of the divide, and broadening its own basin at the expense of the other. A process of this kind must be taking place on the eastern side of the Andes, in South America.

128. **Curves.**—Rivers seldom follow a straight course for any long distance, but swing from side to side in curves. The deviation from a right line may have its origin in the irregularity of the original slope, or it may be in the greater susceptibility to erosion in a soft bank on one side; or, again, it may be caused by some force, like the entrance of a tributary, which throws the current over to the opposite bank.

When the curve has been once formed, conditions favoring its increase are established. The current in its onward movement strikes against a concave bank, thus wearing it deeper. It is then, according to a law of motion, reflected to the opposite bank, where it forms another concavity. The convex curves of the bank, on the other hand, are swelled out more and more by sediment deposited along its comparatively quiet shores.

By the process described, in course of time, some streams return upon themselves by *ox-bow* curves, so as to leave a very narrow neck of land between two points on their banks, which, following the stream, may be miles apart. The river then, when flooded, often breaks across the isthmus, forms a new and shorter channel, and by subsequent deposits at each end of the ox-bow converts it into a curved lake.

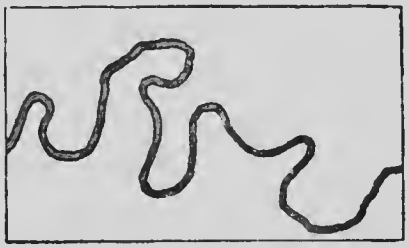


Fig. 26.—Ox-Bow Curves.

129. **Deltas.**—Immense quantities of earthy matter are carried down by rivers and emptied into the sea. Where there is much exposure to tidal action and strong waves, this matter is distributed widely until it is finally spread over the floor of the ocean. In other cases, as at the mouth of the Nile, the Mississippi, and the Ganges, it is deposited at the mouth of the river, forming a bar, and, by extending the land, makes gradual encroachments on the sea. The stream often divides and makes its way through this alluvial district by various channels. From the triangular form of the land between these channels, such a district is called a *delta*.

130. The **lowlands** along the middle and lower course of most streams are liable to be flooded when the stream rises above its ordinary height, as at the time of spring

Fig. 27.—Delta of the Nile.

freshets. When the water subsides, it leaves a rich sediment and forms soil of great fertility. Intervale is formed in this way. The extensive lands thus formed along the

lower course of the Mississippi and other large rivers are known as *flood-plains* or *bottom-lands*.

The lowlands along the lower course of the Mississippi and some other rivers are protected by artificial embankments. Sometimes these levees, as they are called, are broken down by the great pressure of the water, and large districts of country are inundated, resulting in great destruction of property. An inundation of this kind occurred along the lower Mississippi in 1897, destroying property to the value of 15,000,000 dollars.

131. Another kind of alluvial soil, called *marsh land*, is formed along the margins of rivers in certain low-lying districts. Earthy matter, carried down to the sea by the streams, and here mingled with similar matter worn from the rocks by the waves, is carried up the river by the tide and deposited on the lands which are inundated at high water. Lands formed in this way, when protected by dikes from further tidal floodings, are among the most fertile in the world. Many rivers in Nova Scotia, as those flowing into the Bay of Fundy and its branches, are bordered by rich marsh lands which, without fertilizers, have yielded luxuriant crops since the settlement of the country.

132. **Waterfalls and Rapids.**—An abrupt descent for any considerable distance in the bed of a river causes a waterfall, or cataract. Such a descent, or precipice, may be formed by some movement of the rocks during an upheaval of a portion of the Earth's crust, or it may be formed by the river in passing from hard to soft rock along its course. The hard rock has resisted the action of the river, while the soft rock has been worn away. Waterfalls gradually shift their position, working their way up stream by wearing off the face of the precipice over which they flow.

133. **Niagara Falls** may be considered the most noted phenomenon of the kind in the world. The Niagara River,

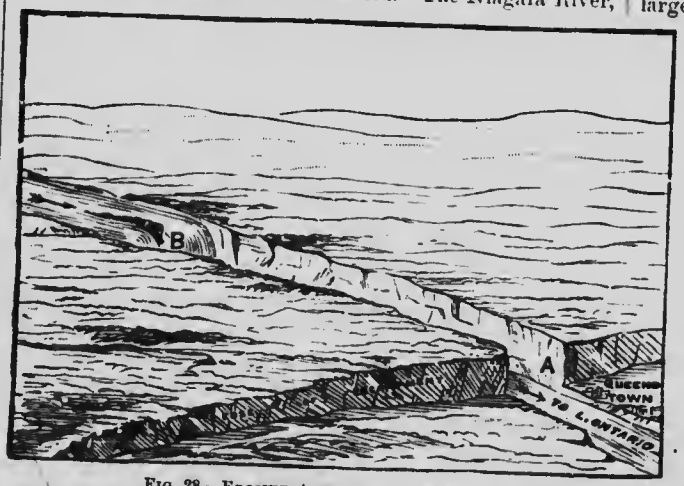


FIG. 28.—EROSIVE ACTION OF NIAGARA FALLS.
The gorge A to B has been worn away by the river.

a stream three-fourths of a mile wide, which connects Lakes Erie and Ontario, falls over a precipitous descent of 160 feet. By careful observation it is found that the cataract is retreating towards Lake Erie at the rate of about five feet in a year, and there is evidence in the rocks to show that the fall was once some six or seven miles farther down the river.

134. Among the other celebrated falls in the world may be named the Yosemite of California, and the Victoria Falls in the Zambesi of Africa.

135. **Rapids** are caused by a steep incline in a river bed. The St. Lawrence is noted for its numerous rapids.

136. **Effects.**—Brooks and rivers are, as we have seen, busy agents in changing the face of nature, ever tearing down and building up. They are of great service to man. They supply him with pure water, fertilize his fields, furnish a motive-power for machinery, and form a highway for travel and commerce. Along the margins of rivers is found the most fertile soil. Here are situated the chief inland towns, and here are the most busy scenes of human industry.

137. **Lakes.**—Lakes are accumulations of water in a depression or basin-shaped hollow of the land, usually found along the course of a river. The basins which they occupy owe their origin to various causes—as, unequal elevation or depression of the Earth's crust, or obstruction in a river from glacial deposits in remote ages, or from landslides. The unequal weathering of rock, due to different degrees of hardness or to difference in chemical action, tends to form lake basins. Lake basins are sometimes formed near the foot of a glacier by dams of ice in the glacial valley. Many such lakes are found in Alaska.

138. Lakes are most numerous in North America, Europe, Asia, and Africa. North America and Africa have the largest fresh-water lakes—as, *Superior*, *Michigan*, *Huron*, and *Erie*, in North America; *Albert*, *Victoria*, and *Chad*, in Africa. Asia is remarkable for its numerous salt lakes, of which the *Caspian Sea* is the largest lake in the world. The lakes of Europe are small, but many of them, occupying deep valleys surrounded by high mountains, are of singular beauty. These mountain lakes are long and narrow, and they are generally very irregular in form. Some of them are very deep, *Lake Maggiore*, in Italy, having a depth of 2,623 feet. Among the most celebrated of the European lakes are *Constance*, *Geneva*, *Maggiore*, and *Como*, in the Alps. *Lake Baikal*, in Asia, nearly 500 miles long, is the largest mountain lake in the world.

139. Most lakes are fed by affluents, and discharge their surplus waters by out-flowing streams. Many lakes, however, have large affluents, but, discharging their surplus waters wholly by evaporation, have no streams flowing out. Lakes of this class are most numerous in Asia, including the Caspian Sea, the Sea of Aral, the Dead Sea, and Lake Baikal. Great Salt Lake, in North America, and Lake Chad, in Africa, also belong to this class. Most of these lakes are very

salt. This is explained by the fact that while the surplus waters have been removed by evaporation, the salt, dissolved from the soil and brought in during the ages, has been left to accumulate. Some salt lakes near the Caspian Sea wholly disappear during the dry season, leaving on their bed a thick crust of pure dry salt.

140. All lakes are in process of extinction. This is due to two causes: their basins are being gradually filled up by the sediment borne in by their affluents, and the barrier at the foot of the lake is slowly wearing away and allowing the waters to escape.

141. Large areas once occupied by lakes are now dry land. One of the most remarkable examples of this kind was the temporary lake in the valley of the Red River of the North, covering a tract of country now included in Manitoba, Minnesota, and North Dakota, and having an area of about 110,000 square miles. During the glacial period, already referred to, immense masses of ice obstructed the streams on the northern slope of the central plain of North America. The waters accumulated, forming this great lake; and finally overflowing the divide on the south, they found their way into the Mississippi. To this great lake geologists, in honor of a distinguished scientist, have given the name *Lake Agassiz*. When a warmer climate had removed the ice-dam, Lake Agassiz disappeared, leaving only the fragments now known as Lakes *Manitoba*, *Winnipeg*, and *Winnipegosis*. The territory once covered by Lake Agassiz is now a vast prairie, but along its borders are gravel ridges which mark the ancient shore-line.

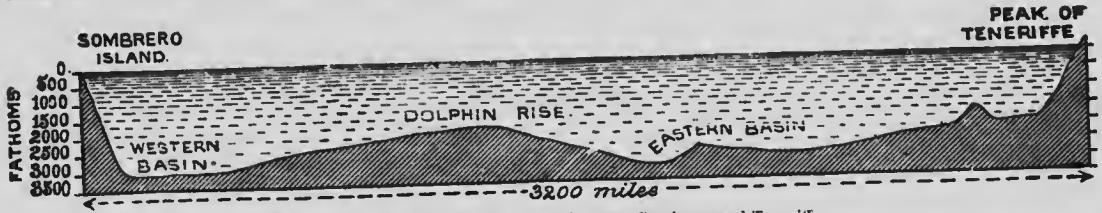
142. A climatic change from humidity to dryness has also caused large lakes to disappear, or has greatly reduced their size. That portion of North America known as the Great Basin, between the Rocky Mountains and the Sierra Nevadas, now an arid region, in ages long past had abundance of rain. Its lakes at this ancient time were on a grand scale. While some of them are still represented by lakes of much smaller area, others have been entirely destroyed by evaporation. One of the first-named class, now represented by Great Salt Lake, had an estimated area of nearly 20,000 square miles. Present appearances indicate that this great lake discharged its surplus waters by a tributary of the Columbia River. In honor of a noted explorer of this western country, the ancient lake has been named *Lake Bonneville*.

THE OCEAN.

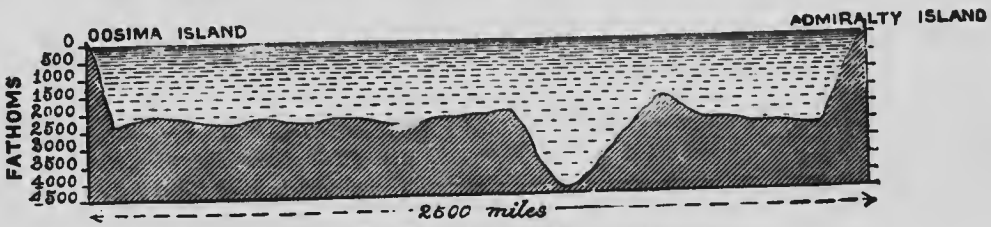
143. **Extent.**—The sea or ocean is that vast, continuous body of salt water which covers nearly three-fourths of the Earth's surface. Its area is computed to be 144,000,000 square miles, equal to a square of 12,000 miles.

144. **Contents.**—The composition of sea-water is nearly the same in all parts of the ocean. Owing to excessive evaporation, however, a rather larger proportion of saline matter is found in tropical seas; this is true also of such inland seas as the Mediterranean Sea and the Red Sea, which send off more water by evaporation than they receive from rivers. On the other hand, such waters as the Baltic and Black Seas, which receive more water from rivers than they lose by evaporation, are less saline than the main ocean.

About 3½ per cent. by weight of sea-water consists of various salts held in solution. Of these salts, chloride of sodium, or common salt, forms about three-fourths of the whole. Among the other substances are lime, salts of magnesium, potassium, sodium, and iodine. In all, twenty-nine different elements have been discovered in sea-water. Some of these substances are secreted from the water in large quantities by marine animals in the formation of shells and coral. New supplies are contributed by the rivers, so that the composition of sea-water remains unchanged.



Section of the North Atlantic Ocean between Sombrero and Teneriffe.



Section of the North Pacific Ocean between Japan and Admiralty Island.

FIG. 29.—DEPTH OF THE SEA.

145. **The Bed of the Sea.**—The bed of the sea rises and falls in hills and valleys, but by more gradual slopes than the land. The general distribution of sediment brought in by rivers, and washed by the waves from the shores, tends to maintain uniformity of level.

Generally the bed of the ocean slopes off gradually from the continents, giving a shallow sea for considerable distance, and then sinks abruptly to a great depth. It is thus bordered next the land by a high shelf. This shelf, on the American side of the Atlantic, is only a few miles in width along the Southern States, but farther north it spreads out to a breadth of 100 miles. For this distance

it is not more than 600 feet below the surface, but it then sinks abruptly to a depth of about 6,000 feet.

146. **Depth.**—The greatest known elevation of the land above the sea-level is about 29,000 feet. The deepest soundings of the ocean give 30,930 feet, near the Fiji Islands. It has been computed that the average depth of the ocean is not less than 12,000 feet. Some of the other deep soundings reported by navigators are 22,805 feet near Porto Rico, 23,275 feet off the Kurile Islands, and 27,000 feet near St. Helena.

147. **Temperature.**—The sea is warmed more slowly, and it parts with its heat less readily, than the land, thus maintaining a more uniform temperature. Owing to its saline properties, it freezes less readily than pure water, the freezing-point being 28° Fahrenheit.

Below a certain depth, varying with the latitude of the place, the waters of the ocean maintain a nearly uniform temperature about equal to the freezing-point of fresh water. In high latitudes the temperature of the deep sea is about 30°; in low latitudes it varies from 35° to 40°.

For several reasons, the sea is less readily heated than the land. Its smooth, glassy surface reflects much of the heat which falls upon it. A large part of the heat absorbed is used in the process of evaporation, and passes off as latent heat in the vapor. Again, the temperature of water rises slowly in proportion to the quantity of heat absorbed. And yet, further, the waters of the ocean are kept in such constant movement by ocean currents that warm and cold waters are intermingled, and extremes of temperature are modified. Then water is a bad radiator, so that the sea does not cool down as rapidly in winter as does the land.

148. **Divisions.**—Although the ocean forms one great connected body, it is usual to consider it in five principal divisions:—

The *Atlantic*, *Pacific*, *Indian*, *Arctic*, and *Antarctic Oceans.*

These oceans are separated in part by the continents, but towards the south they have no natural dividing lines. Some geographers have, hence, with much propriety, regarded these waters on the south of the continents as forming the principal ocean, which they have called the *Southern Ocean.* The other oceans may be regarded as great arms or gulfs extending northerly from this ocean.

Branches of these oceans, extending into the land, take various names, as *seas*, *bays*, *gulfs*, *channels*, and *straits.*

The terms *sea*, *bay*, and *gulf* are sometimes applied to bodies of water which do not essentially differ from one another. Thus, the *Caribbean Sea*, the *Gulf of Mexico*, and *Hudson Bay* are similar waters. The terms *strait* and *channel* are also used to designate connecting waters of the same kind, although a channel is usually longer and broader than a strait. Compare the *English Channel* and the *Strait of Dover.*

149. The **Atlantic Ocean** lies on the east of America, which it separates from Europe and Africa. The Polar Circles are its northern and southern limits, and the Equator divides it into *North* and *South Atlantic.*

The principal branches of the Atlantic are—on the American side, *Davis Strait*, *Baffin Bay*, *Hudson Bay* and *Strait*, the *Gulf of St. Lawrence*, *Bay of Fundy*, *Gulf of Mexico*, and the *Caribbean Sea*; on the eastern side, the *North Sea*, *Baltic Sea*, *English Channel*, *Bay of Biscay*, *Mediterranean Sea*, and the *Gulf of Guinea.*

The Atlantic varies in breadth from 900 to 4,000 miles. It is of great importance in a commercial point of view, forming the great highway between America and Europe. A submarine plateau in the North Atlantic forms the bed of the telegraph cables between Newfoundland and Ireland.

150. The **Pacific Ocean** is on the west of America, separating it from Asia and Australia; and it extends from Bering Strait, on the north, to the Antarctic Circle. It is divided into *North* and *South Pacific* by the Equator.

The chief branches of the Pacific are—the *Gulf of California*, on the American side; *Bering Sea*, *Sea of Okhotsk*, *Sea of Japan*, *Yellow Sea*, and *China Sea*, on the coast of Asia.

Bering Strait, connecting the Pacific with the Arctic Ocean, is about 50 miles wide.

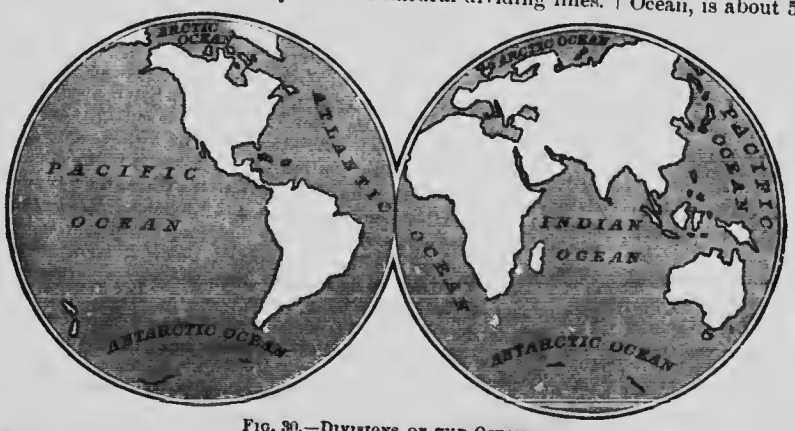


FIG. 30.—DIVISIONS OF THE OCEAN.

The extreme breadth of the Pacific is about 10,000 miles, or nearly half the circumference of the Earth. It is noted for the number of its islands. This great ocean was unknown to Europeans until 1513, when it was discovered by a Spaniard named Balboa, who crossed the Isthmus of Panama. The part of the ocean seen from the mountains of the isthmus lay on the south, from which the Pacific received the name of the South Sea.

Magellan, who crossed this ocean in 1521, called it the Pacific, because he encountered no storms on his voyage.

151. The **Indian Ocean** lies south of Asia, having Africa on the west, and Australia on the east. The Antarctic Circle is the southern limit.

Its branches are—*Mozambique Channel*, *Red Sea*, *Arabian Sea*, *Persian Gulf*, and the *Bay of Bengal.*

152. The **Arctic** or **Northern Ocean** is on the north of America, Europe, and Asia, within the Arctic Circle. Its principal branches in the Eastern Hemisphere are—the *White Sea*, *Sea of Kara*, and the *Gulf of Obi*. It is much broken by islands on the north of America.

Throughout a long winter this ocean is covered with ice of considerable thickness, which breaks up in the spring. *Icebergs* are masses of frozen fresh water, detached from glaciers falling into the sea, and drifting towards the Equator with the ocean currents.

A navigable route from the Atlantic to the Pacific, through the Arctic Ocean, was long sought with great ardor. The most memorable and disastrous expedition for the discovery of *The North-West Passage*, as the route on the north of America was called, was that commanded by Sir John Franklin, who sailed from England in 1845 with two ships and 138 men. None of the party ever returned.

Whilst engaged in the search for Franklin, Captain M'Clure, entering by Bering Strait, made the whole passage on the north of America to the Atlantic; but he was compelled to leave his vessel frozen fast, and to go part of the way over the ice.

Explorers often made unsuccessful efforts to reach the North Pole, but success was finally achieved by Captain Peary of the United States Navy in April 1909.

153. The **Antarctic Ocean** is situated within the Antartic Circle. The cold is even more severe than in the Arctic, and the ice extends farther from the Pole.

The finding of the South Pole, too, was long delayed. Sir James Ross in 1841 discovered a large tract of land in the Antarctic Ocean, which he named Victoria Land, and which was found to be a vast plateau, 9,000 feet in height, forming an Antarctic continent. The Pole was first reached on 14th December 1911 by Captain Amundsen, a Norwegian, and a month later by Captain Scott of the British Navy.

154. **Motions of the Sea.**—The waters of the ocean have three kinds of movement—*waves*, *tides*, and *currents*—arising from distinct causes.

155. **Waves.**—Waves are agitations of the surface water, usually occasioned by the wind. Except in shallow water, and when the wind is very strong, there is no onward flow of water, but each wave communicates its motion to the next. A log lying upon the water rises and falls with the waves, remaining in nearly the same position, and thus showing that the water makes little forward movement. Waves are sometimes caused by earthquakes.

The motion of the water in waves is circular, and is greatest at the surface. The depth at which the water is disturbed depends on the breadth of the wave. The disturbance caused by the most violent winds is computed to reach a depth of about 600 feet, but at this depth the motion is very slight.

The highest waves are found in the Atlantic, off the Cape of Good Hope, where, from the hollow or *trough* of the sea to *the crest* of the wave, the height is sometimes 40 feet.

The rise of waves is obstructed by ice-cakes or by seaweed floating on the water, and by dense fogs.

156. **Breakers** occur near the shore and in shallow waters. They are caused by obstructions of the land at the base of the wave, whilst the surface water moves on.

157. **Tides.**—By observing the waters of the ocean near the shore, we note a regular and persistent change of sea-level. For about six hours the water rises gradually, and then for a like period it falls; or, to be more exact, between one maximum of elevation or depression and the next there is an average interval of twelve hours and twenty-five minutes. By more extended observation we find that this change of level characterizes the whole extent of the ocean, and that a great wave moves from east to west, following the Moon in its revolution around the Earth. This alternate rising and falling of the ocean is called the tide. The rising or inflow of the water is called flood-tide, and the falling or receding of the water is called ebb-tide. For a few minutes before the change of the tide the water remains at rest.

In the open ocean, the height of the tide—that is, the maximum level of high water above the extreme depression at low water—is from one to three feet; but when the water is forced up narrow bays, the tide rises much higher. In the Bristol Channel the height is from 40 to 50 feet, and in the head-waters of the Bay of Fundy it sometimes rises from 50 to 60 feet. Along many coasts a wide margin of land is alternately flooded and laid bare.

FIG. 31.—TIDES.

158. **Cause of the Tides.**—The tides are caused in part by the attractive force of the Moon and Sun, and in part by centrifugal force. The Moon, however, being much nearer the Earth than is the Sun, exerts by far the greater tide-generating influence. The Sun and the Moon sometimes act conjointly, causing higher tides than usual, and sometimes they act in opposition, producing very low tides. These modifications will be considered farther on. Also, it will simplify the explanation at first to take no notice of the Sun's influence and of the Earth's rotation on its axis.

It has already been shown (58) that the Earth and the Moon revolve around a common centre of gravity, situated within the body of the Earth. In figure 31, let E represent the Earth, M the Moon, and *g* the central point around which the Earth and the Moon revolve. Now it is evident that, as regards the whole mass of the Earth, the average force with which it is attracted by the Moon, and the centrifugal force which counterbalances that attraction in maintaining the revolution of the Earth about the centre *g*, are exactly equal. But it is also evident that every particle of the Earth is not attracted by the Moon with equal force; for the attraction of gravity is inversely proportionate to the square of the distance, and the point *a* is nearer to the Moon than is the point *z* by the Earth's diameter, or about 8,000 miles. Hence the whole hemisphere of the Earth facing the Moon is attracted more strongly than is the opposite hemisphere. Now it is manifest that where the attraction is stronger than the average—that is, on the side of the Earth facing the Moon—the attractive force overbalances the centrifugal force, and where the attraction is less than the average—that is, on the opposite side—the centrifugal force preponderates.

The solid portions of the Earth being firmly held together, act as a mass in obedience to the resultant of the two forces; but with the ocean, in whose waters there is little cohesive attraction, the case is different. Through the Moon's attraction there is, therefore, an accumulation of water near the central meridian of

the hemisphere of the Earth facing the Moon, and through the action of the centrifugal force there is a similar accumulation near the central meridian of the opposite hemisphere. Further, the excess of the attractive force of the Moon on the nearest point of the Earth's surface over the average at the Earth's centre, and the excess of this average over the attractive force at the remotest point, are nearly equal. Accordingly, the accumulation of waters drawn up on the one side by the Moon's attraction is nearly the same as the accumulation on the opposite side caused by the centrifugal force. In other words, the tides on the opposite sides of the Earth are nearly equal. Thus there are two meridians on the Earth, 180° apart, at which it is high water simultaneously, and other two intermediate between these, and the same distance from each other, at which it is low water.

159. **Effect of the Earth's Rotation.**—As the Earth turns upon its axis from west to east in its daily rotation, the two tidal waves and the intervening troughs move around the Earth from east to west, bringing high water and low water twice in succession every day. As with the wind-waves, the tidal motion is not an onward flow, except near the shore and in shallow water. If the Moon were stationary, the time between one high water and the next would be exactly twelve hours; but in consequence of the Moon's progress in its orbit, any particular meridian is nearly an hour later each day in coming directly under the Moon.

160. **The Influence of the Sun.**—The influence of the Sun in causing tides is similar to that of the Moon, only in less degree. Sometimes the two bodies act together, when they are said to be in conjunction. This occurs at New Moon, when both are on the same side of the Earth, as shown in figure 32; it also occurs at Full Moon, when they are on opposite sides of the Earth. At such times the tides are unusually high, and are called *spring tides*.

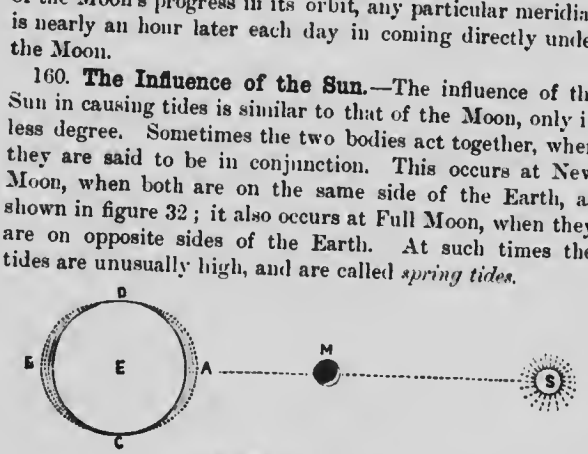


FIG. 32.—SPRING TIDES.

At the first and third quarters of the Moon, the Sun and Moon are at right angles to each other, as shown in figure 33. They are then said to be in opposition, and they partially counteract each other's influence. The low tides under these conditions are called *neap tides*.

161. **Effect of the Moon's Distance from the Earth.**—As the path of the Moon around the Earth is an ellipse, of which the Earth occupies one of the foci, at one part of its orbit the Moon is much nearer the Earth than when it is in the opposite part. When nearest the Earth, the Moon is said to be in *perigee;* when farthest from the Earth, in *apogee*. Hence, as attraction varies with the distance, when the perigee of the Moon coincides in point of time with the conjunction of the Sun and Moon, the tides are very high. Similarly, the variation in the distance of the Sun from the Earth affects the height of the tides.

162. **Tides Modified by the Land.**—The theoretic exactness of the time at which tidal phenomena should occur at any place is modified by various causes. Friction, especially in shallow waters, retards the progress of the tide. The great continents of America and Africa, stretching north and south, cause a deviation in the

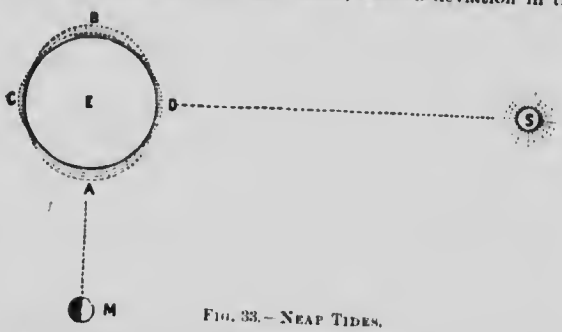


FIG. 33.—NEAP TIDES.

regular movement of the tide from east to west; and it is only in the great Southern Ocean that the tide keeps regular time with the Moon. On the west coasts of the continents it travels northerly, bringing high water successively on the different parallels in its course.

It will be seen, by reference to the map of Nova Scotia, that Halifax Harbor and the mouth of the Shubenacadie are nearly on the same meridian, and it might be supposed that they should have high water at the same time. But as the Bay of Fundy opens to the ocean on the west, the wave cannot flow in until it has passed the extreme west of Nova Scotia. Its movement is then up the bay from west to east. As this bay becomes much narrower near its head, the waters are crowded and piled up, causing the very high tides already referred to.

163. **The Tidal Bore.**—The tide rushes very rapidly up the estuaries of many rivers, assuming the form of a high wall-like wave of water. Such a tide-wave is called a *bore*. One of the most noted tidal bores in the world occurs in Tsien-Tang-Kiang, a river of China, where the wall of water is in some places twelve feet high. Bores of considerable height are met with in the Peticodiac, in New Brunswick, and in many other rivers flowing into the head-waters of the Bay of Fundy; also in the Severn and Wye in England, and in the Seine in France.

164. **Advantages of Tides.**—Some harbors are obstructed by a bar across their entrance, which ships are able to cross only at high water.

Rich marsh lands are formed along the lower course of many rivers by the sediment deposited during the tidal overflow of the banks.

Water-power for running mills and dynamos, and for other purposes, is often obtained by storing water during flood-tide, so as to form a large pond. The water is shut in by a self-acting gate, and is thus available for turning a wheel while the water outside is at a lower level.

165. **Ocean Currents.**—Besides the wave and tidal movements in the ocean, there are many evidences of an onward flow of its waters by which they exchange places. These movements are sometimes of a general character, without any exact limits, while in other places they are well-defined streams, and are known as ocean currents.

Among the evidences of such movements of the sea the following may be noted:—

Vast icebergs drift from the Polar Seas towards the Equator.

Driftwood is borne from Northern Europe to Iceland, various natural products of the West Indies are carried on the surface of the waters across the Atlantic Ocean to the Azores and other islands on its eastern side; and drift material from China is cast upon the shores of the Aleutian Isles.

Bottles thrown into the sea, containing slips of paper marking date and place, are picked up in waters remote from the place where they began their voyage.

The marked difference in the temperature in certain waters, either warmer or colder than the surrounding ocean, shows that these waters have been transported from places having a different climate.

166. **General Conclusions.**—By careful observation and inference, physicists have arrived at the following general conclusions in regard to these oceanic movements:—

(1.) There is a general, though very slow, movement of the broad expanse of warm surface water of the Equatorial Regions towards the Poles, and a counter movement of the cold waters of the Polar Regions towards the Equator. Owing to their density, these cold waters move beneath the warmer water.

(2.) On each side of the Equator, both in the Atlantic and Pacific Oceans, broad currents, known as the *Equatorial Currents*, setting out at the eastern side of the ocean, flow westerly from continent to continent. In each ocean the current on the north is separated from that on the south of the Equator by a counter-current flowing easterly. Near the west side of the oceans these currents are broken up. One main branch in each case turns towards the Pole, sweeps around, first easterly and then towards the Equator, finally uniting with the Equatorial Current at its starting-place on the eastern side of the ocean. These great whirls of waters enclose large elliptical areas of still water more or less covered with seaweed. This whirl and the enclosed calm sea are much more clearly defined in the North Atlantic than they are elsewhere. The calm sea in this region, known as the *Sargasso Sea*, situated between 20° and 35° north latitude, and 30° and 60° west longitude, is densely covered with seaweed.

On the north of the Equator these great whirls of waters move in the direction of the hands of a watch lying face uppermost; on the south of the Equator they move in the opposite direction.

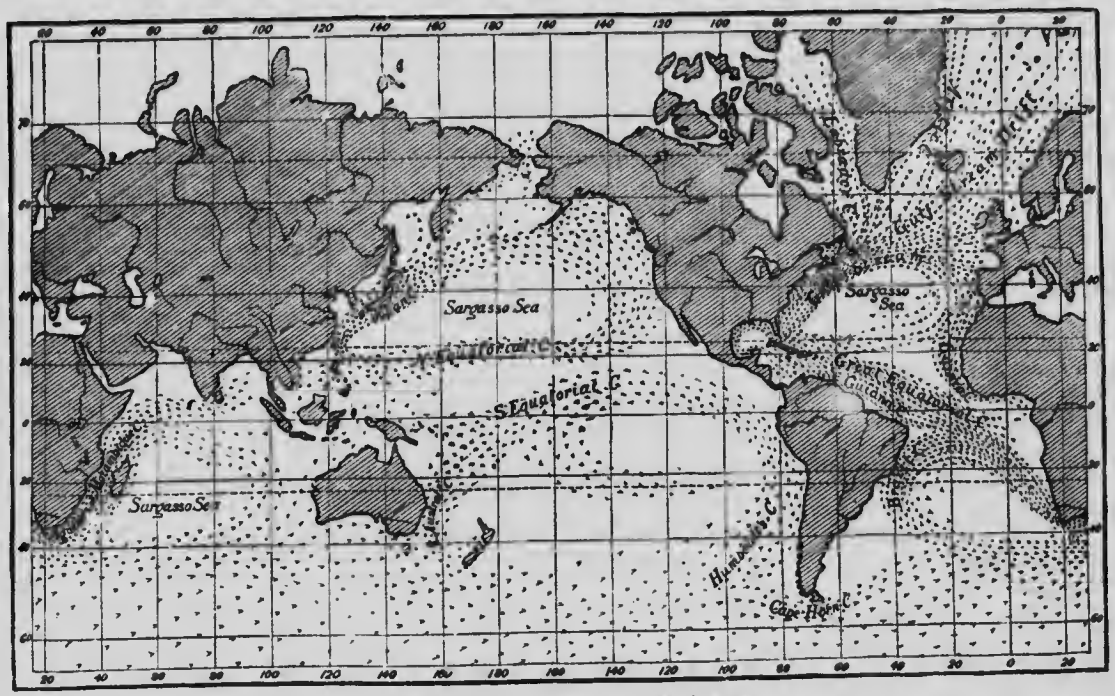


FIG. 34.—SURFACE CURRENTS OF THE OCEANS.

167. **Causes of Ocean Currents.**—Opinions differ greatly as to the origin of ocean currents. They are probably produced and modified by a variety of causes.

Difference of temperature in the waters of the Equatorial and Polar Regions, causing inequality of density, tend to bring about a flow of the lighter surface waters of warm regions towards the Poles, and a pressure from beneath of the Polar waters towards the Equator. The rapid rotary motion of the central parts of the surface of the Earth should also be considered in accounting for the flow of waters towards the Equator.

Two causes may be assigned for the westerly movement of the Equatorial Currents. The strong easterly winds which prevail within the trade-wind region cause a drift of waters towards the west. Again, in the rotary movement of the Earth, the waters in

this region do not move from west to east so freely as does the solid Earth, but, lagging behind, appear to move in the opposite direction.

Owing to the variation in the velocity with which the surface of the Earth rotates in different latitudes, currents moving along longitudinal lines, through a well-known law of motion, are deflected towards the east when moving from the Equator, and towards the west when moving towards the Equator.

The easterly deflection of the surface currents in the Temperate Zones is re-enforced by the prevalent westerly winds of those regions.

It should be stated, further, that ocean currents are greatly modified by the interference of the land.

168. **The Currents of the Atlantic.**—On reaching the eastern coast of South America, the southern belt of the Equatorial Current is divided into two parts at Cape St. Roque. The southern division flows southerly, joins a current from the Antarctic Ocean, and returns to its starting-place on the east of Africa. The other and larger division is turned northerly, joins the Equatorial Current on the north of the Equator, and enters the Caribbean Sea. Deflected by the land, it enters the Gulf of Mexico, from which it issues through the Strait of Florida as the Gulf Stream.

169. The **Gulf Stream** (which is the most sharply defined of all the currents) at its outset flows as a warm river through the ocean at the rate of about four miles an hour in a north-easterly direction. As it advances it turns easterly, becomes broader and less distinctly marked, and finally is merged in the easterly drift of waters spoken of in a preceding section.

170. The **Labrador Current** is a cold current which passes down from the Arctic Ocean, flowing between the east coast of North America and the Gulf Stream.

171. The **Gibraltar Current** is a stream from the Atlantic into the Mediterranean, to restore the equilibrium disturbed by excessive evaporation from that sea.

172. **The Currents of the Pacific.**—The currents of this ocean are less clearly defined than those of the Atlantic. The Equatorial Current is broken up by the islands on the west side of this ocean. One division turns southerly, flows along the east of Australia, passes New Zealand, and turns easterly to its starting-place.

173. The **Japan Current**, or the *Kuro-Sivo*, is the most important of all the deflected currents arising out of the Equatorial Current of the Pacific. It is the Gulf Stream of this ocean. It flows north-easterly past Japan, and crosses the Pacific Ocean, bearing a large part of its warm waters to the shores of Alaska and British Columbia.

174. **Effects of Currents.**—Ocean currents aid the mariner by speeding him in his voyages over the sea; they also have a marked influence on climate. The westerly winds of the North Temperate Zone bear the heat which they have taken from the warm waters of the Gulf Stream and the Japan Current to the countries on the west of Europe and America. The Labrador Current on the east of America is less genial, retarding with its chilly north-east winds the advance of spring. Great Britain and Labrador, which are about equally distant from the Equator, illustrate the immense influence of ocean currents on climate.

THE ATMOSPHERE.

175. The atmosphere is the gaseous envelope which surrounds the Earth on all sides to the height of several hundred miles. It moves with the solid Earth in its rotation on its axis and in its revolution around the Sun.

176. **Composition.**—The atmosphere is composed chiefly of a mechanical mixture of two gases, nitrogen and oxygen, in the proportion of 79 of nitrogen and 21 of oxygen, by volume, in every 100 parts. It also contains a small fraction (about 3 parts in every 10,000) of carbonic acid and a variable quantity of watery vapor. Small quantities of argon and other newly-discovered gases are also found in the atmosphere. In addition to these constituents, there are always present in the atmosphere innumerable particles of dust, which are considered of great importance in the condensation of water vapor into fog and rain. Dust and water vapor are much less abundant in the higher strata of the atmosphere than at lower elevations.

A high wind often raises clouds of dust, the larger particles of which soon settle again to the Earth, while the lighter particles remain in the air until they are brought down by falling rain or snow.

The oxygen of the air is the great supporter of combustion; hence, when there is a scanty supply of air, the fire goes out or burns feebly. Oxygen is also essential to animal life. Carbonic acid, which is generated by burning carbon in oxygen, and also in the process of breathing, is necessary to vegetable life.

177. **Properties.**—The atmosphere has little cohesion among its particles, so that it is easily displaced, and we move about in it without feeling the slightest obstruction. Yet when it is moving rapidly, as in a high wind, it strikes opposing objects with immense force.

Except when laden with condensed vapor, the atmosphere is perfectly transparent, so that objects are seen through it with the greatest clearness. It is not, however, quite colorless; for when we look at a large volume of air—as upwards into the sky, or at a distant mountain—it appears of a blue tint.

Air is exceedingly elastic. If it is nearly exhausted from a closed vessel by the air-pump, the little that remains will expand and fill the whole space. So also it becomes more dense under pressure, and it expands and becomes rarefied when the pressure is removed. Heat also causes air to expand.

178. **Weight of the Air.**—A hundred cubic inches of dry air, at a temperature of 60° Fahrenheit, weigh about thirty-one grains. A column of air of the full height of the atmosphere is equal in weight to a column of water of equal base 34 feet high, or to a column of mercury 30 inches in height. The pressure of the air at the level of the sea is about 15 pounds to the square inch.

Through atmospheric pressure water rises in the pump to the height of about 34 feet; also, the mercury is sustained in the tube of the barometer to the height of about 30 inches. The pressure of the atmosphere varies within certain narrow limits, according to the temperature, humidity, and electrical state of the air, causing a corresponding variation in the height of the mercury in the barometer.

As we rise above the sea-level, the density and pressure of the air rapidly diminish. At the height of 18,000 feet the pressure is

reduced to about one-half. Thus the barometer is used for determining the height of mountains. In consequence of the diminished pressure, water and other liquids boil at a lower temperature on mountains. A certain degree of density and pressure of the atmosphere is necessary to animal life. On high mountains breathing becomes difficult, and the blood bursts from the nose, eyes, and ears. Effects of this kind are experienced by travelers in visiting certain villages on the plateau of Tibet, where the pressure of the atmosphere is only about two-thirds of that at the sea-level. The natives, accustomed to these conditions, breathe without difficulty.

179. **Height of the Air.**—The height to which the atmosphere extends is not known. The existence of air at great heights is supposed to be proved by falling meteors. These bodies are supposed to be heated by friction in passing rapidly through the upper air. The distance above the surface of the Earth at which they begin to glow is estimated at not less than 500 miles.

180. **Reflection of Light.**—Objects become visible by the light which passes from them to the eye. Some bodies, like the Sun, are luminous, emitting light of their own; others are dark, and are seen by reflecting light which they receive from some luminous body. The atmosphere, by its reflecting power, which depends largely on the dust and water vapor it contains, distributes the light which passes through it. If there were no atmosphere, the Earth would be illuminated only in those places which received direct rays of light.

Twilight is also dependent on the same cause. When the Sun is not more than 18° below the horizon, the rays of light which strike the higher regions of the atmosphere are thence reflected to the Earth. As more rays thus find their way to the Earth when the Sun is near the horizon, day and night come on gradually.

181. **Refraction of Light.**—A stick held obliquely in water appears broken or bent at the surface of the water. Place a coin in an empty basin, and stand back until the coin is hidden by the edge of the basin. Now pour in water, and although the eye and the coin have not changed their position, the latter will become visible. These experiments illustrate the refraction of light. The rays reflected from the stick and the coin, on passing obliquely from the water to the less dense air, are bent, so that the object appears elevated above its real position.

The rays of the Sun, on passing through the atmosphere, are constantly passing from a rarer to a denser medium; consequently, when the rays are oblique, which is always the case beyond the tropics, they are so refracted as to cause the sun to appear above its real position in the heavens. Thus, when the lower edge of the Sun appears just on the verge of the horizon, the whole body of the Sun is actually below the horizon, and it would be invisible but for this property of the atmosphere.

182. **Temperature.**—Balloonists, in their ascent through the air, find that the temperature decreases about 1° Fahrenheit for every 300 feet of ascent. Thus, in the warmest countries, at the height of sixteen or seventeen thousand feet, the air is always below the freezing-point of water; and it is estimated that at the height of ten miles the cold is equal to that at the Poles. In explaining this it may be well to state that the air has no source of heat within itself; its natural condition is one of intense cold. It must derive its heat, directly or indirectly, from the Sun. But the air is diathermanous, so that it is not warmed to any great extent by the rays of heat as they pass from the Sun to the Earth. It is supposed to be warmed slightly more by the radiated heat which is thrown back into space from the Earth, and to some extent also by contact with dust and water vapor, which absorb some heat as the rays pass through the atmosphere. The air is warmed chiefly by contact with the warm Earth on which it rests. The heat does not pass by conduction from one portion of air to another which lies next it, in the same manner as it passes down into the ground, but it is distributed by convection—that is, the cold air from above, being heavier, presses down and forces the warm light air to ascend. In this way there is kept up a constant circulation between the upper and lower portions of the atmosphere. The air that is thus warmed by contact with the Earth has comparatively little effect in modifying the extreme cold of the atmosphere at great heights above the Earth. In the first place, the quantity of warm air which ascends from the Earth is very small as compared with the ever-widening expanse of air with which it intermingles as it ascends. Again, this warm air, as it ascends, being relieved of much of the pressure of the upper air, rapidly expands, and is thus reduced in temperature. The Sun's rays, as they fall upon mountain tops, may be even warmer than they are on lowlands, for they lose less heat in passing through the thin, clear upper air lying above the mountains than in passing through the denser, vapor-filled air over the lowlands. But as the same conditions afford free radiation, there can be little accumulation of heat.

183. **Water Vapor.**—If on a hot day we sprinkle the floor with water, in a short time the water disappears, and the room is cooled. A portion of the heat in the air of the room becomes latent in changing the water into invisible vapor. In a similar manner, water on the surface of the Earth is almost constantly changing to vapor and rising into the atmosphere. The capacity of the air for holding water vapor depends chiefly on its temperature. The warmer it becomes the more vapor it can contain. Air at any given temperature has its limit in regard to the quantity of vapor which it is capable of holding. When it has reached this limit, it is said to be saturated, or at the *dew point;* and if it then parts with a portion of its heat, some of its vapor will be condensed, and take the form of dew, fog, clouds, or rain. On the other hand, if a saturated atmosphere rises in temperature, its capacity for water vapor is increased.

As heat becomes latent in the changing of water to vapor, so it is again set free in the process of condensation.

Copious evaporation depends on three conditions—a wet surface, a high temperature, and wind to bear away the saturated air and bring dry air in its place. Hence evaporation goes on most freely from the surface of the sea within the tropics. Evaporation is not wholly arrested, however, by extreme cold, as even snow and ice give off water vapor.

184. **Dew.**—A cold pitcher or bottle placed in a warm room is soon covered with drops of water. The air of the room contains invisible vapor, which is condensed by contact with the cold surface of the pitcher or bottle. The formation of dew is somewhat similar. After sundown the Earth cools rapidly by radiation, the air next the Earth is cooled by contact with cold surfaces, and as its capacity to hold moisture diminishes with its temperature, it deposits a portion of its vapor in the form of dew.

Dew is most copious when the atmosphere is heavily laden with vapor, and when the conditions are favorable for the radiation of

heat. Hence there will be most dew in a clear, calm, cool night after a hot day. Clouds interfere with radiation, and so prevent dew. In some tropical countries the dews are like showers of rain. Grass and the leaves of plants radiate heat freely, and are consequently laden with dew, while the gravel walk is dry.

185. **Clouds and Fog.**—When water vapor is so condensed in the upper regions of the atmosphere as to become visible, it forms *clouds*. *Fogs* are masses of condensed vapor floating in the air near the Earth. Clouds are of various forms, and they are classified as *cirrus*, *cumulus*, *stratus*, and *nimbus* clouds. Cirrus clouds are formed at great elevations; they are thin and hazy, and have some resemblance to locks of hair. They are supposed to consist

FIG. 25.—VARIOUS FORMS OF CLOUDS.

of ice crystals. Cumulus clouds are the massive, fleecy clouds common in hot summer days. Stratus clouds lie very low, and are spread over a large part of the sky. Nimbus clouds are spreading, in the form of cirrus clouds on the upper side, and dense, changing into rain, on the lower side.

Clouds combining these various forms take such names as *cirro-cumulus* and *cirro-stratus*.

186. **Rain, Snow, etc.**—When clouds are further condensed by currents of cold air, by mountain heights, electricity, or other cause, they fall to the Earth as *rain*, *snow*, or *hail*. Snow is the crystallized form taken by water vapor when it is condensed in air at a temperature below the freezing-point. Hail often accompanies thunderstorms. The mode of its formation is not well understood.

WINDS.

187. **Origin.**—Owing to its lightness and elasticity the air is easily set in motion. Winds are currents of air. They are caused chiefly by heat.

If the door between two adjoining rooms of unequal temperature be set open, a current of cold air will be found near the bottom of the door, flowing from the cold room into the warm room; while near the top of the door a warm current will flow in the opposite direction. A smoking taper held in the doorway will show the direction of the currents. When the air over one part of a continent is warmer than that over adjoining parts, there will be inequality of atmospheric pressure, the warmer section having less pressure than the cooler; and this difference in pressure will be indicated by the barometer. The air will then be set in motion to restore the equilibrium in a manner similar to the movement of air between the two rooms in the illustration given above—the wind at the surface of the Earth blowing from the region of high pressure to that of low pressure, while in the upper air it is the reverse. Clouds near the Earth are often seen moving in one direction, while those more elevated move in the opposite direction.

188. **Different Kinds of Winds.**—Winds are divided into three classes—*permanent*, *periodical*, and *variable*. Permanent winds blow constantly from the same direction. They include the *trade winds* of the Torrid Zone and the *anti-trade winds* of the Temperate Zones. Periodical winds are those which shift at certain periods of the year or of the day, as the *Monsoons* and the *land* and *sea breezes*. Variable winds shift at irregular intervals. The first two classes prevail in the Torrid Zone. The last named is more characteristic of colder climates. Winds blowing over the sea are less influenced by local causes, and are, on this account, much more regular than those blowing over the land.

189. **The Trade Winds.**—The air in the Torrid Zone and the adjoining regions is highly heated and made lighter, in consequence of which the colder and heavier air on each side presses in towards the Equator, forcing the lighter air to ascend. When the ascending air has reached a stratum of air of its own density, still forced onward by the current beneath, it flows horizontally towards the Poles as an upper current. There should thus be a prevailing north wind on the north of the Equator, and a prevailing south wind on the south. But owing to the rotation of the Earth from

west to east, as explained in connection with ocean currents, these winds are deflected towards the west, becoming respectively north-east and south-east winds. On account of the advantage taken of them by navigators, these winds, which prevail over a large part of the Earth within 30° of each side of the Equator, are called *trade* winds—*the north-east* and the *south-east trade wind*.

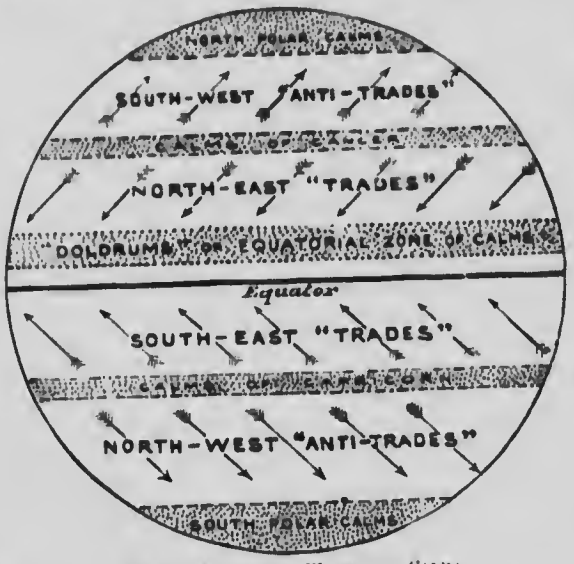


Fig. 36.—Permanent Winds and Calms.

In their progress towards the Equator they are constantly moving from cooler to warmer regions, and are thus constantly acquiring greater capacity for water vapor. They therefore promote evaporation in passing over the sea, and also in passing over lowlands, where they sometimes cause deserts. But when they pass over cool highlands, they give up their moisture in copious rainfall.

190. **The Equatorial Calm Belt.**—Between the region of the north-east and the south-east trade winds, where these opposing currents meet, there is a belt of almost constant calm. This belt, sometimes called the *Doldrums*, varies from two to five degrees in breadth. Its general position is a little north of the Equator, and it shifts a few degrees north and south at different seasons, according as the Sun is north or south of the Equator. The air in the calm belt, being highly heated and rarefied, ascends and moves towards the Poles as an upper current. In its ascent it is cooled; and its vapors, being condensed, descend in copious rain, making this a very humid region. The belt is sometimes disturbed by violent storms.

191. **Tropical Calms.**—At the northern and southern limits of the trade winds, near the tropics, the air which travelled from the equatorial belt as an upper current begins to descend to the surface of the Earth. This descent of the air gives rise to a narrow belt of calms, one near each tropic, varied by light, changing winds, known as the *Belt of Tropical Calms*, called also the region of the *horse latitudes*.

192. **The Return Trade Winds.**—As already stated, the air which ascends near the Equator moves towards the Poles, passing over the Torrid Zone as an upper current, which is known as the *Return Trade Wind*, or the *Anti-Trade Wind*. At the Tropical Calms a portion of this current descends to the Earth, and a portion of it continues as an upper current, being deflected towards the east by the rotary motion of the Earth.

In a general way, the *Return Trade Wind* is kept up at the surface of the Earth as a prevailing south-west wind in the North Temperate Zone, and a north-west wind in the South Temperate Zone. The regularity of this wind, however, is greatly disturbed, especially in the Northern Hemisphere, by ocean currents, ice-fields, and other causes.

193. **Monsoons.**—Monsoons blow for part of the year from one direction, and then for a similar period from the opposite direction. The most strongly marked monsoons are in the Northern Indian Ocean and in the adjacent parts of the Pacific Ocean. They are caused by the varying inequality of temperature between land and water at different seasons of the year. When the Sun is south of the Equator, the air over the ocean is highly heated, while that over the land of Southern Asia becomes cool and dense. Accordingly, during this season, a strong north-east wind prevails. When the Sun has passed north, becoming vertical over the land, the denser and heavier air is over the ocean, giving rise to the south-west monsoon. It will be seen that the south-west monsoon is laden with water vapor, and brings the rainy season to India and other parts of Southern Asia. Each monsoon continues about five months. Variable winds and violent storms occur at the change.

Similar winds, caused by varying inequality in the temperature of the air over adjoining land and water in summer and winter, are found in Australia, Spain, Texas, and other places.

194. **Land and Sea Breezes.**—Along the sea-coast, particularly in tropical countries, about the middle of the forenoon, the air over the land becomes warmer than that over the sea; accordingly, a sea-breeze sets in towards the land. In the evening, the land cools more rapidly than does the sea, and a land-breeze blows seaward.

195. **Modifying Causes.**—Winds are greatly modified by the region over which they blow. Those that have crossed large bodies of water are humid; those that have crossed a continent or

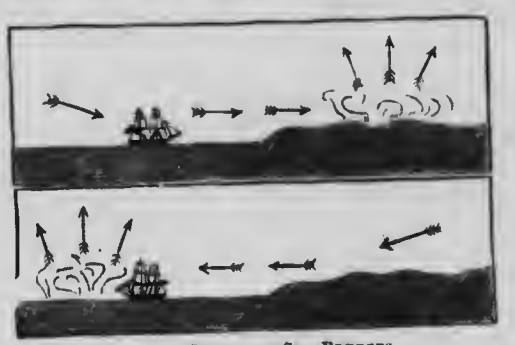


Fig. 37.—Land and Sea Breezes.

a high mountain are dry; those that have come over frozen lands or seas of ice are cold; and those from burning deserts are hot and dry.

The deserts of Africa and Asia give rise to hot, suffocating winds—as the *Simoom* of Arabia, the *Khamsin* of Egypt, the *Harmattan* of the west coast of Africa, and the *Sirocco* of Italy and Greece.

STORMS.

196. **Different Kinds of Storms.**—Disturbances of the atmosphere, giving rise to high winds, with rain, hail, or snow, and often accompanied by thunder and lightning, are common in most parts of the world. Violent winds, while varying much in different places, have many common features. They are known as hurricanes, typhoons, cyclones, and tornadoes. These storms are most frequent and violent on the ocean within the tropics, except in the South Atlantic, where they are unknown.

197. **Spiral Movement of Storms.**—In the hot days of summer whirlwinds are often observed moving along our streets, lifting dust and other light objects along their path. Two movements are evident in these winds—a rotary motion around a centre, and a forward motion by which the centre of the whirl is borne onward. This spiral movement, which is characteristic of all violent storms, is caused by the meeting of opposing winds. The centre of the storm, in which there is no wind, is a region of light atmospheric pressure, as shown by the barometer, where the inflowing air ascends. The movement of the ascending current is shown by the streamers extending from the upper clouds.

198. **Direction of Movement.**—Within the trade-wind region, on the north of the Equator the forward movement of storms is generally towards the north-west, and on the south of the Equator it is towards the south-west. Beyond

FIG. 38.

Diagram of spirally inflowing winds of hurricane in Northern Hemisphere, together with the path pursued by the storm. Spiral movements greatly exaggerated.

this region, on the north of the Equator storms usually travel in a north-easterly direction, and on the south of the Equator their course is towards the south-east.

The rotary movement of storms in the North Temperate Zone is from right to left, or contrary to the movement of the hands of a watch (diagram No. 38); in the South Temperate Zone it is in the opposite direction. Thus, on

FIG. 39.—WATERSPOUTS ON THE WEST COAST OF AFRICA.

the east side or front of a cyclone the wind turns from the Equator, on the west side or rear it turns towards the Equator, as shown in the diagram.

199. **Changes in the Wind.**—Owing to its rotary movement, the wind on any two opposite sides of the storm centre blows in opposite directions, as shown in the diagram. During the progress of a storm, also, the wind changes its direction, the changes in any given place depending on the position of the storm centre. This position can be determined from the changes in the wind.

200. **Tropical hurricanes**, also called cyclones, originate in the Gulf of Mexico, occurring generally in the late summer and early autumn months. Their general course is first in a north-westerly direction, and then recurving, they turn to the north-east, passing over the Grand Banks of Newfoundland, and crossing the Atlantic Ocean. Sometimes they pass over a portion of the continent before turning easterly, and at other times they keep wholly to the ocean. These hurricanes are often fearfully destructive, as, for example, the violent storms that occurred in the West Indies in the autumn of 1898 and August 1899.

There are many signal-stations along the Gulf and Atlantic coasts of the United States, from which warning of the approach of a storm is telegraphed to places farther north. Signals, consisting of square red flags with black square centres, are displayed in the principal harbors to warn mariners against going to sea until the storm has passed.

A mariner caught in a cyclone endeavors to move away from the centre, as the storm is more violent near that point. At the centre there may be a

dead calm; but though there is no wind, the tumultuous waves, lashed to fury, make this the most dangerous part of the ocean. It is the seamen's endeavour, in evoiding the centre, to move behind rather then in front of it. By remembering that the wind moves in e vast circle opposite to the movement of the hands of e wetch, he can easily determine where the centre lies. If he faces the wind, his extended right erm will point towards the centre, end he can determine the direction in which the centre is moving by noting the changes in the direction of the wind. If the change is towards the right, when the wind is said to *haul*, the centre is then passing from left to right; but if the wind changes to the left, when it is said to *back*, the centre moves from right to left.

Merinere sometimes use oil to quiet the agitated waters. A small quantity, allowed to drop slowly on the water, spreads out in a thin film over the surface, and prevents the weves breaking over the ship.

201. **Typhoons.**—Violent hurricanes called *typhoons*, similar to the cyclones of the West Indies, are common in the Indian and South Pacific Oceans during the months of July, August, September, and October.

202. **Tornadoes.**—Tornadoes, often improperly called cyclones, are violent local whirlwinds which often occur in the Mississippi valley, and also occasionally in certain portions of country in the east of the United States and Canada. They are unknown on the western side of the continent. They cover a limited area, their path varying in width from a few yards to a quarter or half a mile, and in length not exceediug 30 or 40 miles. Within these limits, however, they are exceedingly destructive, tearing down houses, uprooting trees, and sweeping away with terrific energy every object that lies iu their path. Tornadoes occur during times of extreme heat. In the distance a tornado appears as a black funnel-shaped cloud in violent commotion. As it draws nearer, the clouds spread over the sky, and, except at the centre, where the column of air is ascending, there fall torr of rain and hail.

When e tornado passes over a large body of water, it forms what is known as e *waterspout*, which presents the appearance of a column of water extending from the surface to the clonds. In reality, however, whet eppears as a column of water is the dense cloud which extends down to the surface of the water.

203. **The Weather.**—By the term *weather* is meant the condition of the atmosphere at any particular time as respects temperature, wind, cloudiness, and humidity, including fall of rain or snow. The state of the weather is closely connected with the degree of atmospheric pressure—rising temperature, cloudiness, and precipitation being associated with low pressure, and falling temperature and clear weather with high pressure. Throughout the eastern and central portions of North America changes of atmospheric pressure, with corresponding changes in the weather, more or less definitely marked, generally succeed each other at regular periods, passing in waves, covering wide areas, from west to east across the continent. These movements have their origin in the Canadian North-West, and are supposed to be occasioned by changes of temperature, though their origin is not very well understood. Except near the centre of the area, where a calm condition of the atmosphere prevails, the wind blows in from all directions towards the centre of a low-pressure area, and outward in all directions from the centre of a high-pressure area; but in both cases, owing to the forward movement of the wave and to opposing currents, the winds assume a spiral direction. The winds of a low-pressure area are called *cyclones*, and those of a high-pressure area *anti-cyclones*. The direction from which the wind blows at any particular place depends on the stage of the advancement of the wave. It is evident that near the centre of a low-pressure area there must be an ascending current of air, while near the centre of a high-pressure area there must be a descending current.

The fall of rain or snow within the area of low pressure is due to the condeneation of vapor caused by the cooling of the air as it ascends. This cooling of the ascending current is due partly to its admixture with the cold upper atmospheric strata, but mainly to its rapid expansion consequent on the removal of pressure. We may expect to find at the centre and on the eastern side of a cyclone clouds and rain or snow. On the western side of a cyclone, where the wind is moving from a cooler to a warmer region, there will be clear, cool weather. Precipitation is also more abundant when the air has been saturated with moisture in passing over large bodies of water, as in the case of an easterly wind on the Atlantic coast of Canada. On the other hand, a clear atmosphere prevails over a high-pressure area, because the descending air becomes warmer, and has increased capacity for water vapor, as it approaches the Earth.

The weather cycle, with all its variations of atmospheric pressure and attendant phenomena, is generally completed in a period

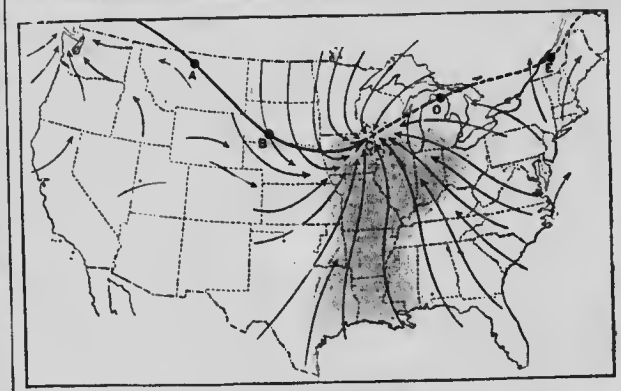


FIG. 40.—A CYCLONE.

of five or six days. Often, however, the changes are but slightly marked, and the periodic succession is also liable to be disturbed by causes not well understood. The changes are most regular and most strongly marked in the winter season.

Two similar areas may be found at the same time on different parts of the continent; thus, as a low-pressure area is central on the eastern borders of the continent, another low-pressure area may be central in the far west. (*See* figure 40.)

In Canada end the United States men are employed by the Government, at stations in verious parts of the country, to observe end report weather phenomena. As the weather-wave travels from west to east, hy noting the rate of movement it can be determined approximately at what time a change in progrese in the far west may be expected et eny point in the east. In this way, through the telegraph, we get onr "weather probabilities."

204. **Climate.**—The climate of a country is its general and characteristic condition as regards heat, moisture, and salubrity. It determines the character of the plants and animals of a country, and it has an important influence on the occupations, habits, and character of its inhabitants. The term "weather" is applied to the condition of the atmosphere at any particular time; "climate" expresses its average condition.

The word "climate" is derived from the Greek *klima*, a slope, and was used by the earlier geographers to designate the belts into which they divided the surface of the Earth by imaginary lines parallel to the Equator. They divided each hemisphere into thirty climates, twenty-four of which, called *half-hour climates*, were between the Equator and the Polar Circle. Beginning at the Equator, where the length of the day is twelve hours, and ending at the Polar Circle, where the longest day is twenty-four, the limit of each succeeding climate was placed at the parallel which marked an additional half-hour in the length of the longest day in the year. The remaining six climates, called *month climates*, were between the Polar Circle and the Pole. This division of the Earth is now abandoned.

205. **The Zones.**—In a general way the Earth is divided by parallels of latitude into five climatic belts called zones. (*See* 35.) These zones, in a general way, comprise three climates—*tropical*, *temperate*, and *arctic*. The tropical climate is marked by intense heat throughout the year, by a high average of rainfall, and by a low average of rainy days; the temperate climate is distinguished by its four seasons in the year, by great difference of temperature between the two opposite seasons—summer and winter—by great and sudden change of temperature during the same season, and by a medium average of rainfall and rainy days as compared with the tropical and arctic climates; the arctic climate is marked by low temperature throughout the year, by a low average of rainfall and a high average of cloudy and rainy days, which are most frequent in the warmer season.

206. **Temperature.**—While the temperature of a place depends primarily on its distance from the Equator, which determines the angle at which the rays of the Sun fall upon it, so many modifying agencies have to be taken into account that latitude is a very uncertain criterion of climate. Thus, frozen and inhospitable Labrador has the same latitude as the genial and fruitful British Isles; and Nova Scotia, with its long, cold winters, is in the same latitude as the south of France—land of the vine, the olive, and the orange.

207. **Lines of Equal Heat.**—Lines connecting places having the same mean temperature do not correspond with the parallels, but approach the Equator or recede from it according to the influence of local causes. Lines connecting places having equal mean annual temperature are called *isothermal* lines; those connecting places having equal summer temperature are called *isotheral* lines; and those connecting places having equal winter temperature are called *isocheimenal* lines.

208. **Conditions determining Heat.**—Temperature is mainly dependent on the following conditions:—

(1.) The angle at which the rays of the Sun fall upon the Earth at the given place—that is, the latitude. (*See* 27 and 28.) Hence the temperature is greatest within the tropics, and generally over all parts of the Earth it is highest at the season when the rays of the Sun are most nearly vertical. It should be noted, however, that the hottest days are not when the Sun is most directly overhead, but a little later in the season. This is due to the accumulation of heat from day to day in excess of what is lost by radiation. For a similar reason, the hottest period of the day is a little after mid-day.

(2.) Heat diminishes rapidly with increase of elevation. Thus, in mountainous districts within the tropics, every variety of climate, from tropical to arctic, may be found within a few miles. (*See* 182.)

Even at the Equator, land having an elevation of about 16,000 feet is covered with perpetual snow. This increase of cold with elevation is in part due to the fact that the air is less dense, and contains less dust and water vapor, than places at a lower level. The rays of heat are thus radiated more freely into space.

(3.) A maritime position tends to lessen the extremes of heat and cold, and gives a more equable temperature throughout the year than is found in the interior. This is owing to the fact that water warms and cools more slowly than does the land. Thus it sends to the neighboring land cool winds in summer and warm winds in winter.

FIG. 41.—ISOTHERMAL LINES, SHOWING PLACES THAT HAVE THE SAME AVERAGE YEARLY TEMPERATURE.

(4.) Prevailing winds and ocean currents modify temperature, in some cases bringing heat, in others cold. The prevalent westerly winds, warmed by the ocean currents of the Pacific and Atlantic Oceans, give a milder climate to the western coasts of North America and Northern Europe than is found in the interior or on the east of these continents. The Labrador Current sends cold winds to the east coast of North America.

(5.) A general slope of a country towards the Equator gives a warmer temperature; a slope towards the Pole has the opposite effect.

(6.) Removing surplus water by drainage, thus preventing loss of heat through evaporation, secures higher temperature.

RAINFALL.

209. **Conditions required for Rain.**—Rain (including snow also) demands two conditions—the taking up of water vapor into the atmosphere, and the subsequent condensing of that vapor, so that by the union of its particles it may become heavy and fall to the earth. While water at a low temperature, indeed even snow and ice, send off vapor into cool air, considerable heat is necessary to copious evaporation. Hence the capacity of the air for water vapor is greater within the tropics and in the lower strata of the air than it is in higher latitudes and at great elevation above the sea. In some cases the vapor-laden air is cooled by ascending

into the cold upper strata of the atmosphere, and at other times it is cooled by intermingling with cool surface currents of air.

210. **Distribution of Rain.**—Rain is very unequally distributed over the Earth. The average quantity is greatest in the Torrid Zone, and, in general, it decreases as the latitude increases.

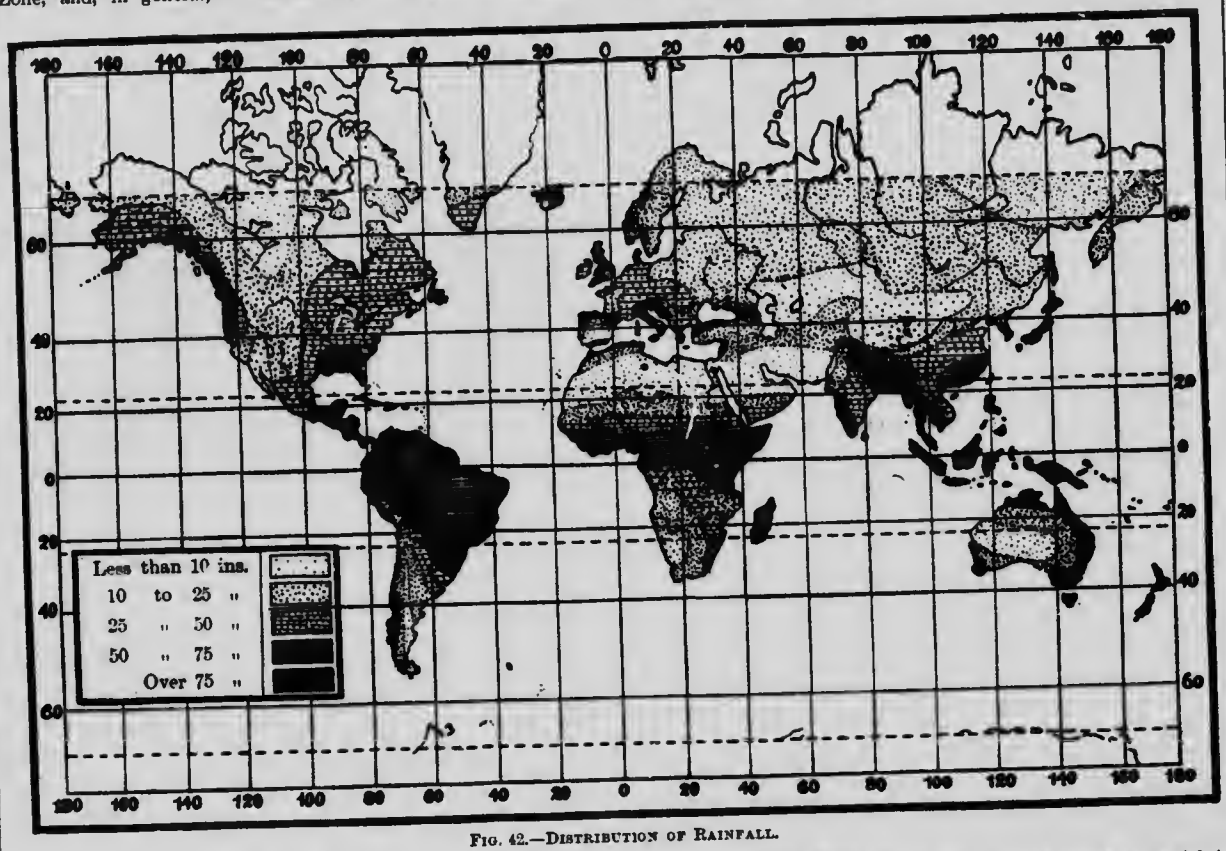


FIG. 42.—DISTRIBUTION OF RAINFALL.

More rain falls on the ocean and near the coast than in the interior of the continents.

The rainfall of a country is, to a large extent, dependent on its winds. Winds that have crossed a wide extent of land are dry winds. Warm winds that have crossed large bodies of water are heavily laden with moisture. If they now pass over a mountain range, they give copious rains on the windward side, and they become dry winds after they have crossed the mountain. A wind coming from a cool to a warm region has increased capacity to hold water vapor, or, in other words, is a dry wind. The reverse is true of a wind passing from a warm to a cold region.

The south-east trade wind thus brings abundance of rain to Brazil, especially along the eastern slopes of the Andes. But after it has crossed the cold heights of the Andes, it becomes a dry wind in Northern Chile and in Peru on the west of the mountains. Similarly the north-west return trade wind brings rain to Southern Chile, but it is a dry wind in the Argentine Republic. The south-west return trade wind gives heavy rainfall on the Pacific coast of British Columbia and of the United States, but it is a dry wind in the interior, after it has crossed the mountains. Also, the south-west wind, blowing over the warm waters of the Gulf Stream, gives a mild and humid climate to the British Isles.

The monsoons in Southern Asia, when blowing from the land, bring a dry season, but when blowing from the sea, a wet season. Thus, while the south-west monsoon brings rain to the western side of the peninsula of Hindostan, it is a dry wind after it has crossed the Western Ghauts. The eastern side of the peninsula, in its turn, has its rainy season during the north-east monsoon, which is a dry wind on the western side of the peninsula.

Over a large part of the Torrid Zone there is a rainy season and a dry season. The rainy season occurs when the Sun is most vertical. The heated, moisture-laden air then ascends, and its vapors, condensed in the cool upper air, return in torrents of rain during a portion of every day.

Within the belt of calms this heavy downpour every day prevails; and where the calm belt shifts north and south with the Sun, there is an alternation of rainy and dry seasons. The rainy season sets in with the calm when the Sun is vertical. This condition is found in Africa near the sources of the Nile, in the West Indies, Venezuela, and Brazil. Near the central portion of the Torrid Zone there are two rainy seasons, one at each crossing of the Sun.

The prevailing wind in the great Sahara of Africa has crossed vast tracts of arid land. Besides, through the intense heat of the desert, the capacity of this wind to hold water vapor is greatly increased, so that it yields no rain to the thirsty land.

THE FRIGID ZONE. THE TEMPERATE ZONE. THE TORRID ZONE.

FIG. 43.

THE ORGANIC WORLD, OR PLANTS AND ANIMALS.

211. **Variation.**—Plants and animals are greatly diversified in adaptation to the varied conditions under which they live in different parts of the Earth. While the variations spoken of in the following paragraphs are mainly dependent on climate, animals and plants also have special organization according as their home is the land, the water, or the air, and also according as it is salt water or fresh.

212. Most animals are limited in their range by climate, and we do not always find precisely the same species in different continents, though the climate may be quite similar. There is, however, strong resemblance of type, as the crocodile of Africa and the alligator of South America.

213. **Inhabitants of the Water.**—On account of the very limited degree of light, and owing to the intense cold also, in water at great depths, plant life is confined chiefly to the waters that are within 200 feet of the surface. Ocean plants are most abundant along rocky shores, and in the quiet waters that lie within the whirl of ocean currents, as the Sargasso Sea.

Some animals of the ocean, on account of their inability to resist cold, are confined within very narrow limits. The little animals of the polyp family, which secrete coral from the ocean, requiring a temperature of about 68° Fahrenheit, are thus restricted to the surface waters of tropical seas.

Waters that are excessively salt, as Great Salt Lake and the Dead Sea, are nearly destitute of all forms of life.

214. **Inhabitants of the Air.**—Animals that frequent the air, as birds and insects, often betake themselves to the land or the water. Many insects, as the mosquito and the dragon-fly, resort to fresh water for breeding, and their young, during their earlier stages, live wholly in the water.

215. **Plant Life within the Tropics.**—Within the tropics, under the favoring conditions of heat and moisture, vegetation is most varied and luxuriant. The forests are composed of majestic evergreens, whose trunks and branches support twining plants and parasites in such profusion that it is sometimes difficult to ascertain the trunk to which the leaves and blossoms belong. Among the trees are the huge baobab, with trunk thirty feet in diameter, the wide-spreading banyan, and the majestic palm. Here also are found the caoutchouc, the gutta-percha, rosewood, mahogany, ebony, and various dyewoods. Other trees yield valuable gums, drugs, spices, and fruits.

The most important food plants of the Torrid Zone are the bread-fruit tree, the date palm, sago palm, cocoa palm, the cow tree, manioc, banana, sweet potato, yam, rice, millet, sugar-cane, and coffee.

216. **Plants of the Temperate Zones.**—The forests of temperate climates have such trees as the oak, elm, maple, beech, walnut, chestnut, pine, spruce, and cedar.

The principal food plants of this climate are wheat and

other cereals, pease, beans, potatoes, onions, beets, carrots, and turnips. The fruits are the apple, pear, plum, peach, grape, and various small fruits.

The warmer portions of the Temperate Zones produce cotton, opium, tea, maize, the mulberry, and such fruits as the orange, lemon, and fig.

217. **Vegetation in the Arctic Regions.**—In the warmer portions of these regions, bordering on the Temperate Zone, are forests of cone-bearing trees, as spruce and fir. As the cold becomes more severe, there are but stunted birches, willows, and alders, while near the Pole these give place to lichens and mosses. Finally, all vegetation disappears in the regions of eternal snow.

219. **Vertical Plant Zones.**—Mountains in the Torrid Zone whose summits rise above the snow-line present, within narrow compass, nearly all the variety of vegetation found between the Equator and the Poles. At the base are tropical palms, tree-ferns, and choice fruits; then the trees, cereals, and fruits of temperate climes; higher up are the cone-bearing trees and hardy fruits; then shrubs, mosses, and lichens.

220. **Animals of the Torrid Zone.**—The Torrid Zone surpasses the other parts of the Earth in the number, size, and beauty of its animals. Some of the most important are the elephant, rhinoceros, camelopard, giraffe, lion, tiger, leopard, panther, hippopotamus, crocodile, alligator,

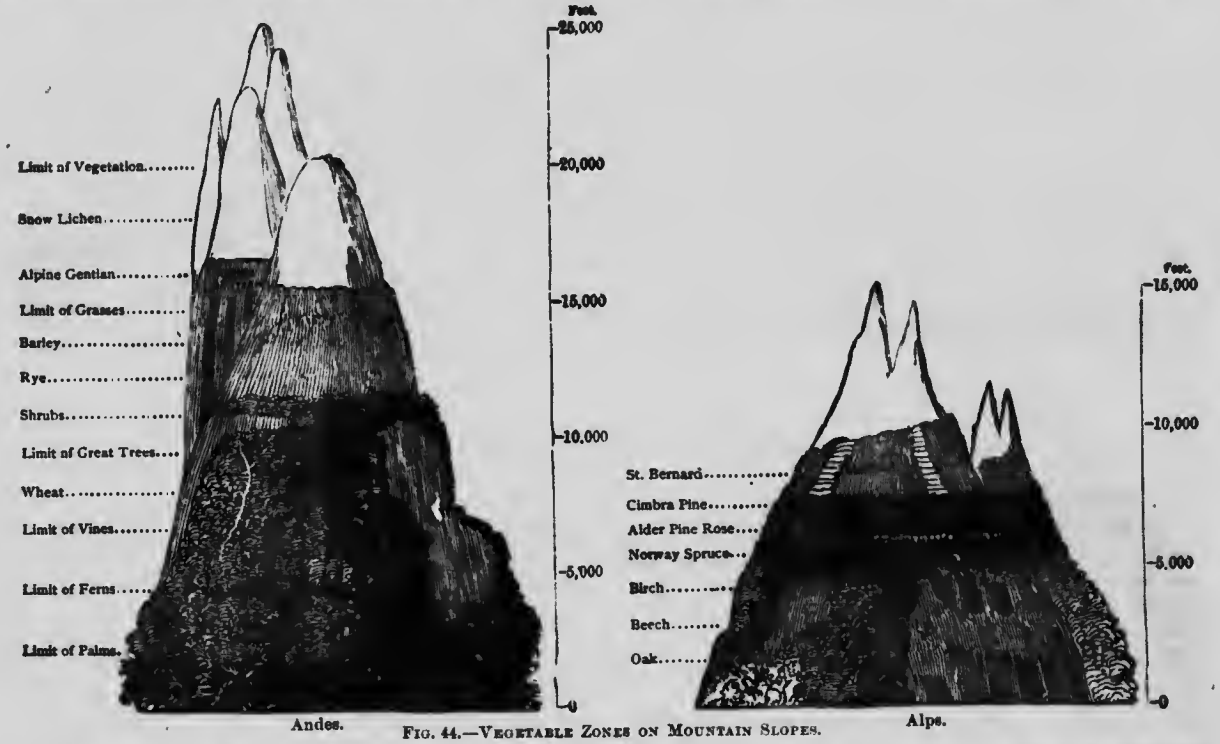


FIG. 44.—VEGETABLE ZONES ON MOUNTAIN SLOPES.

218. **Plant Zones.**—The Earth is sometimes divided into five plant zones, as follows:—

(1.) The *Tropical Zone*, yielding palms, tree-ferns, bamboo, bread-fruit, spices, bananas, sugar-cane, and coffee.

(2.) The *Sub-tropical Zone*, yielding the live oak, oleander, box-tree, cotton, the mulberry, rice, sweet potato, tea, the olive, fig, orange, and lemon.

(3.) The *Temperate Zone*, yielding the chestnut, oak, beech, maple, wheat, maize, and other cereals, apple, pear, peach, and plum.

(4.) The *Cold Zone*, yielding spruce, fir, pine, and other coniferæ, oats, barley, and hardy vegetables.

(5.) The *Arctic Zone*, yielding shrub-willows, alders, mosses, and lichens.

Barley has a wider range of climate than any other cereal. Certain hardy varieties of this grain, requiring a very short season to mature, ripen in Norway as far north as the 70th parallel.

chimpanzee, gorilla, ostrich, condor, and boa-constrictor. Birds and insects are very numerous.

There are two species of elephants; the larger is confined to Asia, the smaller to Africa. The lion is peculiar to Asia and Africa; the puma is its representative in America. The camel is peculiar to Asia and Africa; the llama is the American camel.

221. **Animals of the Temperate Zones.**—The animals of temperate climes are less ferocious than those of tropical countries. The more important are the bison, deer, elk, boar, wolf, bear, fox, beaver, ox, horse, sheep, and goat. Among the birds are the eagle, turkey, and goose.

222. **Animals of the Frigid Zone.**—The characteristic animals of the Frigid Zone are the white bear, musk-ox, reindeer, and such fur-bearing animals as the fox, beaver, sable, ermine, and mink.

The birds are generally waders and swimmers. The sea abounds in whales, walruses, and seals. There are no reptiles, and few insects.

Many of the animals that resort to cold countries in summer make their winter home in a milder climate.

MAN.

223. The total number of people on the Earth is estimated at 1,500,000,000. They are distributed very widely, but very unequally, over the surface of the Earth.

224. **Influence of Man on Nature.**—Man is commissioned to have dominion over the Earth, and bring it into subjection to himself. While he is greatly influenced by the physical conditions of the world in which he lives, he reacts on that world, and so modifies the conditions of his environment as to bring them into higher subserviency to his well-being. The countries occupied by civilized man, through his improving hand, are ever changing their aspect and character. Vast forests are transformed into fertile fields, and places that were once solitary without inhabitant become populous cities. Carriage-roads, canals, and railways are constructed for the promotion of trade and travel; the earth is pierced by mining shafts, and compelled to give up its hidden treasures; factories are established, and the raw products of the Earth are changed into new forms without number.

Even the climate of a country is in a measure subject to man's control. By drainage he removes surplus water, which otherwise would take away heat in the process of evaporation. Sometimes, indeed, the changes which man makes in carrying out his purpose work disaster. He cuts away the forests from the mountain side, and the exposed soil is washed away by rain, leaving only a barren waste. Further, the rain, which was once absorbed by decayed leaves and vegetable mould, yielding a perennial supply for the summer streams, now flows off rapidly, swelliug the rivers, inundating the lowlands, and working untold destruction.

Perhaps in no sphere is man's power over nature more marked than is seen in the development of grains, fruits, vegetables, and domestic animals, which are so improved by culture that their resemblance to the original stock can scarcely be recognized.

225. **Man's Adaptability to Conditions.**—Through the adaptability of his nature to external conditions, and his power of modifying those conditions to which he cannot conform, man is able to make his home in every clime. He can subsist upon great variety of food. In the tropical regions he lives principally on rice, cocoa-nuts, bananas, and various fruits; in the temperate climes, his food consists of the various grains, vegetables, and fruits, combined with flesh of animals; in the frozen regions, where the earth yields little or nothing for his subsistence, he betakes himself almost entirely to animal food. Substances which he could not otherwise eat he converts into wholesome and nutritious food by cooking. He adapts his clothing and shelter to the various conditions of climate, and he lays land and sea under tribute for the supply of his wants. Thus, by his superior organization and noble endowments, man is less dependent on his physical surroundings than are the lower animals, and he is able to take the whole Earth as his domain. This is especially true of him in the higher stages of development to which he has attained.

226. **Man modified by Physical Surroundings.**—While man is able to subsist, and even flourish, under great variety of conditions, he is by no means independent of his environment. His character, habits, and occupation are all greatly influenced by the physical conditions under which he lives. It is probable that every country makes its own impress on human life. The inhabitants of the rugged mountain are not like the inhabitants of the plain; those who live by the seaside differ from those of the interior. The nomadic herdsmen of the dry plains of Central Asia, who need to be ever on the move to find pasturage for their flocks and herds, make no effort to improve the place of their sojourn, and they never rise above the rude condition of their ancestors. Their wandering habits, developed by the climate of the country in which they live, enable them to commit crime with impunity, and accordingly they are noted for outrage and robbery.

The inhabitants of Central Africa, long isolated from the rest of the world, know nothing of its improvements, are never stimulated by its rivalries, never hear of its Christianity; and so, never awakened to struggle for anything more elevated as regards their physical, intellectual, or moral condition, they continue immured in barbarism. Within the tropics the intense heat makes labor irksome, and the profusion of nature renders it unnecessary; thus man becomes indolent and effeminate. In the arctic regions, pinched by cold, and requiring to use all his energies to supply his lower wants, he makes but little progress in civilization. In temperate climates activity is both needful and agreeable; a moderate amount of labor secures the necessaries of life, and there are leisure, inclination, and energy for mental culture.

227. **Races.**—Since the inhabitants of the various parts of the world are subjected to such diversified influences, it is not surprising to find them characterized by many marked peculiarities. The most striking physical characteristics of the different divisions of the human family are in color of the skin, form of the face and skull, qualities of the hair, stature, and general proportion of different parts of the frame. A classification based on these elements seems to justify at least six divisions, called *races*, which are as follows:—

(1.) **The White Race**, characterized by white skin, with ruddy cheeks varying to swarthy according to climate, large skull, oval face, expanded forehead, full chin, abundant beard, and well-

proportioned frame. This division is often called the **Caucasian Race**, a name derived from the Caucasus Mountains, near which is the supposed centre from which the race emanated, and, indeed, the birthplace of the whole human family. It comprises about two-fifths of the human family, including nearly all the inhabitants of Europe, Western Asia, Northern and Southern Africa, and the descendants of Europeans in America and Australia. It surpasses the other races in intellectual power, in activity, and in energy of character; and it has been the dominant race from the earliest times.

(2.) The **Mongolian**, or **Yellow Race**, distinguished by a yellowish-colored skin, dark straight hair, low retreating forehead, broad flat face, oblique eyes, small chin, prominent cheek-bones, and low stature. This race equals the Indo-European in number, and comprises all the inhabitants of Eastern Asia except India, with the Finns, Lapps, Magyars, and Turks of Europe, and the Esquimaux of North America.

FIG. 45.—RACES OF MEN.

(3.) The **Negro**, or **African Race**, distinguished by black skin, black woolly hair, low forehead, prominent cheek-bones, broad flat nose, thick lips, and projecting jaws. This race occupies all Africa south of the Great Desert and Abyssinia, except the Europeans of South Africa.

(4.) The **Malay**, or **Brown Race**, distinguished by brown skin, black hair, low forehead, short broad nose, in many respects resembling the Mongolian race, but having horizontal eyes. It occupies the peninsula of Malacca and the islands of the Indian and Pacific Oceans.

(5.) The **Australian Race**, which resembles the African, but the skin is a grayish black, the hair more bushy, and the general form is less regularly developed. It comprises the native people of Australia and the neighboring isles.

(6.) The **American Indian**, or **Copper-colored Race**, distinguished by copper-colored skin, coarse, straight, black hair, high cheek-bones, large mouth, having a general resemblance to the Mongolian, but the eyes are not oblique as in this race. With the exception of the Esquimaux, it comprises the aborigines of America.

These races of the human family are not separated by very sharp and well-defined lines, but shade into each other through subordinate varieties.

228. **Social Conditions.**—The various conditions of human society may be reduced to three principal classes, represented by the hunter, the shepherd, and the agriculturist.

In hunter life, which is the lowest type, men wander about, living on the flesh of wild animals, dwelling in rude wigwams, and owning no property except a few movables. They are divided into small tribes, each under a leader or chief. The Indians of North America are an example.

Pastoral life is also migratory, and there is no individual right in the soil. But here we find an increase of property in the form of domestic animals—as sheep, goats, cattle, and horses. The people are generally subject to a central head. The nomads of Central Asia are an example.

In the third and highest stage of society, men have fixed abodes, and an individual ownership in the soil, from which they derive their chief subsistence. Here only do we find vast accumulations of wealth in various forms, and men rising to the highest condition of civilization.

Religion.—229. Nearly all races and communities of men believe in some spiritual Power superior to themselves, whose favor they are anxious to secure. The forms of religious belief, and the practices arising out of these forms of belief, are almost endless. Those who are ignorant of the true God make to themselves false gods, and those who worship the true God differ in many important points of faith and practice.

There are five principal systems of religion in the world —*Christianity*, *Judaism*, *Mohammedanism*, *Brahminism*, and *Buddhism*. All originated in Asia. To these may be added the *fetich worshippers* of Central Africa.

Christians are divided into three great bodies—*Protestants*, *Roman Catholics*, and the *Greek Church*. They include about one-fourth of the human race, or about 380,000,000, comprising nearly all the inhabitants of Europe and the people of European descent in other parts of the world. The Jews number about 8,000,000; the Mohammedans, 160,000,000; the Brahminists, 200,000,000; Buddhists, 480,000,000; other religions, about 212,000,000.

230. **Government.**—In civilized society men are combined into states under regular forms of government, called *empires*, *kingdoms*, or *republics*. There are two principal forms of government—*monarchy*, where the chief power is vested in a single person; and *democracy*, where the power is in the hands of the people, or such of themselves as they shall elect as rulers for a limited time. Monarchical and democratic principles enter more or less into the governments of the various countries of the world. An absolute or despotic monarchy is a government in which the sovereign has all the power in his own hands, and makes such laws as he pleases; a limited or constitutional mon-

archy is a government in which the legislative power is shared by the sovereign and a popular assembly, according to fixed principles called the constitution; a *republic* is a form of government in which the highest executive officer, as well as the legislature, is elected by the people. Russia is an absolute monarchy, Great Britain is a limited monarchy, and the United States is a republic.

ECONOMIC GEOGRAPHY.

231. **Law in Development.**—Villages and towns do not spring up here and there regardless of law. Nor is it a mere accident that the village becomes a town, and the town a large city. There is usually some natural cause for this development—a fitness in the place to meet man's necessities or convenience. Perhaps the meeting of four roads at one point has determined the gathering place, as may be seen in many a village through the land; or it may be a bridge by which districts on opposite sides of a river are connected; or a harbor which offers facility of intercourse with the outside world. Often the position of the city is fixed at the head of navigation on a river, where water and land transport meet; or it may be at the point where large ocean steamers tranship their freight to smaller craft, as at Montreal.

232. **Countries Mutually Dependent.**—The Earth is a vast storehouse from which man's wants are supplied; but its treasures are widely scattered—one kind here, another there—so that there is an incompleteness in any one country when isolated from the rest of the world. Thus, one country produces grain, another lumber; one fish, another sugar. Hence it is that intercourse is brought about, and trade springs up between different lands. By this means each country, as it were, lays the whole Earth under tribute, and increases the variety of its commodities. It is thus for the interest of every people to learn the resources of their own country, and the products, both natural and manufactured, which it can most advantageously yield. They need to know, also, where they can best obtain what their own country fails to supply, and where they can most profitably dispose of their surplus products.

233. **Highways of Trade and Travel.**—Isolation is a great barrier to progress. No country shut out from intercourse with the rest of the world, or lacking facility of communication between its different parts, can make great advances in civilization or in material prosperity. Thus the character of the public roads through a country may be taken as a fair index of the social and economic conditions of its people.

Throughout a large part of Asia and Africa, and in many parts of South America, there are no roads for wheeled vehicles, or bridges across the streams. Traffic, to a limited extent, is carried on by pack animals—elephants, camels, mules, horses, oxen, or other animals—bearing boxes or bales of goods on their backs. Indeed, in Central Africa, in Tibet, in portions of China, and in other places, goods are conveyed by human porters, a pack of 200 pounds or more being slung over the shoulders, as pedlars sometimes carry their wares.

The camel is sometimes called the "ship of the desert." This animal, by its ability to go several days without food or water, is specially adapted to the long journeys across the deserts of Africa and Asia. To guard against attacks from robbers who infest those routes of travel, merchants go in large companies called caravans—a caravan sometimes containing several thousand camels.

234. **Railways.**—The modern steam-railway has surpassed all other modes of transport, both as regards cost and speed; though steam as a motive-power may yet be surpassed by electricity.

The first railways were constructed for conveying coal from the pits, the trucks being moved by horse-power. The first railway employing a steam locomotive was between Stockton and Darlington, in England, in 1825. The Liverpool and Manchester line was opened in 1830; and the first in Canada was a line 14 miles in length, between La Prairie on the St. Lawrence and St. John's on the Richelieu. Now every civilized country on the globe is traversed in all directions by railways, bringing every considerable town into communication with the rest of the world. Marvellous feats of engineering skill are displayed in carrying railways over broad continents, lofty mountains, and large rivers.

The Canadian Pacific Railway, which, with the Intercolonial from Halifax to Quebec, crosses Canada from the Atlantic to the Pacific Ocean, a total distance of 3,750 miles, is one of the greatest railways of the world. Other railways in the United States also cross the continent. The Trans-Siberian Railway crosses both European and Asiatic Russia from Petrograd to Vladivostok, an important port on the Japan Sea—length, 6,677 miles.

In Peru, a railway has been carried over the Andes at an elevation of nearly three miles; and in Europe, a line between France and Italy pierces the lofty Alpine peaks by tunnels from seven to ten miles in length.

235. **Rivers and Canals.**—Rivers and canals have long been great highways in carrying on the world's commerce. Among the great rivers thus used are the *St. Lawrence*, the *Mississippi*, the *Hudson*, the *St. John*, in North America; the *Amazon*, the *Orinoco*, and the *La Plata*, in South America; the *Danube*, the *Volga*, the *Rhone*, the *Rhine*, the *Seine*, and the *Thames*, in Europe; the *Yang-tse-kiang*, the *Hoang-Ho*, and the *Ganges*, in Asia; and the *Nile*, the *Niger*, and the *Congo*, in Africa.

Transport through the interior is also carried on largely by means of canals. In the early times, in Canada, water conveyance above Montreal was obstructed by numerous rapids in the St. Lawrence. A system of canals now removes the difficulty. These artificial water-ways include six short canals, varying in length from less than a mile to eleven and a half miles, along the St. Lawrence; the *Welland Canal*, 28 miles long, between Lakes Ontario and Erie; and the *Sault Ste. Marie Canal*, between Lakes Huron and Superior. There is thus a continuous water-way to the head of Lake Superior, 2,000 miles from the sea. The *Panama Canal*, under construction, 49 miles long, will connect the Atlantic and Pacific Oceans.

Other important canals in North America are—the *Erie Canal*, between Buffalo on Lake Erie and Albany on the Hudson; the

Champlain Canal, between Albany and Lake Champlain; the *Chambly Canal*, overcoming the rapids of the Richelieu; and *St. Peter's Canal*, in Cape Breton.

In Europe, an important ship canal, 61 miles in length, crosses the Danish peninsula from the mouth of the Elbe to the Baltic Sea.

The *Manchester Canal*, 35½ miles long, connects the city of Manchester, in England, with the mouth of the Mersey.

Numerous canals in Russia cross the country, connecting various navigable rivers.

In Africa, the *Suez Canal*, one of the most important in the world, 87 miles in length, connects the Mediterranean Sea and the Red Sea. By this canal steamships making the voyage between Europe and Asia are saved the long route around Africa.

In Asia, the *Imperial Canal* of China, extending from Hang-Chow northerly 650 miles, is the longest canal in the world.

236. **Ocean Transport.**—Countries that border on the sea, and have good harbors, enjoy great commercial advantages. Of the countries thus situated are the Atlantic Provinces of Canada, the United States, Great Britain, France, and many other countries in Europe.

Ocean navigation has, in recent times, undergone great change by the substitution of iron ships for wooden ones, and of steam propulsion for wind. Swift ocean steamers now cross the Atlantic Ocean between the ports of Canada or the United States and those of Great Britain in about six days. Canada has also communication with Japan, China, and Australia by a line of first-class steamers, whose Canadian port is Vancouver, in British Columbia.

ARTICLES OF COMMERCE.

237. The commodities exchanged through trade between the different countries of the world are of varied kinds. They may be classed as natural products and manufactured goods. The natural products, again, belong either to the mineral, the plant, or the animal kingdom. The manufactured commodities are greatly diversified, comprising textile fabrics of wool, cotton, linen, and silk; goods made of metal; flour and various articles of food; liquors, drugs, furniture, carriages, and others too numerous to mention.

238. **Minerals.**—The most important mineral substances having properties which give them ecouomic value are coal, iron, gold, silver, platiuum, lead, copper, ziuc, tin, quicksilver, nickel, petroleum, salt, asbestos, diamonds and other precious stones, and building stones.

The metals as found in nature are seldom pure, but are either mechanically mixed with some other mineral substance, or they are chemically combined with various elements, as oxygen, sulphur, or carbon.

(1.) **Coal**, which is now so extensively used both as domestic fuel and for generating steam and electric power for factories, railways, steamships, and other purposes, was scarcely known to the people of ancient times. It is extensively mined in Great Britain; Pennsylvania, and other parts of the United States; Nova Scotia, British Columbia, and other parts of Canada; Germany, France, Austria, Belginm, Russia, New South Wales, and in various other countries.

(2.) **Iron** is very abundant in many countries. First in rank as iron-producing countries are the United States, Great Britain, and Germany, which together yield about six-sevenths of the world's product. France, Belgium, Austria, Sweden, and Canada are also great iron-producing countries.

Iron and coal are used in largest quantities by countries that are engaged most extensively in mannfactures and commerce.

(3.) **Gold** is generally found mechanically mixed with silver or some other mineral. It sometimes occurs in quartz veins, in which it has been embedded when in a molten state. The quartz is crushed by powerful machinery, after which the gold is separated by means of quicksilver. Most of the gold got in Nova Scotia is obtained in this way. The more common source of gold is alluvial deposits, into which the gold has been washed after the rock in which it was embedded has been broken up by the action of water or some weathering process. Gold mines of this kind are called "placer" mines, and the precious metal is separated from the sand by washing.

The most important gold-producing countries of the world are Australia, South Africa, California, British Columbia, the Yukon district in the Canadian North-West, Alaska, and Russia.

Gold is obtained in considerable quantities in Nova Scotia, Ontario, and various other countries.

(4.) **Silver** ores are often found in veins, and also in "pockets" or cavities in limestone rocks. This metal is very often found associated with lead or copper. It is abundant in Nevada, Colorado, Mexico, Peru, China, British Columbia, and Ontario.

(5.) **Platinum** is a rare mineral, ranking in value next to gold. As it melts only at a very high temperature, and is not readily acted on by acids, it is superior to any other metal for crucibles. It is obtained chiefly from the Ural Mountains, in Russia.

(6.) **Lead**, which is most used for gas and water pipes, is obtained chiefly from Spain, the United States, Germany, Great Britain, Peru, Chile, Turkey, France, and Algeria.

(7.) **Copper** is widely distributed, and is often found in its native or pure state. The supplies come chiefly from the United States, Chile, Spain, Germany, South Australia, Russia, France, Great Britain, Cape Colony, and Ontario.

(8.) **Zinc** is obtained chiefly from Prussia, Belginm, Great Britain, Germany, Holland, and the United States.

(9.) **Tin** is obtained in Cornwall and Devonshire in England, the Dutch islands of Banka and Billiton, in the Straits Settlements, Australia, Tasmania, Bolivia, and Peru.

(10.) **Quicksilver** is found in largest quantities in Spain, Italy, Austria, California, Mexico, Peru, and China.

(11.) **Salt** is obtained as "rock salt" from salt mines, and also by evaporation of salt water from salt springs, brine pits, and ocean water. Great Britain stands first in the production of salt. The other countries which lead in its export are Spain, Portugal, and Germany. It is also plentiful in Ontario.

(12.) **Asbestos** is obtained chiefly from Quebec, this province yielding about 85 per cent. of the world's product. It has very remarkable properties. Like cotton or silk fibre, it can be carded, spun, and woven into cloth, and, as its name implies, it is incombustible.

(13.) **Nickel**, in combination with other minerals, is widely distributed over the world; but it generally forms but a small proportion of the ores in which it occurs. The Sudbury mines of Ontario furnish about one-half of the world's supply, the mines of New Caledonia and of Norway nearly all of the other half.

(14.) **Petroleum**, or *rock oil*, is obtained in various countries by boring to great depths into the earth. In some places the oil flows freely, in others it is pumped from the wells. It differs considerably in different countries, as regards density and other properties;

and it is known under the various names of petroleum, kerosene, and paraffin. It is abundant in Pennsylvania and other parts of the United States, in Ontario near Lake Huron, in the Russian territory of Transcaucasia, in India, and China.

Some of the oil-wells in the neighborhood of Baku, near the Caspian Sea, have been known to yield 1,000,000 gallons a day. Another rich oil-field lies near the Black Sea, in Transcaucasia.

(15.) **Asphalt** is a semi-liquid substance resulting from the union of oxygen with crude petroleum. It is found on the surface of the earth, above deposits of petroleum. It is obtained from the asphalt lakes of Trinidad and Barbados, in the West Indies; from Switzerland, Germany, France, Italy, and Algeria.

(16.) **Diamonds** are obtained chiefly in Cape Colony, the Transvaal, Brazil, and India.

(17.) **Mineral Fertilizers.**—Potash salts are abundant in Germany, nitrate of soda in Chile, phosphate of lime in South Carolina, Canada, Norway, England, and Spain.

239. **Vegetable Products.**—A country's products of this class for the markets of the world depend largely on its climate and facilities of transport.

(1.) **Wheat** and **Maize** come principally from the United States, Canada, India, Russia, Egypt, France, Bulgaria, Rumania, Servia, and the Argentine Republic.

(2.) **Rice** is exported chiefly from Burmah, India, Siam, Cochin-China, Japan, and Italy. It forms a large part of the food of the people of Eastern Asia.

(3.) **Sugar** is obtained from two principal sources—sugar-cane and the sugar-beet. The supply from the sugar-cane comes mostly from the West Indies, Guiana, Brazil, Java, the Philippine Islands, Mauritius, and Egypt; that from the beet is produced by Germany, France, Belgium, and Austria.

(4.) **Tea** is exported from China, Japan, India, and Ceylon; **Coffee** from Brazil, the West Indies, Central America, India, Java and other East India Islands, and Southern Arabia.

(5.) **Tropical** and **Semi-tropical Fruits** are produced in the West Indies, East Indies, California, Florida, and the south of Europe and Asia.

(6.) **Spices** are brought chiefly from Sumatra, Borneo, Ceylon, and other islands of the East, the Straits Settlements, Siam, and the West Indies.

(7.) **Wines** are exported from France, Spain, Portugal, Italy, Austria-Hungary. California and Ontario also yield considerable wine.

(8.) **Cotton** is obtained principally from the United States, India, Egypt, China, and Brazil.

(9.) **Tobacco** is obtained from the United States, the West India Isles, Brazil, the Philippine Isles, and India.

240. **Animal Products.**—Cattle and beef are exported from Canada, the United States, Brazil, and the Argentine Republic; sheep, mutton, and wool from Australia, Tasmania, New Zealand, and South Africa. The countries of first rank in the fishing industries are the United States, Canada, Great Britain, Norway, and France.

Raw hides are extensively exported from Brazil and other countries of South America. Furs are obtained in Canada, Alaska, Russia, and other countries in high latitudes.

241. **Manufactures.**—The leading manufacturing countries of the world are Great Britain, France, Germany, Belgium, and the United States.

The manufactures of Great Britain are varied, comprising cottons, woollens, linens, silks, pottery, cutlery, firearms, machinery, and hardware of all kinds.

Those of France comprise silks, cottons, woollens, porcelain, and fancy goods.

Germany excels in the manufacture of woollens, silks, cottons, porcelain, watches, and scientific instruments.

Belgium is noted for its woollens, cottons, yarn, machinery, and glassware.

The United States stands high in the manufacture of farming implements, cottons, machinery, boots and shoes.

Canada has high rank in the manufacture of lumber, leather goods, butter, and cheese.

242. **Barriers and Encouragements to Trade.**—Nations, like individuals, are influenced by rivalry, each competing with others to secure the markets for its products. This rivalry works most freely and naturally where each country confines itself, in the main, to those industries for the production of which it has greatest facility. Under these conditions there will result the largest product with the least expenditure of labor. Some nations seek to foster industries in which they, through lack of favorable conditions, cannot freely compete with other countries, by imposing a tariff on the imported commodity sufficiently large to more than balance the natural disadvantage. This is known as a protective tariff, and is opposed to free trade, by which competition is allowed the fullest freedom.

The policy of the United States is protection, that of Great Britain is free trade. Canada has a moderate protection tariff.

On the other hand, nations sometimes seek to force on the markets of the world a commodity that is produced under disadvantageous conditions, by paying the producer a bonus on the export. In this way Germany fosters the manufacture of sugar from beets—the manufacturer, through the government bonus, being able to sell his sugar in foreign countries for less than the cost of production.

NORTH AMERICA.

FIG. 46.—FALLS OF NIAGARA.

1. America was discovered by Columbus in 1492. It takes its name from Americus Vespucius, a native of Florence, who explored part of the coast of South America in 1497.

2. **Form, Position, etc.**—The general form of North America is triangular. The Arctic Ocean lies on the north, the Atlantic on the east, the Gulf of Mexico on the south, and the Pacific Ocean on the west. North America and South America are connected by the Isthmus of Panama, which at the narrowest part is 38 miles in width. North America is separated from Asia by Bering Strait, which has a breadth of about 50 miles. It is wholly in the Northern Hemisphere, and is principally in the North Temperate Zone. The narrow portion in the south is called Central America.

N. lat. 7°—72°; W. lon. 55° 30′—168°.

3. The principal **islands** pertaining to North America are—*Greenland, Iceland, Baffin Land, Southampton, Newfoundland, Anticosti, Magdalen Isles, Prince Edward, Cape Breton, Long Island, Bermuda, West Indies, Vancouver, Queen Charlotte, Prince of Wales, Sitka, Kadiak*, and the *Aleutian Isles*.

The **area** of North America is estimated at 8,700,000 square miles, comprising about one-sixth of the land surface of the earth.

4. **Physical Features.**—In regard to its physical fea-


NORTH AMERICA
ARCTIC OCEAN
Baffin Bay
GREENLAND
(Danish America)
Davis Strait
HUDSON BAY
LABRADOR
BRITISH COLUMBIA
CANADA
PACIFIC OCEAN
UNITED STATES
ATLANTIC OCEAN
Bahama Is.
GULF OF MEXICO
WEST INDIES
Jamaica
CARIBBEAN SEA
CENTRAL AMERICA
SOUTH AMERICA
Tropic of Cancer
Equator
Longitude West 100 from Greenwich
Ocean – General elevation below 600 feet
Yellow : : between 600 and 6000 feet
Pink : : above 6000 feet
Political Boundaries.
English Miles.
Scale of 650 Miles to an Inch

tures, North America may be considered under four great natural divisions:—

(1.) A broad and elevated highland region on the west.

(2.) A narrow and less elevated highland region on the east.

(3.) A great lowland plain through the middle.

(4.) A narrow lowland tract along the Atlantic coast.

FIG. 47.—RELIEF MAP OF NORTH AMERICA.

5. The **Western Highlands** extend the whole length of the continent from the Arctic Ocean to the Isthmus of Panama. They form a broad plateau, quite low towards the Arctic Ocean and also in the south, but in the central portion of the continent they are from 2,000 to 7,000 feet above the sea-level, ridged with lofty mountain ranges, which rise from one to two miles above the level of the plateau. The most elevated peaks in these highlands are Mount Logan, in Canada, and Orizaba, in Mexico.

6. On the eastern side of the Western Highlands are the **Rocky Mountains**, wild and rugged, clad with forests along their lower slopes, and farther up, in summer, with grasses and gay-colored flowers, while their summits consist of barren rocks covered with everlasting snow. In some parts of their course there are two or more parallel ranges, separated by high valleys. In Mexico the principal range is the **Sierra Madre**. On the east of the Rockies are vast plains 5,000 feet above the sea-level, and sloping gradually to the central lowlands; on the west the plateau is in some parts divided into basins by short mountain ranges. The **Wahsatch Mountains**, in Utah, separate the basin of the Colorado from the Great Basin.

7. **Great Basin** comprises nearly all Nevada and large portions of Utah, Oregon, and California. It is naturally an arid, unproductive region, but it becomes very fruitful when watered by irrigation from streams flowing from the mountains. Its drainage is chiefly into lakes which have no outlet. One of these, **Great Salt Lake**, in northern Utah, 4,200 feet above the sea-level, is 75 miles in length, and about 30 miles in breadth.

8. **Yellowstone Park**, situated mainly in Wyoming, but partly also in Montana and Idaho, is elevated from 7,000 to 11,000 feet above the sea, and is remarkable for the grandeur of its scenery, its canyons, geysers, and boiling springs. It is held by the Government of the United States as a national park and game preserve.

9. Some of the highest peaks of the Rocky Mountains are *Mounts Brown, Hooker*, and *Murchison*, in Canada; *Pike's Peak, Long's Peak*, and *Sierra Blanca*, in the United States; and *Popocatepetl* and *Orizaba*, in Mexico.

10. The **Sierra Nevadas**, or Snow Mountains, in California, and the Cascade Mountains, which are a continuation of the Sierra Nevadas, in Oregon, Washington, and British Columbia, lie along the western side of the Pacific Highlands. These ranges are much broken by deep canyons, through which rapid streams from the interior make their way to the sea. They are noted for grand scenery, gigantic trees on their western slopes, and for rich mines of gold and silver. The range contains many extinct volcanoes. Some of the highest peaks are *Mounts Pitt, Scott, Tacoma, Baker*, and *St. Helen's*.

11. The **Yosemite Valley**, on the western side of the Nevadas, about 150 miles from San Francisco, bordered by granite cliffs from 3,000 to 5,000 feet high, presents scenery of wonderful grandeur. The Merced River, which traverses the valley, makes in three successive cataracts a total fall of over 2,500 feet.

12. **Death Valley**, a desert region 175 miles in length, in the south-east of California, is a remarkable depression, being in one place 225 feet below the sea-level.

13. The **Coast Mountains** skirt the Pacific coast irregularly from southern California to Alaska. They are generally quite low, but some peaks in the north rise to great heights. *Mount Logan*

(19,539 feet), in the Canadian North-West, is considered the highest mountain in North America. *Mount St. Elias*, also in Canada, is a lofty volcanic peak.

14. The **rivers** of this western region, on account of falls and rapids, are generally unnavigable throughout a great part of their course. Those of chief importance are the *Yukon*, *Stikine*, *Fraser*, *Columbia*, *Sacramento*, and *Colorado*.

15. The **Yukon**, formed by the union of the Lewes and the Pelly, has a north-westerly course over the plateau on the west of

FIG. 48.—THE GRAND CANYON OF THE COLORADO RIVER.

the Rockies. During four or five summer months it is navigable for small steamers over 2,000 miles to Lake Teslin. The **Stikine** is navigable for small steamers for about 140 miles.

16. The **Fraser**, navigable for 120 miles, flows through a country remarkable for its fine scenery and its rich gold mines.

17. The **Columbia**, navigable for 165 miles to the Cascades, has important salmon fisheries.

18. The **Colorado**, formed by the union of Green and Grand Rivers, in Utah, is famous for its canyons. Grand Canyon is the most remarkable. Here for over 200 miles the river has cut for itself, through the solid rock, a great gorge from four to twelve miles in width, and from three-quarters of a mile to a mile and a quarter in depth. For the last 600 miles of its course the Colorado is a placid, navigable river.

19. The **Atlantic Highlands** are older than those of the west, and they have been greatly worn down by the weathering agencies which have acted on them since their upheaval. This highland region is divided into two sections by the St. Lawrence valley. The northern section, known as the *Laurentian Highlands*, which comprises most of the peninsula of Labrador, is a low, rugged plateau, with low, irregular mountain ridges extending east and west. In some places the scenery is wild and romantic. Grand Falls, on Grand River, are said to have a descent of 300 feet. The *Appalachians*, in the southern section, comprise several parallel ranges with fertile valleys intervening. Their average height is about half a mile, and the highest peaks are *Mount Washington*, in New Hampshire, and *Mitchell's Peak*, in North Carolina. The principal ranges are the *White Mountains*, the *Green Mountains*, the *Adirondacks*, the *Alleghanies*, and the *Shenandoah Mountains*.

20. The **Central Plain** extends from the Arctic Ocean to the Gulf of Mexico. A low divide, known as the *Height of Land*, about 1,500 feet above the sea-level, near the 48th parallel, separates the plain into two slopes. The northern slope, which is principally in Canada, is a vast plain inclining gently to the Arctic Ocean. Much of the southern portion of this slope is prairie land of unsurpassed fertility, and specially adapted to the growth of wheat. Towards the north are extensive forests, and the extreme north is a frozen barren region. The whole plain is traversed by large rivers; and numerous lakes, whose basins were hollowed out during the glacial period, form a remarkable feature of the country.

Most of the rivers on this slope are of little use in navigation except for the canoes of trappers and hunters, as they flow into frozen seas, and are themselves frost-bound during a large portion of the year.

21. The **Saskatchewan** is an important river. It has two great branches, *North Saskatchewan* and *South Saskatchewan*, which after a course of nearly 1,000 miles unite and flow into Lake Winnipeg, which is about 240 miles in length. Thence the waters pass on to *Lake Manitoba*. To this reservoir **Red River**, which is about 700 miles long, and is navigable throughout a large part of its course, contributes its waters. The **Nelson**, a large river flowing through a rugged country, and having its navigation obstructed by numerous falls and rapids, bears the surplus waters of Lake Manitoba to Hudson Bay.

22. The **Mackenzie** has an entire length of over 2,000 miles, and drains a territory of more than half a million square miles. Its great tributaries are the *Athabasca*, *Peace*, and *Liard*. In its basin are *Great Bear Lake*, *Great Slave Lake*, and *Lake Athabasca*.

23. The southern slope of the Central Plain, wholly in the United States, is comprised chiefly in the basin of the Mississippi-Missouri River. It is a remarkably level region, sloping gently from the Height of Land, on the north, to the Gulf of Mexico, and having two subordinate slopes towards the great river which follows the lowest line. This region comprises some of the most fertile lands

in the world; and it has great variety of products, from those of temperate climes in the north to those of the sub-tropical in the south.

24. The **Mississippi-Missouri River**, of which the Missouri is the longer branch, is regarded as the longest river in the world, though ranking as the fifth in the area and rainfall of its basin. Along its lower course, embankments, called levees, have been built, to prevent overflows during the season of the rapid melting of snow and heavy rainfall along its upper course. Sometimes the river breaks through these embankments and inundates large tracts of country. The Mississippi is navigable for steamers nearly to Grand Falls, and with its great tributaries it provides a grand system of highways for commerce.

25. The **Rio Grand**, or Rio Grand del Norte, forming part of the boundary between the United States and Mexico, is a large river, navigable for about 400 miles.

26. The **Atlantic Plain** is a narrow lowland bordering on the Atlantic Ocean, and lying principally south of the Hudson River. The coast region is but little above the sea-level, comprising in some parts extensive marshes and swampy districts. A few miles from the sea the land rises somewhat abruptly to a more rugged country at the base of the mountains. Towards the south the lowlands widen, and, on the Gulf coast, unite with the Central Plain. There is evidence that, ages ago, the sea covered all the lowland region, from which it has in more recent times been shut out partly by detritus carried down from the highlands and partly by the upheaval of the land.

Through the low and nearly level coast country the streams are sluggish, and at high water they admit the ocean tide far up their channels. There are few good harbors on the coast. On the higher lands of the interior the streams flow with swifter current, and they make their descent to the lowlands of the coast through numerous falls and rapids. This fall-line marks the limit of river navigation, and determines the position of many cities and towns.

North of the Hudson there is little breadth of lowland on the coast, the highlands often extend in bold cliffs and headlands to the sea, and there are many excellent harbors.

27. The **Hudson River** is noted both for the almost matchless beauty of its scenery and as a great commercial highway. It is connected with Lake Erie by the Erie Canal, and with the St. Lawrence by the Champlain Canal, Lake Champlain, Chambly Canal, and the Richelieu River.

28. The **Susquehanna** and the **Potomac** rise on the west of mountain ranges, through which they make their way to the Atlantic by water gaps or deep gorges. The passage of the Potomac through the Blue Ridge at Harper's Ferry is a place of interest to tourists.

29. The valley of the **St. Lawrence** forms a break in the Western Highlands. This river, the only great river on the eastern side of North America, and the Great Lakes in its basin, are features of the greatest interest and importance. The total length of the river to Lake Ontario is about 750 miles, and to the head of Lake Superior the length is over 2,000 miles. At its mouth the river is 40 miles broad. It is navigable for ships of the largest size to Quebec, 400 miles, and for large ocean steamers to Montreal, 560 miles from the sea.

30. **Lake Superior**, the largest body of fresh water in the world, is 420 miles in length, and has an area of 32,000 square miles. Its depth is about 1,200 feet, and its surface is 630 feet above the sea-level. On its shores are curiously-colored rocks, called the Pictured Rocks.

FIG. 49.—THE GREAT CANADIAN WATER-WAY.

31. The **St. Mary River** carries the surplus waters of Lake Superior forward to Lake Huron. Navigation is here obstructed by the rapids of Sault Ste. Marie, which are overcome by two

canals—one on the Canadian side, and one on that of the United States.

32. **Lakes Michigan** and **Huron** are each about two-thirds the size of Lake Superior. Michigan is connected by a canal with the river system of the Mississippi. Huron contains many islands, of which Grand Manitoulin is the largest.

33. **Lake Erie** receives the waters of the upper lakes through St. Clair River, St. Clair Lake, and Detroit River. It has less than one-third the area of Lake Superior, and is the shallowest of the Great Lakes. At the mouth of the St. Clair River is a delta of mud flats, through which the river flows by several channels. One of these channels, called South Pass, has been widened and deepened so as to form a navigable passage.

34. **Niagara River**, which bears the waters onward, is 34 miles in length. It is remarkable for *Niagara Falls*, 14 miles from Lake Ontario, the grandest and most celebrated waterfall in the world. The river is here over half a mile in breadth, and is divided by Goat Island. The Horse Shoe Falls, on the Canadian side, have a breadth of 1,900 feet; the falls adjoining the United States are about half as wide. The waters, rushing over a ledge of rocks, fall 165 feet. A short distance below the falls the river is spanned by a suspension bridge connecting railway lines on opposite sides. The obstruction to navigation caused by the falls and rapids of the Niagara is overcome by the Welland Canal, in the Province of Ontario.

35. **Lake Ontario**, the smallest of the great lakes, is about one-fourth the size of Lake Superior. Its surface is 330 feet below that of Lake Erie, and 234 feet above the sea-level.

36. The **St. Lawrence River** where it issues from Lake Ontario is known as the *Lake of the Thousand Isles*, which is celebrated for numerous beautiful islets. From Lake Ontario to Montreal, 200 miles, the river has a fall of 230 feet, a large part of which is included in rapids. The chief tributaries of the St. Lawrence are the *Ottawa*, *St. Maurice*, and the *Saguenay*, on the north, and the *Richelieu*, *St. Francis*, and *Chaudière*, on the south.

37. **Climate.**—The temperature varies with the latitude and elevation—cold in the north and on the mountain heights, temperate in middle latitudes, and warm in the south. The western side of the continent, from the mouth of the Columbia River northward, warmed by south-westerly winds from the warm ocean currents, is much milder than is the region within the same latitude on the eastern side, which is chilled, especially in the spring months, by winds from the Arctic current.

The rainfall, too, in different parts of the middle-latitude region is very unequal. The rain-winds on the western side of the continent blow from the south-west. Thus the westerly slopes of the Coast Mountains, Sierra Nevadas, Cascades, and Rockies receive abundance of rain, while the plateau regions on the east of these ranges are nearly destitute of rain. The Atlantic side of the continent, including the Central Plain, is well watered by rain-winds from the Gulf of Mexico or from the Atlantic Ocean.

38. **Minerals.**—Almost all the important minerals are found in North America. Gold is abundant in Yukon, British Columbia, and California; it is also obtained in Nova Scotia, Ontario, and Quebec. Silver is plentiful throughout the Western Highlands, including British Columbia, Nevada and other states, and Mexico, and in Ontario. Coal is abundant in Nova Scotia, Pennsylvania, Alberta, and British Colnmbia; iron in Newfoundland, Nova Scotia, Michigan, and Wisconsin; lead in Missouri and other states of the Central Plain; copper in Newfoundland and in various parts of the United States; quicksilver in California; petroleum in Pennsylvania and Ontario.

39. **Vegetation.**—Vegetation is diversified according to climate. In the extreme north trees do not grow, and the chief plants are shrubs, lichens, and mosses. In the temperate regions are forests of spruce, pine, maple, birch, and other trees; while the cultivated plants include wheat, potatoes, apples, grapes, and various other kinds of grain, vegetables, and fruit. In the south, tobacco, cotton, rice, sugar-cane, oranges, and pine-apples are cultivated. The dry table-lands have neither tree nor shrub. The cactus is their chief native plant towards the south, the sage bush in the north.

On the humid slopes of the western mountains are magnificent forests of pines, cypresses, cedars, and other trees.

40. **Animals.**—The wild animals of America are not equal in size to those of Asia and Africa.

The animals of the north are generally clothed with fur. The largest are the musk-ox and polar bear. In the Western Highlands are the grizzly bear, the Rocky Mountain goat, and the puma. In the temperate regions are the moose, deer, caribou, brown bear, and wolf. There are also many small fur-bearing animals, as the fox, beaver, and mink. In the hot regions of the south are found the tapir, jaguar, monkey, and alligator.

41. **Inhabitants.**—The population of North America is estimated at about 118,000,000. The great majority are of European origin. The Spaniards, shortly after the discovery of America, colonized Mexico and Central America, and the descendants of these colonists, together with Indians and mixed races, still occupy these countries. The English, Scotch, Irish, and French colonized the principal portions of territory now forming the United States and the Dominion of Canada, and their descendants comprise the great majority of the present inhabitants. There are also many negroes, especially in the United States, whose ancestors were brought from Africa as slaves. All are now free.

The aborigines include two races. The Indians, or copper-colored race, are thinly scattered over the continent. On some of the northern coasts and islands of the Arctic Ocean are a few people called Eskimos, usually classed with the Mongolians of Asia. They are of small size, clothe themselves with the skins of animals, and subsist chiefly on animal food.

42. **Political Divisions.**—The principal portion of the mainland of North America is divided nearly equally between the Dominion of Canada, in the north, and the United States, in the middle and south. Alaska, in the north-west, belongs to the United States. The other divisions are Mexico and Central America, in the south, the latter comprising several small independent states. The islands of Greenland and Iceland, on the north-east, belong to Denmark; and the West Indies, between North and South America, with the exception of *Haiti*, *Cuba*,


DOMINION OF
CANADA
ALASKA
PACIFIC OCEAN
BRITISH COLUMBIA
Vancouver Island
ALBERTA
SASKATCHEWAN
MANITOBA
NORTH WEST TERRITORIES
Victoria Land
Wollaston Land
Prince of Wales Land
Banks Land
Great Bear Lake
Great Slave Lake
Athabasca L.
Winnipeg L.
Lake of the Woods
Queen Charlotte Is.
Juan de Fuca Str.
Victoria
Olympia
WASHINGTON
Salem
OREGON
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
Bismarck
Yellowstone R.
MINNESOTA
WISCONSIN
UNITED STATES
English Miles
0 50 100 200 300 400 500
San Francisco
Longitude West
60
55
50
45
40
135
130
125
120
115
110
105
100


BAFFIN BAY
GREENLAND
DAVIS STRAIT
ATLANTIC OCEAN
HUDSON BAY
HUDSON STRAIT
LABRADOR PENINSULA
JAMES BAY
Fox Chan.
Cumberland Sd.
Hall Penin.
Meta Incognita
Resolution I.
Southampton Isld
Cape Dorset
Ungava Bay
Lake Superior
Lake Michigan
Lake Huron
Lake Ontario
Lake Erie
Chicago
Detroit
Buffalo
New York
Albany
Montreal
Quebec
St Lawrence R.
Gulf of St Lawrence
Halifax
St Johns
C. Sable
C. Race
Anticosti I.
Cape Breton I.
Sable I.
Prince Edward I.
New Brunswick
Nova Scotia
Newfoundland
Maine
Massachusetts
Connecticut
Long I.
Wisconsin
Michigan
Ohio
Pennsylvania
New York
Vermont
New Hampshire
Lancaster Sd.
Baffin I.
Cockburn Ld.
Somerset I.
Boothia Penin.
Melville Penin.
Akudlerit
Disko I.
Disko Bay
Godhavn
Upernivik
Frederikshaab
Julianehaab
C. Farewell
Arctic Circle

and *Porto Rico*, are under the government of various European powers.

43. **Cities.**—Nearly all the principal cities are on the Atlantic side of the continent, either on sea or lake coast, or beside a navigable river. **New York**, in the United States, with a population of over 5,000,000, is the largest city, and is one of the great commercial centres of the world. **Chicago, Philadelphia, St. Louis, Boston,** and **Baltimore** are very large cities. **San Francisco** is the largest city on the Pacific coast. **Montreal** and **Toronto** are the largest cities in Canada.

THE DOMINION OF CANADA.

44. The Dominion of Canada was formed in 1867 by the union of the Provinces of Nova Scotia, New Brunswick, Quebec, and Ontario. It has been greatly enlarged since that date by the annexation of the vast Hudson Bay Territory, British Columbia, and Prince Edward Island.

45. **Position and Area.**—The Dominion is bounded on the north by the Arctic Ocean, on the east by the Atlantic Ocean, on the south by the United States, and on the west by the Pacific Ocean and Alaska.

The parallel of 49° N. forms the boundary between the Dominion and the United States from the Pacific Ocean to the Lake of the Woods; thence the line takes a more southerly course, passing through the middle of Lakes Superior, Huron, Erie, and Ontario, and the St. Lawrence River, to the 45th parallel. It follows this parallel some distance, and then bends to the north, following the Height of Land between the tributaries of the St. Lawrence and the rivers flowing southerly. The total area of the Dominion is 3,729,665 square miles.

The meridian 141° W. is the boundary between Canada and Alaska, from the Arctic Ocean to the neighborhood of Mount St. Elias, from which the line turns easterly, giving the United States a strip of coast country about 30 miles wide as far south as 54° 40′ N., the most southerly point of Prince of Wales Island. The position of the boundary line between the Dominion and United States territory along the Pacific coast is not definitely determined.

46. **Coast Waters.**—The Dominion of Canada has remarkable facilities for world commerce. Its Atlantic shores, with their splendid harbors at Halifax, Louisburg, St. John, St. Andrew's, and other places, open all the year, approach nearer to Europe than do those of the United States; and the Pacific coast, fringed with innumerable bays and harbors, affords like advantages for intercourse with Australia and the countries of eastern and southern Asia.

47. The **Bay of Fundy**, between Nova Scotia and New Brunswick, 170 miles long, divides into two arms—one on the south, forming Minas Basin and Cobequid Bay, and one on the north, forming Chignecto Bay and Cumberland Basin.

48. **Halifax Harbor**, one of the best harbors in the world, covering 10 square miles, is the principal British naval station in North America, and competes with **St. John Harbor** as a winter port of the Dominion. Its dry dock is the largest work of the kind in America.

49. **Physical Features.**—The eastern side of the Dominion is a lowland region crossed by low ranges of hills which seldom rise to the height of mountains; the central part comprises the northern slopes of the Central Plain of North America; and the western part belongs to the Western Highland region.

Mount Logan (19,539 feet), the highest peak in North America, and **Mount St. Elias**, in the Coast Mountains, and **Mount Hooker** and **Mount Brown**, in the Rocky Mountains, are noted mountain peaks.

50. The **St. Lawrence River**, which is one of the great rivers of the world, with the Great Lakes that form its reservoir, provides a grand water-way nearly to the middle of the continent. From the Strait of Belle Isle, at the mouth of the river, to Port Arthur, at the head of navigation in Canadian territory, the distance is estimated at 2,260 miles, and to Duluth, in the United States, it is 125 miles further. From the Strait to Montreal, at the head of ship navigation, the distance is 950 miles.

The navigation of this great water-way is obstructed in many places by shallows and rapids, and it is more completely broken by Niagara Falls. At great expense the shallow places have been deepened by dredging, and the rapids have been overcome by canals.

The longest shallow water in the St. Lawrence is through the expansion below Montreal, known as *Lake St. Peter*. Between Montreal and Lake Ontario are several rapids, which are obviated by six canals, varying in length from less than a mile to eleven and a half miles, and having a combined length of nearly 44 miles. The navigable route between Lake Ontario and Lake Erie is by the *Welland Canal*, 28 miles in length. The depth of these canals is sufficient for boats of fourteen feet draught.

51. **St. Lawrence Canals.**—At the rapids of the river St. Mary, between Lakes Huron and Superior, are two canals, one on the Canadian side, and the other on that of the United States. The **Sault Ste. Marie Canal**, in Canada, is about three-fourths of a mile in length, and having a depth of over 20 feet is navigable for lake boats.

52. The **Murray Canal**, about five miles long, extends across the isthmus at Quinte Bay, a coast water of Lake Ontario, and enables vessels to avoid open lake navigation.

Along the Ottawa River, below the city of Ottawa, are three short canals. A navigable route, 126 miles long, between Ottawa and Kingston, is made, through the aid of the **Rideau Canal**, along the Rideau and Cataraqui Rivers. The **Richelieu Canals**, having a united length of about 12 miles, overcome the rapids of the Richelieu River.

53. The **Erie Canal**, from Buffalo to Albany, in New York State, is about 350 miles in length, and has a depth of but seven feet, limiting its use to vessels of 240 tons capacity, carrying about 7,000 bushels of wheat. Large quantities of the wheat carried over the lakes find their way to the seaboard by means of this canal and the Hudson River. The route, however, is tedious, nine or ten days being occupied between Buffalo and New York City.

54. **Lake Trade.**—An enormous commerce is carried on over the Great Lakes by Cansda and the United States. Grain and cattle are brought from Fort William and Port Arthur, on Lake Superior; and also grain, flour, iron ore, copper ore, cattle, lumber, and other products of the interior from Chicago, Milwaukee, Duluth, Superior, and other lake ports of the United States, to Owen Sound, Windsor, Sarnia, Kingston, and Montreal, on the Canadian side of the lakes, and to Buffalo, Cleveland, Erie, and other ports of the United States. In the opposite direction up the lakes are taken immense quantities of coal, and all kinds

FIG. 50.—RELIEF MAP OF THE DOMINION OF CANADA.

of manufactured goods, from Pennsylvania, West Virginia, Ohio, and Ontario, to meet the needs of the people of the interior.

This trade is carried on by a large fleet of steamships, many of them built of steel, from 2,000 to 4,000 tons capacity. These large steamers, in addition to their great burden of freight, take in tow several freight-laden barges.

55. **Deep Water-ways.**—The Welland Canal, between Lakes Erie and Ontario—27 miles long—was originally adapted to small canal boats. Lake steamers not being able to pass through, their freight was transferred to canal boats, adding much to the cost of transport. At great expense a new ship canal, wider and deeper than the old one, has now been nearly completed. As Lake Erie is about 330 feet more elevated than Lake Ontario, locks are provided to overcome the difference in level.

56. In 1895, the Governments of Canada and the United States appointed a Commission to consider the possibility of connecting these inland waters with the ocean by a deep water-way navigable for large steamers. The Commissioners considered that the depth of water throughout the route should be not less than 28 feet, and they reported that the scheme was practicable at a cost of about $200,000,000. Different routes were suggested, of which the one that most concerns Canadian interests is by way of the St. Lawrence River. It involved the deepening of the Welland Canal, the construction of a ship canal at Niagara Falls, on the American side, and of a ship canal to replace the shallow canals on the St. Lawrence. The route would be common to the two countries down to Lake St. Francis, a few miles above Montreal. From this point, for the use of the United States, a ship canal would be constructed to Lake Champlain, and thence the route would follow the Lake Champlain and Erie Canals to the Hudson River. Another route which commended itself to the American Commissioners was by way of Lake Ontario to Oswego, and thence through the valley of the Mohawk to Troy, on the Hudson.

By far the shortest route from the upper lakes to the seaboard is from Georgian Bay, along French River, Lake Nipissing, the Mattawa, and the Ottawa, to Montreal. It is thought that by using existing canals along this route a water-way for vessels of 1,000 tons and of 10 feet draught can be constructed for $25,000,000. This is the route followed by Champlain and other early explorers.

57. **Climate.**—The climate of the Dominion varies from temperate in the south to severe cold in the north. The cold is most severe in the north-east. The western coast country is mild and humid. The western table-lands and eastern slopes of the mountains have little rain.

58. **Products.**—The agricultural products throughout the southern half of Canada comprise the various grains, vegetables, and fruits of temperate climates. Canada's wheat crop in 1915 was 376,300,600 bushels, of which the prairie provinces produced 342,918,000 bushels. It is estimated that only one-fifteenth of the wheat lands of these three provinces is under cultivation.

FIG. 51.—PARLIAMENT BUILDINGS, OTTAWA. (*Destroyed by fire on February 3, 1916.*)

59. **Minerals.**—The estimated values in 1914 of the following minerals were:—Coal, $33,433,108; gold, $15,925,044; silver, $15,097,269; nickel, $13,655,381; copper, $10,301,935; cement, $9,187,924; clay products, $7,090,898; asbestos, $2,892,266; lead, $1,627,568; pig-iron from Canadian ores, $1,138,912; petroleum, $343,124.

60. Canada ranks first among the countries of the world in the production of nickel and asbestos. The nickel mines near Sudbury yield the world's chief supply, the only other important source being New Caledonia, an island in the Pacific Ocean. Quebec is the great source of asbestos.

61. Nova Scotia ranks first among the Provinces in the yield of coal, and British Columbia second.

62. Near Cobalt, in Northern Ontario, are the richest silver mines in Canada. Yukon Territory has the richest gold mines, though the yield has greatly fallen off.

63. **Fisheries.**—The value of the fish caught during the year ending March 31, 1915, was as follows:—Salmon, $8,560,386; lobsters, $4,339,929; cod, $3,886,134; herring, $2,735,257; halibut, $1,793,283; sardines, $1,349,615; haddock, $1,244,840; whitefish, $975,685; smelts, $837,682; mackerel, $826,846; other kinds, $4,715,068. Total, $31,264,631.

The values according to provinces were—Nova Scotia, $7,730,191; New Brunswick, $4,940,083; Prince Edward Island, $1,261,666; Quebec, $1,924,430; Ontario, $2,755,291; Manitoba, $849,422; Saskatchewan, $132,017; Alberta, $86,720; British Columbia, $11,515,086; Yukon, $69,725.

64. **Inhabitants.**—The population of the Dominion in 1911 was 7,206,643. The majority of the people are of British origin, except in the province of Quebec, in which three-fourths are of French origin and speak the French language. Of religious denominations, the Roman Catholics comprise over one-third of the population; and next, in regard to numbers, are the Methodists, the Presbyterians, and the Baptists.

65. The Indians number 103,531 (1915). Of these about 26,000 are in Ontario, 25,000 in British Columbia, 13,000 in Quebec, 10,000 in Manitoba, 9,000 in Saskatchewan, and 8,000 in Alberta. Some 40,000 are Roman Catholics, 16,000 Anglicans, 12,000 Methodists, and 4,000 Christians of other denominations.

66. The Dominion Government expends over $900,000 annually in supporting schools for the Indians.

67. **Political Divisions.**—The Dominion of Canada comprises the nine Provinces Nova Scotia, New Brunswick, Prince Edward Island, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia, together with the District of Yukon and the North-West Territories.

68. **Cities. — Ottawa** (73,193), on the Ottawa River, 100 miles from its confluence with the St. Lawrence, is the capital. The Parliament Buildings, occupying a beautiful situation on a natural terrace 150 feet above the level of the river, cover nearly four acres of ground, and cost about

$5,000,000. **Montreal** is the largest city, and the great centre of trade. The other leading cities are *Toronto*, *Quebec*, *Hamilton*, *St. John*, *Halifax*, *London*, *Winnipeg*, *Kingston*, *Victoria*, and *Vancouver*.

69. **Railways.**—The great railways of Canada are—the Canadian Pacific, 12,310 miles; Canadian Northern, 8,335 miles; Grand Trunk, 4,785 miles; Intercolonial, 1,920 miles (or, including the eastern division of the Grand Trunk Pacific from Moncton to Winnipeg, 1,804 miles, a total of 3,730 miles); the western division of the Grand Trunk Pacific, 943 miles, making in all 30,070 miles. Other lines have a total length of about 10,525 miles, making for all lines in Canada a grand total of 40,595 miles.

The Canadian Government has taken over the eastern division of the Grand Trunk Pacific.

70. **The Hudson Bay Railway** (418 miles), connecting *Port Nelson* with the Canadian Northern at *Le Pas* on the Saskatchewan, is nearly completed. The object is to open up a water route to the British Isles by way of Hudson Bay and the Atlantic Ocean.

71. **Resources.**—Nova Scotia yields agricultural and dairy products, fruit, fish, coal, and gold; New Brunswick, agricultural and dairy products, lumber, and fish; Prince Edward Island, agricultural and dairy products and fish; Quebec, agricultural and dairy products, lumber, and minerals; Ontario, agricultural and dairy products, lumber, nickel, petroleum, salt, gold, and silver; Manitoba, agricultural products; Saskatchewan and Alberta, grain, gold, coal, and cattle; British Columbia, gold, silver, coal, copper, fish, and lumber.

72. **Trade.**—The leading **exports** of Canada are agricultural and dairy products, animals and animal products, fish, lumber, coal, gold, and other minerals, and manufactured articles. Total value in 1915, $509,022,240.

The **exports** are sent chiefly to Great Britain, the United States, West Indies, South America, Newfoundland, France, Norway, and Sweden.

The leading **imports** are manufactured goods, as woollens, cottons, linens, silks, and hardware; brandy, wine, and other liquors; tobacco, sugar, tea, coffee, tropical fruits, iron, coal, cotton, wool, and other raw material. Total value in 1915, $421,677,217.

73. **Government.**—The Dominion of Canada is a dependency of Great Britain, the government being under the general supervision of the Colonial Secretary. The British Government, however, allows Canada the fullest freedom in the management of her internal affairs, gives her a voice in the making of foreign treaties which affect her interest, and imposes no tax for imperial or other purpose. The government is similar to that of Great Britain. The *Governor-General* represents the Sovereign. His advisers or ministry, called the *Cabinet*, must be members of Parliament, and must possess the confidence of the Commons.

The **Parliament** is composed of the *Governor-General*, the *Senate*, and the *House of Commons*.

The **Governor-General** is appointed by the Crown, and receives a salary of $50,000 from the Dominion treasury.

The **Senators** are appointed by the Governor-General in Council. A senator must be over thirty years of age, possess property worth at least $4,000, and reside in his own Province.

The members of the **Commons** are elected by the people for the term of five years. The number for each Province is to be readjusted after each decennial census; the number for Quebec remaining at 65, and those for the other Provinces bearing the same proportion to their population as 65 to the population of Quebec.

The **Senate** consists of 87 members—10 for Nova Scotia, 10 for New Brunswick, 4 for Prince Edward Island, 24 for Quebec, 24 for Ontario, 4 for Manitoba, 4 for Saskatchewan, 4 for Alberta, and 3 for British Columbia.

The **House of Commons** has 221 members—18 for Nova Scotia, 13 for New Brunswick, 4 for Prince Edward Island, 65 for Quebec, 86 for Ontario, 10 for Manitoba, 10 for Saskatchewan, 7 for Alberta, 7 for British Columbia, and 1 for Yukon.

The Dominion Government has control over all matters of general interest, as defence, trade, fisheries, mails, and criminal laws. The **revenue**, which arises chiefly from duties on imports, excise, revenue from post office and public works, is about $170,000,000.

The **public debt** is about $449,376,000.

74. Each Province has a Lieutenant-Governor, appointed by the Governor-General in Council, and a local Legislature, which has control over education, crown lands, minerals, and various local matters.

NOVA SCOTIA.

75. **Position and Area.**—The Province of Nova Scotia, comprising the Peninsula of Nova Scotia and the Island of Cape Breton, is situated on the Atlantic coast, and forms the south-eastern extremity of Canada. It is separated from New Brunswick, on the north-west, by the Bay of Fundy, except at the Isthmus of Chignecto, which is about 12 miles in breadth. The Strait of Canso, about 15 miles in length and one in breadth, separates the Peninsula from the Island of Cape Breton.

N. lat. 43° 25′—47°; W. lon. 59° 40′—66° 25′.

The area is 21,428 square miles, of which the Island of Cape Breton comprises one-seventh.

76. **Coast.**—Nova Scotia has a great extent of sea-coast compared with its area, and no part of the interior is over 30 miles from the sea. The coast waters teem with fish, including cod, halibut, shad, mackerel, salmon, and herring. The Atlantic coast has many excellent harbors, which are open to navigation throughout the year. Some of the more important of these are Louisburg, Halifax, Lunenburg, and Shelburne. The shores of the Bay of Fundy are usually rocky and elevated, forming a great wall against the sea. Digby Strait, a singular break in this wall, forms the entrance to Annapolis Basin. Cobequid Bay and Cumberland Basin, at the head of the Bay of Fundy, are noted for their very high tides. Much of the coast land around Minas Basin, Cobequid Bay, and Cumberland Basin is low, and the banks of the rivers for many miles up are below the level of high water, and are protected by dikes from the overflow of the tide. The Strait

of Canso during the summer season is a great thoroughfare between the Gulf of St. Lawrence and the Atlantic.

77. **Small islands** are numerous, especially on the Atlantic coast.

78. **Boularderie**, between Great and Little Bras D'Or, at the east of Cape Breton, is 25 miles in length.

79. **Madame**, south of Cape Breton, comprises about 75 square miles.

80. **Cape Sable Island**, off the south-west coast, is about seven miles in length.

81. **Briar Island** is the most westerly part of the Province.

82. **Sable Island**, about 100 miles south of Cape Breton, and about 25 miles in length, is low and sandy, with dangerous sand shoals on the coast. Herds of wild ponies roam over the island. An establishment is maintained on the island by the Dominion Government to succor the shipwrecked.

83. **Physical Features.**—Nova Scotia is varied with lowlands, hills, and low but regular mountain ranges. A water-shed runs through the middle of the Peninsula, from which the slopes are towards the north and south. Much of the southern slope is rugged and rocky.

FIG. 52. THE BRAS D'OR, CAPE BRETON.

FIG. 53.—CAPE BLOMIDON AND MINAS BASIN, NOVA SCOTIA.

84. The **South Mountain** forms the western portion of the central water-shed; the North Mountain lies along the margin of the Bay of Fundy, from Blomidon to Digby Neck; the Cobequid Mountains are on the north of Cobequid Bay. The mountains in the north of Cape Breton are the highest in the Province, but the most elevated peaks do not exceed half a mile in height. The Cobequids have an extreme elevation of about 1,100 feet. The North Mountain rises abruptly from the lowlands, on the south, to an extreme height of about 600 feet, and from its summit are many beautiful views of the surrounding country.

85. The valley between the North and South Mountains is one of the most beautiful and fertile districts in the Province. It is divided into an easterly slope, drained by the Cornwallis River, and a westerly, drained by the Annapolis. The early French settlement of Port Royal was at the western extremity of the valley, and at the eastern extremity were Canard and Le Grand Pré.

86. The longest **rivers** do not exceed 40 miles in length. The principal are *St. Mary's*, *La Have*, *Liverpool*, *Tusket*, *Annapolis*, *Cornwallis*, *Shubenacadie*, *Philip*, *Wallace*, and *East River* of Pictou.

87. Of the many small **lakes**, the more important are *Rossignol*, *Grand Lake*, *Ship Harbor Lake*, and *Annalie*, which are from 9 to 12 miles in length.

88. The **soil** on the north of the central water-shed is generally very fertile. The southern side of the Province is not generally so well adapted to agricultural pursuits. Most of the streams flowing into the head-waters of the Bay of Fundy are bordered along their lower course by diked marsh lands of the greatest fertility, having, without fertilizers, yielded immense crops since the first settlement of the country.

89. **Climate and Products.**—The climate is salubrious and invigorating, free from extremes of heat and cold, and from cyclones, blizzards, and other violent storms. Seed-time varies somewhat according to the drainage of the soil or other local conditions, but is chiefly in the month of May. Fostered by sunshine and shower, growth and maturity of farm crops is rapid, the interval between seed-time and harvest often not exceeding three months. Autumn is a delightful season.

Native **forests** of spruce, fir, hemlock, pine, beech, maple, and other trees still cover a large part of the country, yielding valuable lumber, pulp-wood, and fuel. In these forests are found many wild animals, such as moose, caribou, bear, fox, and raccoon.

The **agricultural products** are wheat, oats, barley, potatoes, turnips, apples, plums, and other kinds of grain, vegetables, and fruit of temperate climates. The valley between the North and South Mountains is noted for its apples.

90. **Minerals.**—The minerals of Nova Scotia are varied and of great value, including coal, iron, gold, copper, manganese, lime, gypsum, granite, sandstone, slate, marble, and salt.

91. The **coal** fields are very extensive in the east and north. The most important mines are in Cape Breton, Pictou, and Cumberland.

92. **Iron ore** is abundant in the northern counties from Annapolis to Antigonish, the most important mines being at Clementsport, in Annapolis, and at Londonderry, in Colchester.

93. The **gold** fields of Nova Scotia lie along the Atlantic side of the Province from Canso to Yarmouth. The most important mines are in Guysborough, Halifax, and Hants Counties. Gold is found in quartz veins, and is separated from the crushed ore by means of mercury. In the production of gold, Nova Scotia ranks fourth among the Provinces of Canada; value in 1914, $56,042.

94. **Gypsum** is very abundant in Hants, Colchester, Cumberland, Antigonish, and other counties.

FIG. 54.—HALIFAX FROM GEORGE'S ISLAND.

95. **Copper** is found in Cumberland, Colchester, Pictou, and Antigonish; **lead** at Gay's River, Pembroke, and Smithfield; **manganese** at Walton, Tenny Cape, and Loch Lomond.

96. **Inhabitants.**—The population in 1901 was 459,574. The inhabitants are generally of British and Irish descent. The Acadians, who are of French origin, number about 20,000, found chiefly in the counties of Yarmouth, Digby, Halifax, Antigonish, Richmond, and Inverness; the negroes, about 6,000; and the Micmac Indians, 1,500. In Lunenburg County there are many of German origin.

97. Public schools, sustained by provincial endowment and by assessment on county and section, are free to all over five years of age. The colleges are King's, Acadia, Dalhousie, and St. Francis Xavier's. About one-fourth the population are Roman Catholics, one-fourth Presbyterians, one-sixth Baptists, one-seventh Episcopalians, and one-tenth Wesleyans. All religious denominations have equal civil privileges.

98. The Province is divided into eighteen counties—fourteen in the Peninsula and four in Cape Breton.

99. **Towns.**—**Halifax**, the capital, situated on the Atlantic coast, is strongly fortified, and is the chief British naval station in America. Its landlocked harbor affords sufficient anchorage for the largest navy in the world. Ships of the largest size can come up to its wharves at all states of the tide. It is the seat of *Dalhousie College*.

100. **Dartmouth** is prettily situated about a mile from Halifax, on the opposite side of the harbor. In its neighborhood is the Provincial Lunatic Asylum.

Lunenburg has a large and safe harbor. It exports lumber and fish, and has considerable trade with the West Indies.

Liverpool is an important centre for lumbering and fishing.

Shelburne was founded by loyalists who came to the Province at the time of the American Revolution.

101. **Yarmouth**, the largest town in the west, is noted for commerce and general enterprise. It is connected with Boston by a regular line of steamers.

Annapolis, the Port Royal of the French, is the oldest town in Nova Scotia.

Digby has a beautiful situation at the west end of Annapolis Basin. **Kentville** has an experimental farm and a sanatorium.

102. **Wolfville** is the seat of *Acadia College*; **Windsor**, of *King's College*; **Truro**, of the *Provincial Normal College* and the *College of Agriculture*; **Antigonish**, of *St. Francis Xavier's College*.

Amherst is an important business centre, and has extensive manufactures. **Springhill** is the centre of important coal mines.

New Glasgow is a growing commercial and manufacturing town. In its neighborhood are important iron and steel works.

Pictou is a business centre, has one of the best high schools in the Province, and has the best harbor on the north coast.

103. **Sydney**, situated on a fine harbor, is a rapidly rising town. It is the seat of the most important iron works in the Dominion. The ore is obtained chiefly from Bell Island, on the south-east coast of Newfoundland. **Glace Bay** and **Sydney Mines** are flourishing coal-mining centres. **North Sydney** has a fine harbor.

Louisburg, a former stronghold of the French, has an excellent harbor, and exports large quantities of coal. **Arichat**, on Isle Madame, is the headquarters of valuable fisheries.

104. **Industries.**—The principal pursuits are agriculture, mining, fishing, lumbering, manufacturing, and commerce.

105. The counties on the north side of the Province are the most important agricultural districts. The products comprise grain and vegetables of various kinds. Fruit, comprising apples, pluma

NEW BRUNSWICK

pears, and various other small fruits, is extensively raised in Annapolis, King's, and Hants Counties. The valley of the Cornwallis and Annapolis Rivers is one of the most noted apple-producing districts in the world.

106. **Nova Scotia** ranks first among the Provinces of the Dominion in the value of its coal mines and fisheries. The amount of coal raised in 1911 was over six millions of tons. The value of the fish exported from Nova Scotia in 1911 was over $16,000,000.

Nova Scotia ranks third among the Provinces of the Dominion in the output of gold, the annual yield being over $500,000.

107. The **exports** include fish, coal, gold, gypsum, apples, potatoes, and lumber; the **imports**, flour, tropical produce, liquors, silks, woollens, cottons, and various manufactured goods.

108. **Railways.**—The railways are—the **Intercolonial**, from Halifax to the New Brunswick frontier, with its branches from Truro to Sydney, and from Oxford to Pictou; the **Dominion Atlantic**, from Halifax to Yarmouth; the **Nova Scotia Central**, from Middleton to Lunenburg; the **Springhill** and **Parrsboro'**; the **Cornwallis Valley**; the **Joggins**; the **Midland**, from Windsor to Truro; the **Richmond and Inverness**, from Port Hawkesbury to Broad Cove; the **Halifax and South-western**; and several short lines, making in all about 1,450 miles.

Fig. 55.—The Provincial Normal College, Truro.

NEW BRUNSWICK.

109. **Position and Area.**—New Brunswick is bounded on the north by Quebec and Bay Chaleur; on the east, by the Gulf of St. Lawrence and Northumberland Strait; on the south, by Nova Scotia, Chignecto Bay, and the Bay of Fundy; on the west, by the United States and Quebec

N. lat. 45°—48°; W. lon. 63° 50′—69°.

The Province has an area of **27,985** square miles. Its length, from north to south, is about **200** miles; the breadth, from east to west, 160 miles.

110. **Coast.**—Two sides, the east and south, are bordered by the sea, giving about 500 miles of coast, and furnishing many excellent harbors. The coast on the Bay of Fundy is generally elevated and rocky. The fisheries of the coast waters are very valuable.

111. The **islands** are **Miscou** and **Shippegan**, **Grand Manan**, and **Campobello**.

Grand Manan, the largest island in the Bay of Fundy, is about 20 miles long. It has good harbors and important fishing stations.

112. **Physical Features.**—The surface is generally undulating. The highest mountains, about 2,000 feet, are in the north-west, forming the north-eastern limit of the Appalachian system. The principal water-shed extends through the country from north-west to south-east. The basin of the St. John River has a general slope towards the south-east.

113. The **rivers** may be arranged in two groups:—Those on the Gulf slope, including the *Restigouche*, *Nepisiguit*, and *Miramichi*; those on the Bay of Fundy slope, the principal being the *Peticodiac*, *St. John*, and *St. Croix*.

114. **Restigouche** is an Indian name, signifying the *five-fingers-river*, the river having five principal tributaries. It forms a part of the boundary between New Brunswick and Quebec, and is about 200 miles in length. This river and its tributaries are noted for their salmon fisheries, and for the beautiful scenery along their course. *Dalhousie* and *Campbellton* are the principal towns on the Restigouche.

115. The **Miramichi**, 225 miles in length, flows through a fertile farming country. It is navigable for large ships two miles above Newcastle, and for small schooners 25 miles farther. The Miramichi abounds in salmon and many other kinds of fish. Shipbuilding and lumbering are important industries along its shores. The principal places on its banks are *Nelson*, *Newcastle*, *Douglastown*, and *Chatham*.

116. The **Peticodiac** is about 100 miles in length, and is navigable 25 miles for large vessels. It has rich marsh lands along its lower course. The principal places on its banks are *Moncton*, *Hillsborough*, *Dorchester*, and *Hopewell*.

117. The **St. John** is by far the largest river in New Brunswick. It rises in the State of Maine, receives several tributaries from Quebec, and has a total length of about 450 miles. It is navigable 85 miles to Fredericton, and at the time of the spring freshet to Grand Falls, 225 miles. The St. John and St. Croix form portions of the boundary between New Brunswick and the United States.

The valley of the St. John is very fertile, and is noted for its beautiful scenery. At *Grand Falls* the river has a perpendicular descent of 75 feet. A large portion of the country drained by the St. John is covered with dense forests, and immense quantities of lumber are brought down the river in rafts.

The principal tributaries of the St. John are—the *Oromocto*, *Aroostook*, *Madawaska*, *Tobique*, *Nashwaak*, *Salmon*, *Washademoak*, and *Kennebecasis*. The principal places on the river are *Woodstock*, *Fredericton*, *Oromocto*, *Gagetown*, *Kingston*, and *St. John*.

118. Small **lakes** are numerous. **Grand Lake**, about 30 miles in length and five miles in breadth, is the largest.

119. The **soil** is generally very fertile and well suited to agriculture. Extensive marshes and intervales along the rivers are among the richest lands in the world.

120. The **climate** is subject to great extremes, but is very healthful. Winter sets in rather earlier than in Nova Scotia, and the cold, especially in the northern portion, is more intense and steady. The Bay of Fundy coast is subject to fogs in summer.

A large part of the country is still covered with forests of spruce, pine, juniper, cedar, oak, beech, maple, and birch.

121. The **agricultural products** include the various grains, vegetables, and fruits of temperate climates.

122. The principal **minerals** are coal, iron, gypsum, lime, asbestos, and building stone.

123. The most important **coal** mines are in Queen's County. A variety of coal known as Albertite, from which oil is obtained, is found in Albert County.

124. **Inhabitants.** The population in 1911 was 351,889. Most of the inhabitants are of British and Irish origin. Those of French descent, numbering about 45,000, are principally in the counties of Gloucester, Kent, Westmoreland, and Madawaska. The Indians, Micmacs and Milicetes, number about 1,400.

125. New Brunswick makes liberal provision for general education. The common schools, free to all, are supported by provincial aid and assessment on county and district. The higher institutions of learning are the *University of New Brunswick*, *Mount Allison University*, and *St. Joseph's College*.

126. New Brunswick is divided into fifteen counties.

127. **Cities and Towns.—Fredericton**, the capital, and seat of the *University of New Brunswick* and of the *Provincial Normal School*, has a beautiful situation on the St. John River, 84 miles from its mouth.

128. **St. John**, comprising *Portland* and *Carleton*, has an excellent harbor, open all the year, at the mouth of the St. John River. It is an important manufacturing and trade centre. Its manufactures include cottons, lumber, and hardware. St. John is connected with England by a regular line of ocean steamers. Carleton, on the opposite side of the harbor, is connected with St. John proper by a suspension bridge. It contains the Provincial Lunatic Asylum.

Fig. 56.—St. John.

Moncton, on the Petitcodiac, is the headquarters of the Intercolonial Railway. Its industries include the manufacture of cotton and woollen goods.

Chatham and **Newcastle**, on the Miramichi, export lumber and fish.

129. **St. Stephen**, on the St. Croix, and **St. Andrew's**, on Passamaquoddy Bay, are important towns engaged in the lumber trade, fisheries, and shipbuilding.

Woodstock has large interests in the lumber business. **Richibucto** and **Shediac** are centres of important fisheries. **Sackville** is the seat of Mount Allison University; **Memramcook**, of St. Joseph's College; **Dorchester**, of the Dominion Penitentiary for the Maritime Provinces. **Marysville**, near Fredericton, has a large cotton factory.

130. **Industries.**—Agriculture, lumbering, and fishing are the chief industries.

Agriculture, combined with the rearing of cattle and with dairying, ranks first in importance.

Lumbering, once the chief industry of the Province, is still a leading pursuit. The logs are generally cut in the winter season, and brought down the rivers in rafts. The manufacture of lumber gives employment to a large number of men.

The fisheries of New Brunswick rank next to those of Nova Scotia and British Columbia.

The manufactures include lumber, woollens, cottons, leather, nails, and various kinds of hardware.

131. The principal **exports** are lumber, fish, and lime; the **imports** are similar to those of Nova Scotia.

132. **Railways.**—The railways are—the **Intercolonial**, extending through the eastern side of the Province from Nova Scotia to Quebec, with a branch from Moncton to St. John; the **St. John and Maine**, with branches to Fredericton, Woodstock, and St. Andrew's; and the **New Brunswick line**, from Fredericton to Edmonton.

PRINCE EDWARD ISLAND.

133. **Position and Area.**—Prince Edward Island is on the south of the Gulf of St. Lawrence, and is separated from Nova Scotia and New Brunswick by Northumberland Strait. It approaches within 8 miles of New Brunswick, 15 of Nova Scotia, and 30 of Cape Breton.

N. lat. 46°—47° 7′; W. long. 62°—64° 21′.

The Island has an extreme length of 130 miles and a breadth of 34 miles, comprising an area of 2,184 square miles.

134. **Coast.**—The principal coast waters are—*Richmond Bay, Cardigan Bay, Hillsboro' Bay, Bedeque Harbor*, and *Egmont Bay*. Richmond Bay and Hillsboro' Bay divide the Island into three peninsulas. There are many good harbors, and the coast waters are valuable fishing grounds.

135. **Physical Features.**—Prince Edward Island is a level or gently-undulating country. The greatest elevation is about 500 feet above the sea-level.

136. The **soil** is generally a sandy loam, free from stones, and well suited to agriculture. A large proportion of the Island is under cultivation.

137. The **climate** is temperate and healthful. Extremes of heat and cold are not so great as in the neighboring Provinces. The Island is generally shut in by ice from the end of December to the end of March. Mussel-mud, formed from decayed shell-fish, found at various places along the coast, is much used as a fertilizer.

138. The principal **agricultural products** are wheat, oats, barley, potatoes, turnips, and other vegetables.

139. **Inhabitants.**—The population in 1911 was 93,728. The inhabitants are mainly of British and Irish descent, those of French origin forming about one-eleventh of the whole population.

140. About three-sevenths of the population are Roman Catholics. Presbyterians are more numerous than all other Protestants combined. Good provision is made for general education. Free schools were established in 1872.

141. The Island is divided into three *counties—Kings, Queens*, and *Prince*. It is also divided into sixty-seven lots or townships, which are numbered from 1 to 67.

142. **Towns.—Charlottetown**, the capital, has a fine harbor, at the confluence of East, North, and West Rivers, and it is the chief centre of trade in the Province. It is the seat of *Prince of Wales College*.

Fig. 57.—Charlottetown.

143. **Summerside** has a good harbor, and exports farm produce and oysters. **Georgetown** has a superior harbor. **Souris** and **Tignish** are important fishing centres.

144. **Industries.**—The chief industries are agriculture and fishing. Cattle, horses, sheep, and swine are exten-

FIG. 58.—QUEBEC.

sively reared. The annual value of fish taken is about $1,155,000.

145. The chief **exports** are oats, potatoes, butter, cheese, various animal products, live animals, oysters, and other fish; the **imports** are coal, West India products, and various kinds of manufactured goods.

146. **Railways.**—A railway, about 267 miles in length, belonging to the Dominion Government, extends through the Island from Tignish to Souris, connecting all the principal places.

QUEBEC.

147. **Position and Area.**—The Province of Quebec occupies the basin of the St. Lawrence from the Ottawa River to the Gulf. The Ottawa River separates Quebec and Ontario, except for a few miles near its mouth. The north drains towards Hudson Bay and Hudson Strait.

N. lat. 45°—62° 40′; W. long. 57°—79°.
Area, 706,834 square miles.

148. **Coast.**—The coast on the east is confined to the Gulf of St. Lawrence and Bay Chaleur. It is blocked with ice in the winter. The north-west coast is on Hudson Bay and Strait.

149. The island of **Anticosti**, in the Gulf of St. Lawrence, has an area of 2,600 square miles. The southern shores are low and dangerous to navigation. Near the southern coast is a large peat bog. The island is not suited to agriculture, its principal resources being seals and fish, which frequent the coast waters.

150. The **Magdalen Islands**, in the Gulf of St. Lawrence, comprise a group of small islands, of which the principal are *Grosse Isle*, *Coffin*, *Etang du Nord*, *Havre aux Maisons*, and *Havre Aribert*. The inhabitants are chiefly of French origin. Their chief dependence is the cod and herring fisheries and seal-hunting. Population about 6,400; area about 50 square miles.

151. **Bic**, in the St. Lawrence, is noted as the scene of the massacre of about 200 Micmac Indians by the Iroquois two centuries ago.

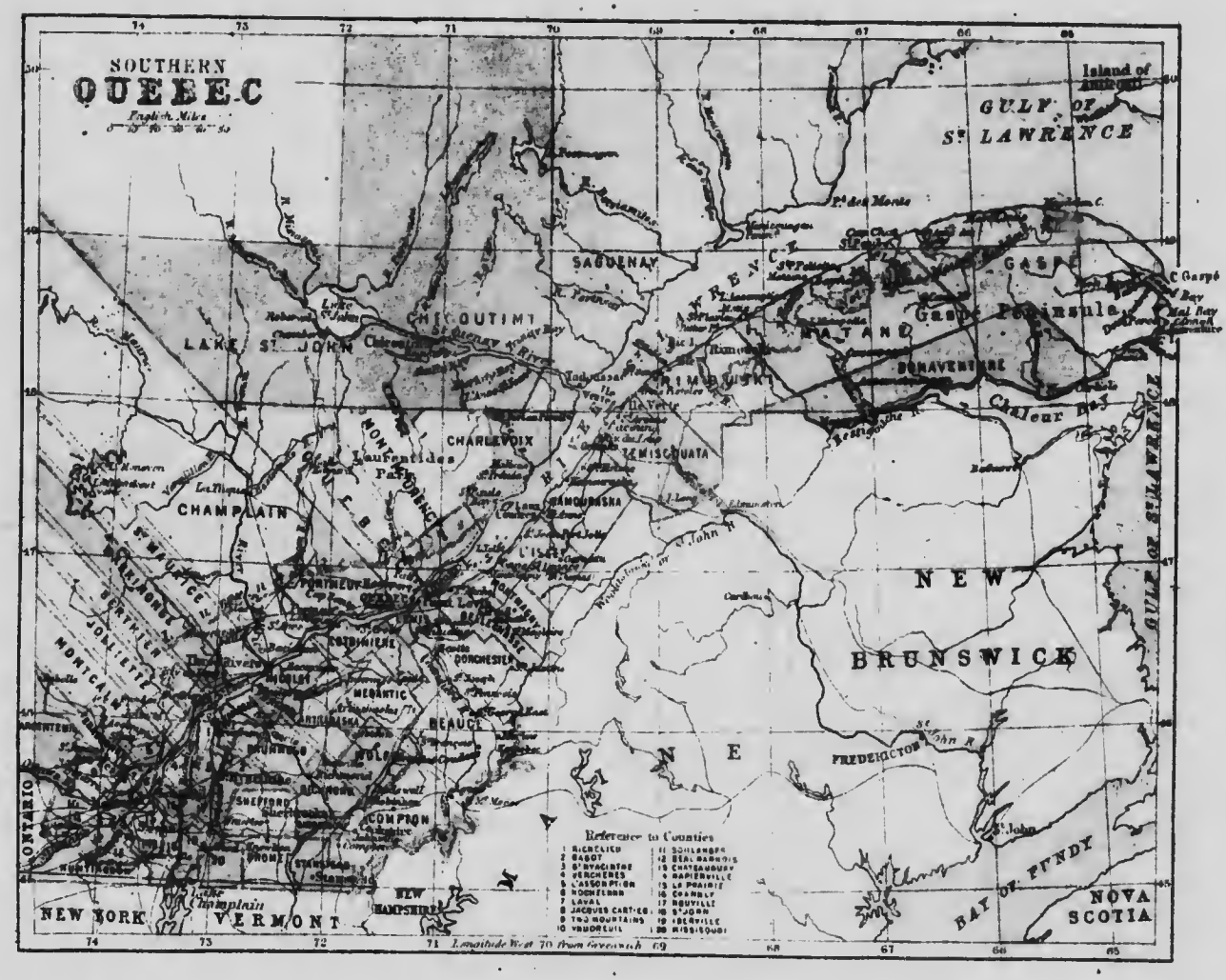
Orleans, 20 miles in length, is very fertile, yielding grain, vegetables, and fruit.

Montreal Island, at the mouth of the Ottawa, is 32 miles long and 10 miles in extreme breadth. The soil is very fertile.

Jesus Island is over 20 miles in length.

152. **Physical Features.**—The surface is diversified but not mountainous. Generally the country lying north of the St. Lawrence, except a narrow district near the river, is hilly and rocky, having numerous rivers and lakes. On the south of the river the western portion is undulating, the eastern hilly and mountainous, the principal mountains being the *Notre Dame* and the *Shickshock*.

153. The principal rivers of Quebec are the *St. Lawrence* and its tributaries the *Ottawa*, *St. Maurice*, *Saguenay*,



QUEBEC.

Boundaries—

North.
Hudson Strait, and Labrador.

East.
Gulf of St. Lawrence.

South.
Bay Chaleur.
New Brunswick, and United States.

West.
Ontario, and Hudson Bay.

Coast Waters—
Chaleur.
Mal
Gaspé.

Capes—
Cape Gaspé.
Point de Monts.
West Point.
Diamond.

Islands—
Anticosti.
Bonaventure.
Magdalen Is.
Bic. } In the St. Lawrence.
Verte. }
Aux Coudres. }
Orleans. }
Montreal. }
Jesus. }
Perrot. }
Calumet. } In the Ottawa.
Allumette. }

Rivers—
St. Lawrence.
Ottawa.
St. Maurice.
Saguenay.
Richelieu.
St. Francis.
Chaudière.

Lakes—
St. Francis.
St. Louis.
St. Peter.
Memphremagog.
Megantic.
Temiscouata.
Champlain.
St. John.

Counties—
Pontiac.
Ottawa.
Argenteuil.
Two Mountains.
Vaudreuil.
Soulanges.
Jacques Cartier
Hochelaga.
Laval.
Terrebonne.
L'Assomption.
Montcalm.
Joliette.
Berthier.
Maskinonge.
St. Maurice.
Champlain.
Portneuf.
Quebec.
Montmorency.
Charlevoix.
Chicoutimi.
Saguenay. Gaspé.
Bonaventure.
Matane.
Rimouski.
Temiscouata.
Kamouraska.
L'Islet.
Montmagny.
Bellechasse.
Dorchester.
Levis.
Lotbiniere.
Nicolet.
Yamaska.
Richelieu.
Vercheres.
St. Hyacinthe.
Bagot.
Rouville.
Iberville.
Chambly.
Laprairie.
St. John's.
Napierville.
Chateauguay.
Beauharnois.
Huntingdon.
Missisquoi.
Brome.
Shefford.
Drummond.
Arthabaska.
Megantic.
Beauce.
Wolf
Richmond.
Compton.
Stanstead
Sherbrooke.

Richelieu, St. Francis, and *Chaudière.* By means of these rivers the interior of the country is, during the summer months, open to the commerce of the world. The St. Lawrence has several lake expansions, as *St. Francis, St. Louis,* and *St. Peter.*

154. The **Ottawa** is about 800 miles in length. Falls and rapids are numerous along its course. By the help of canals, the river is navigable to Ottawa City, 100 miles. *Chaudière Falls,* near Ottawa, have a descent of 60 feet, and a breadth of over 200 feet. There are several lakes in the basin of the Ottawa. *Temiscaming,* 70 miles long, is the largest. The valley of the Ottawa has vast resources in its timber, minerals, soil, and water-power. The **principal tributaries** from Quebec are the *Gatineau, Du Lievre, Du Nord,* and *L'Assomption.*

155. The **St. Maurice** forms many lakes and waterfalls; its banks are generally elevated; and after a course of over 400 miles, a large part of which is through a forest country, it enters the St. Lawrence by three mouths. The *Falls of Shawanegan,* 30 miles from Three Rivers, have a descent of 125 feet.

156. The **Saguenay** is about 400 miles in length, and it enters the St. Lawrence about 120 miles below Quebec city. About 100 miles from its mouth it forms a large expansion, called *Lake St. John.* The lower part of the river is noted for its great depth, and for the grandeur of the scenery along its banks, precipitous rocks rising from 500 to 1,500 feet above the water. *Tadoussac,* at the mouth of the river, is a favorite summer resort. *Chicoutimi,* at the head of navigation, 75 miles from the mouth of the river, has a good harbor, accessible to ships of the largest size. Ten miles below this place the river forms a beautiful basin, called *Ha-Ha Bay.* These places are frequently visited by summer tourists. Navigation in the upper part of the river is obstructed by falls.

FIG. 59.—WINTER IN CANADA.

157. The **Montmorency,** flowing into the St. Lawrence a little below Quebec, is noted for the falls near its mouth, the water falling 250 feet.

The **Richelieu,** 75 miles long, flows from *Lake Champlain,* and enters the St. Lawrence at Lake St. Peter.

158. Lake **Memphremagog,** about 30 miles in length, is partly in Vermont State. The scenery around the lake is very beautiful.

159. The **soil** in the eastern portion of the Province is not well adapted to griculture. The south-western portion is very fertile, and suited to the growth of grain, vegetables, and fruit.

160. **Climate.**—The winter is long, with steady, severe cold, and heavy snowfall. The St. Lawrence is frozen over for about five months in the year. The summer is hot, and vegetation rapid. The air is very pure and healthful.

The settled portion of Quebec is principally a narrow country along the valley of the St. Lawrence. Beyond, covering the greater portion of the Province, are vast forests of pine, spruce, cedar, maple, birch, ash, elm, and other trees.

161. The **agricultural products** comprise the common cereals, vegetables, and fruit of temperate climates; also Indian corn, sugar-beet, hemp, flax, and tobacco.

162. **Minerals.**—The Province is rich in minerals, including copper, iron, lead, asbestos, lime, apatite (or phosphate of lime), and mica. Gold and silver are obtained in small quantities.

163. **Copper** is found in the Eastern Townships, **iron** along the St. Maurice. **Asbestos** is abundant in Megantic and Richmond Counties in the south-west, the Province yielding over 85 per cent. of the world's product. The yield in 1908 was 65,534 tons, valued at $2,547,507. **Phosphate of lime** and **mica** are found in large quantities in Ottawa County. **Gold** is found along the Chaudière.

Fig. 60.—Montreal from Mount Royal.

164. **Inhabitants.**—**The population in 1911 was 2,003,232. Nearly three-fourths of the inhabitants are of French origin, and speak the French language. Those of British descent are most numerous in the Eastern Townships. The Indians of the Province number about 13,000.**

About six-sevenths of the population are Roman Catholics. The Church of England ranks second in respect to numbers, and the Presbyterian Church third. Roman Catholics and Protestants have separate schools. There are three Provincial Normal Schools—two at Montreal and one at Quebec. The higher institutions of learning in the Province are, the *University of McGill*, in Montreal; *Laval*, in Quebec; and *Bishop's College*, at Lennoxville.

The Province is divided into sixty-one counties. Twelve counties in the south-eastern portion of the Province are called the Eastern Townships.

165. **Towns.**—**Quebec**, the capital of the Province, is on the left or northern bank of the St. Lawrence, 400 miles from its mouth, occupying the triangular ground at the confluence of the St. Lawrence and the St. Charles Rivers. The city consists of the *Upper Town*, on the summit of a promontory, and the *Lower Town*, adjoining the river, where the chief commerce is carried on.

The Upper and Lower Towns are connected by two or three steep, winding streets and by a flight of broad, wooden steps. Quebec is one of the most strongly fortified cities in the world. The Citadel stands on Cape Diamond, which rises 333 feet above the river. The lumber trade and shipbuilding are the most important branches of business. Immense rafts of timber are brought down the Ottawa and St. Maurice Rivers, and stored in coves along the St. Lawrence near Quebec. The city has many objects of interest. Near the Upper Town are *the Plains of Abraham*, the battle-ground of 1759. About eight miles below the city are the celebrated *Falls of Montmorency*. Among the important public buildings of Quebec are the *Parliament Buildings*, the *Roman Catholic Cathedral*, *Laval University*, and the *Ursuline Convent*.

Point Lévi, on the south shore of the St. Lawrence, opposite the city of Quebec, manufactures lumber, and has an extensive trade. Five miles above Quebec the St. Lawrence is crossed by a great bridge having the longest span of any bridge in the world.

166. **Montreal**, the commercial capital of the Dominion, is situated on Montreal Island, in the St. Lawrence, 580 miles from its mouth. The city stands at the head of ship navigation, and much of the produce of the surrounding country and of the Upper Province is brought here for exportation. Montreal is built largely of limestone. It has many fine public buildings, among which are the *City Hall*, *Custom House*, *Bonsecours Market*, *McGill University*, *Notre Dame Cathedral*, which is capable of holding 10,000 people, and *St. Peter's Cathedral*. The manufactures of Montreal are important, including hardware, cotton and woollen goods, glass, and india-rubber goods. Near the city is the stupendous Victoria Bridge, by which the Grand Trunk Railway crosses the river.

167. **Three Rivers**, at the threefold mouth of the St. Maurice, is an old French town, 90 miles above Quebec. Its iron works and lumber trade are important. It has one of the finest cathedrals in America.

ONTARIO.

Boundaries—
North.
James Bay, and Hudson Bay.
East and South-east.
Quebec,
St. Lawrence,
Lake Ontario, and
Lake Erie.
South-west.
Lake Huron,
Lake Superior, and
United States.
West.
Manitoba.

Cape—
Cape Hurd.

Islands—
Michipicoten.
Manitoulin Isles.
Christian.
Fidée.
Long Point Island.
Amherst.
Thousand Isles.

Rivers—
St. Lawrence.
Ottawa.
Nation.
Rideau.
Madawaska.
Gonnechere.
Petawawa.
Mistawawa.
French.
Magnetawan.
Muskoka.
Severn.
Nottawasaga.
Saugeen.
Maitland.
Aux Sables.
Sydenham.
Thames.
Grand.
Trent.
Moira.
Abbitibbi.
Moose.
Albany.
Nipigon.
Rainy River.

Lakes and Bays—
Superior.
Thunder Bay.
Black Bay.
Nipigon Bay.
Huron.
North Channel.
Georgian Bay.
Nottawasaga Bay.
Owen Sound.
Erie.
Long Point Bay.
Ontario.
Burlington Bay
Bay of Quinté.

Counties—
Welland.
Monck.
Haldimand.
Norfolk.
Elgin.
Bothwell.
Kent.
Essex.
Lambton.
Middlesex.
Oxford.
Brant.
Wentworth.
Lincoln.
Halton.
Peel.
Wellington.
Waterloo.
Perth
Huron.
Bruce.
Grey.
Simcoe.
York.
Ontario.
Durham.
Victoria.
Peterboro'.
Northumberland.
Prince Edward.
Hastings.
Lennox.
Addington.
Frontenac.
Renfrew.
Lanark.
Leeds.
Grenville.
Dundas.
Carleton.
Russell
Stormont.
Glengary.
Prescott.
Halliburton.
Muskoka.
Algoma.

168. **St. Hyacinthe**, on the Grand Trunk Railway, 35 miles from Montreal, has important manufactures in wood, iron, leather, and wool. It is the seat of St. Hyacinthe College.

169. **Sherbrooke**, the chief city in the Eastern Townships, manufactures cottons, woollens, and hardware.

170. **Hull**, on the Ottawa, opposite Ottawa City, has a large trade in lumber, and manufactures pulp, woodenware, and matches.

171. **Sorel**, at the mouth of the Richelieu, manufactures engines, machinery, and hardware.

172. **Valleyfield**, on Lake St. Francis, manufactures paper. **Cacouna**, on the south side of the St. Lawrence, 130 miles below Quebec, is the resort of thousands of people during the summer months. **Tadoussac** and **Murray Bay**, on the St. Lawrence, are also favorite resorts.

173. Among the other important towns are **Longueil**, **St. John's**, **Lachine**, **Nicolet**, **Joliette**, **Huntingdon**, **Lachute**, **Terrebone**, **Batiscan**, **Knowlton**, **Richmond**, and **Waterloo**.

174. **Industries.**—The principal industries are agriculture, lumbering, fishing, shipbuilding, manufacturing, and commerce.

Immense quantities of lumber are brought down the river to Montreal and Quebec for exportation to Europe. The most important lumbering centres are in the basins of the Ottawa and St. Maurice Rivers.

175. The manufactures comprise cotton, woollen, linen, leather, and rubber goods, hardware, pulp, paper, furniture, woodenware, glass, agricultural implements, soap, chemicals, and sugar-refining.

Creameries and dairies are numerous, producing large quantities of butter and cheese.

The total value of fish in 1914 was $2,755,291.

176. The **exports** comprise lumber, agricultural and dairy produce, fish, and various manufactured goods. The **imports** are similar to those of the other Provinces.

177. **Railroads.**—The St. Lawrence and its tributaries are grand highways of commerce during the summer months. All the principal places are connected by railways. The following are the principal railways:—

The **Intercolonial**, from Montreal to the New Brunswick frontier, and thence to Halifax, Nova Scotia.

The **Canadian Pacific**, from St. John, N.B., to Montreal, and thence westerly across the continent to the Pacific coast, with branch lines between Montreal and Quebec, and between Montreal and Ottawa.

The **Grand Trunk**, from Montreal easterly to Quebec; from Montreal southerly to Portland, Maine; and from Montreal westerly to Sarnia, Ontario.

The **Quebec and Lake St. John**, from Quebec to Roberval, on Lake St. John.

The **Quebec Central**, from Quebec to Sherbrooke.

The **Temiscouata**, from Riviere du Loup to Edmundston, and thence to Fredericton, New Brunswick.

ONTARIO.

178. Ontario is the wealthiest and most populous Province of the Dominion, and it ranks second in area. Its growth has been very rapid. About one hundred years ago it was nearly all forest land, and, except in the neighborhood of the old French forts, scarcely a white man was found in the whole country. It then formed a part of the Province of Quebec. Amongst the early settlers were many United Empire Loyalists, who, on account of their loyalty to Great Britain, had been driven from the United States during the War of Independence. Coming entirely destitute, as all their property had been confiscated, they received free grants of land and supplies from the British Government.

179. **Position and Area.**—Ontario is situated on the north of the St. Lawrence and Great Lakes, extending westerly from the Ottawa River to the western shore of the Lake of the Woods. Its northern limits are Hudson Bay and James Bay. The area, including territory in Keewatin recently annexed, is 407,262 square miles.

180. **Coast.**—The lake coast is extensive, contributing greatly to the commercial advantages of the Province. The lake and river fisheries are of great value, trout and white fish being the most important products.

181. The **Manitoulin Islands**, in Lake Huron, comprise *Grand Manitoulin*, *Little Manitoulin*, and *Drummond*. **Grand Manitoulin**, 80 miles in length, is elevated and rugged. Many of its inhabitants are Indians. **Drummond** belongs to the United States.

Amherst Island, having an area of 26 square miles, is in Lake Ontario.

182. The **Thousand Isles** comprise a group of nearly two thousand wooded islets in the upper part of the St. Lawrence, known as the Lake of the Thousand Islands. They are greatly celebrated for their beautiful scenery.

183. **Physical Features.**—The surface is level or gently undulating, without any elevations that can properly be called mountains. A ridge extends westerly from Niagara River, terminating in the Blue Mountains, on the south of Nottawasaga Bay. The north-western portion of the country is hilly and rocky, and has many small lakes.

(*For Rivers and Lakes, see Canada, p.* 47.)

184. The **soil** of Ontario is generally fertile, and well suited to agriculture.

185. The **climate** varies with the position, but throughout the Province it is healthful. In the southern portion winter lasts about four months. In the peninsula between Lakes Huron and Erie the climate is milder than in other parts of the Province.

186. The **agricultural products** comprise wheat, barley, Indian corn, oats, potatoes, apples, pears, and plums. The peninsula in the south-west yields grapes and peaches of excellent quality.

The northern portion of the Province comprises vast forests of pine, spruce, and other trees of great economic value.

187. **Minerals.**—Ontario has great mineral wealth, including gold, silver, iron, copper, lead, nickel, petroleum, and salt. The whole country north of Lakes Huron and Superior is rich in minerals.

188. The richest **gold** mines of the Province are in the Rainy River district. The Sudbury **nickel** mines yield over half the world's product of this metal, the remainder coming chiefly from New Caledonia and Norway. The Cobalt **silver** mines are among the richest in the world, yielding in 1909 about $12,000,000. **Salt**

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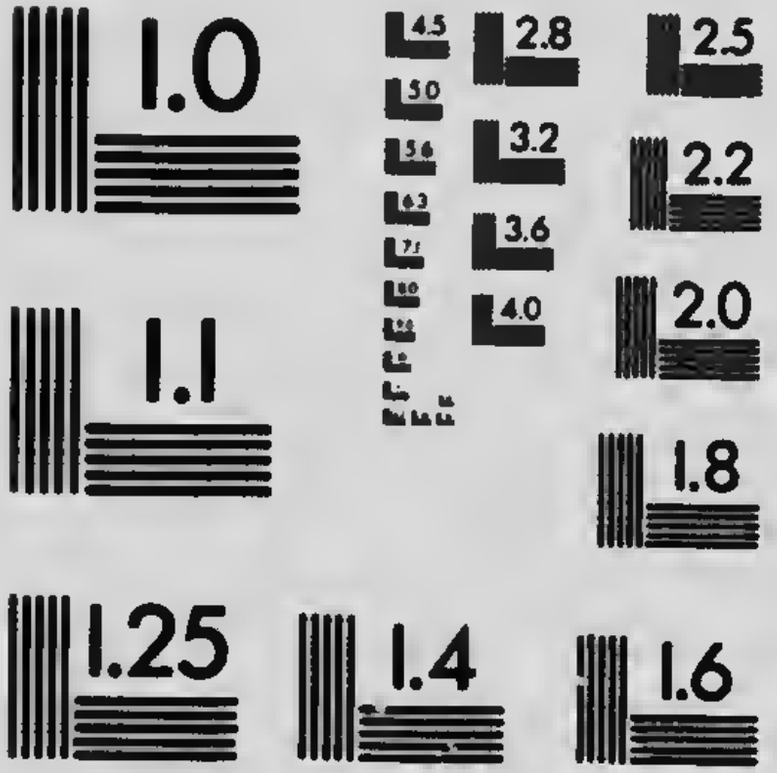

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FIG. 61.—TORONTO.

is abundant in Bruce, Huron, Middlesex, Kent, and Essex Counties; **petroleum** in Lambton and Kent. Extensive **peat** beds exist in various parts of the country. **Natural gas** is found in the neighborhood of Lake Erie.

189. **Inhabitants.**—The population in 1911 was 2,523,274. The inhabitants are principally of British origin. Those of French descent number about 33,000. The various Indian tribes comprise about 26,000.

190. Over four-fifths of the inhabitants are Protestants—Episcopalians, Methodists, and Presbyterians being the largest bodies.

191. The educational affairs of the Province are under the superintendence of a member of Government, styled Minister of Education. The system provides separate schools for Roman Catholics.

192. Teachers of the lowest grade are trained in county model schools, the higher grades in the Normal Schools at Toronto and Ottawa. The most noted of the higher institutions of learning are the *University of Toronto*, *Trinity College*, and *McMaster University* at Toronto, and *Queen's College* at Kingston.

193. **Divisions.**—Ontario is divided into forty-four counties and five districts. The Province is also divided into electoral districts.

194. **Cities and Towns.—Toronto,** situated on Toronto Bay, is the capital and largest city. It has a fine harbor, and is connected with all parts of the country by several lines of railways. Its manufactures are varied and extensive, including railway cars, machinery, hardware, bicycles, sewing-machines, boots, and shoes. Among its many fine buildings are the *University of Toronto*, *Trinity College*, *Osgoode Hall*, *Parliament House*, *St. James's Cathedral*, *St. Michael's Cathedral*, and the *Normal School*.

195. **Ottawa,** on the Ottawa River, is the capital of the Dominion, and the great centre of the lumber trade. The magnificent *Government Buildings* and the *Normal School* are the most important public buildings. *Rideau Hall*, the residence of the Governor-General, is in the village of New Edinburgh, a suburb of Ottawa.

196. **Kingston,** on a fine harbor at the eastern end of Lake Ontario, is a strongly-fortified city. It has extensive manufactures, and is the seat of *Queen's University* and the *Military School* of the Dominion.

197. **Hamilton,** at the head of Burlington Bay, is a prosperous commercial and manufacturing city. Its manufactures comprise agricultural implements, machinery, stoves, glassware, sewing-machines, shoes, and clothing.

London, on the Thames, is surrounded by a fertile and populous agricultural country. It has a large trade in grain and flour.

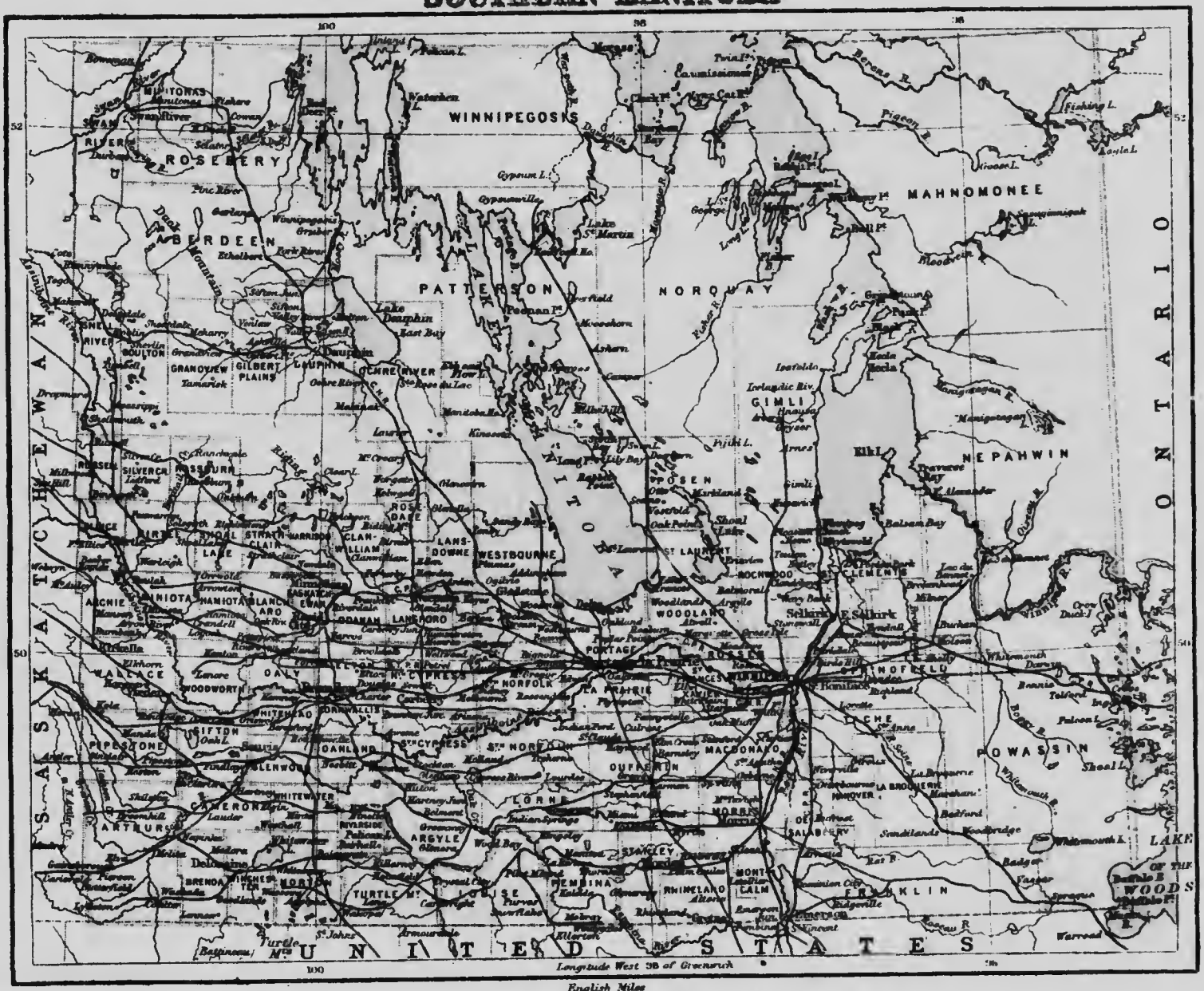
198. **St. Catherine's,** on the Welland Canal, has a beautiful situation in the neighborhood of mineral springs, and is a favorite resort in summer. It manufactures flour, leather, sewing-machines, and woollens. It has extensive nurseries.

199. **Guelph** is in the centre of a rich agricultural district, and has important manufactures. In its neighborhood is the Provincial School of Agriculture, one of the finest institutions of the kind in America.

200. **Brantford,** the seat of a ladies' college and an institution for the blind, manufactures agricultural implements, engines, cottons, woollens, and pottery.

St. Thomas is the seat of a ladies' college, and is an important railway centre.

SOUTHERN MANITOBA



Stratford has a large trade in dairy produce and grain, and has extensive manufactures.

201. **Collingwood**, on Georgian Bay, has steam communication with various ports on Lake Superior, and carries on a large trade in grain and lumber.

Owen Sound has a fine harbor, and is the headquarters of the Canadian Pacific Railway Company's lake steamship line.

Goderich, an important port on Lake Huron, has large flour-mills, salt works, and soap factories.

202. **Chatham**, on the Thames, **Dundas**, **Galt**, **Woodstock**, **Ingersoll**, a noted cheese market, **Peterborough**, **Lindsay**, and **Brockville**, are important manufacturing towns.

Windsor, in a rich fruit-growing district, is an important railway terminus.

203. **Sarnia**, **Cobourg**, **Port Hope**, **Belleville**, the seat of Albert College and an institution for the deaf and dumb, and **Whitby**, are important manufacturing cities and lake ports.

Oshawa manufactures engines, water-wheels, hardware, and agricultural implements. **Napanee** manufactures paper and window glass.

Petrolia is the centre of the rock-oil district of Ontario. **Kincardine**, **Clinton**, and **Seaforth** are noted for their salt wells.

204. **Fort William**, beautifully situated on Thunder Bay, is the western terminus of the Canadian Pacific lake steamship line. Grain and cattle brought from the west by rail are here transferred to steamships and barges. The company has here and at *Port Arthur* five miles farther up the bay, large grain elevators. Over half a century ago Fort William was an important post of the Hudson Bay Company.

205. **Port Arthur** has an excellent harbor and large grain elevators. It is the western terminus of steamboats from Collingwood and Owen Sound.

206. **Kenora**, formerly **Rat Portage**, at the lower end of the Lake of the Woods, is surrounded by a forest country rich in gold and other minerals. The overflow of the lake into the Winnipeg at this point and at Keewatin, four miles distant, provides splendid water-power for the manufacture of lumber.

Sault Ste. Marie, near the rapids of St. Mary, is the chief place in Algoma District.

Parry Sound has a good harbor, and manufactures large quantities of lumber. **Niagara** was the first capital of Upper Canada.

207. **Industries.**—The chief industries are agriculture, manufacturing, mining, lumbering, and commerce.

208. Ontario is one of the best agricultural countries in the world. It produces large quantities of wheat and other grain. Its yield of fruit is also very large. In recent years great attention has been given to the raising of cattle, horses, sheep, and pigs, and also to manufacture of butter and cheese. The total annual value of cheese exported is about $15,000,000. A single cheese weighing over eleven tons was sent from Ontario to the Columbian Exhibition in Chicago in 1893.

The manufactures comprise cotton and woollen goods, boots and shoes, machinery, wood-pulp, paper, musical instruments, and sewing-machines.

209. The **exports** comprise flour, grain, lumber, petroleum, salt, cattle, and manufactured goods. The **imports** include coal, cloths, silks, wine, tea, and tropical produce.

210. **Railways.**—All the principal places in the Province are connected by rail. The most important railways in Ontario are the **Canadian Pacific** and the **Grand Trunk**. The Canadian Pacific crosses the Province from Ottawa to the Lake of the Woods. An important branch runs from Sudbury to Sault Ste. Marie, where an immense bridge gives connection with the railways of the United States. The Grand Trunk extends from the eastern limits of the Province to the St. Clair River. Another line extends from Niagara Falls to Sarnia. Indeed, the various branch lines of the Grand Trunk form a complete network in the western part of the Province.

(*For Canals, see Dominion of Canada, par.* 51.)

MANITOBA.

211. Manitoba, formerly a part of Hudson Bay Territory, was organized as a Province of the Dominion in 1870. It is situated on the west of Ontario, and between the 49th and 60th parallels. The area of the Province, including recently annexed territory in Keewatin, is 251,832 square miles.

212. **Physical Features.**—The part of the Province lying east and north of the Winnipeg River is hilly and rocky, and is generally a well-wooded country. The western portion of the Province is mainly undulating prairie land, which is destitute of trees, except along the margin of rivers and lakes. The Pembina and Turtle Mountains are near the international boundary; Riding Mountain, Duck Mountain, and Porcupine Hills are in the north-western part of the Province.

213. The principal **rivers** are *Red River*, the *Assiniboine*, the *Winnipeg*, and the *Nelson*.

214. **Red River** is navigable from its mouth through the Province, and to Moorhead, in the State of Minnesota. The **Assiniboine** is navigable for over 300 miles.

215. The **lakes** are *Winnipeg*, *Manitoba*, and *Winnipegoosis*.

216. The winters are long and severe, without sudden changes of temperature; but owing to the dryness of the air little discomfort is felt from the severe cold, except during the fierce blizzards which occasionally sweep over the country. The summer months are warm, and well suited to develop the products of the field. The fall of rain and snow is less than it is in the eastern provinces. There are no cyclones, and the climate is very healthful.

217. The **soil**, which is generally very fertile, is throughout a large part of the country a deep, black mould resting on a clay sub-soil, and is well adapted to the growth of grain and vegetables.

218. Manitoba is one of the greatest grain-producing countries in the world, its wheat being of the best quality. It is also well suited to the growth of flax, potatoes, and other vegetables; also to stock-raising and dairying.

219. **Inhabitants.**—The population in 1891 was 152,500, but in 1911 it was 455,614. In 1870 it did not exceed 10,000, chiefly half-breeds and Indians. Little was then known of the agricultural capabilities of the country. The rapid increase is due to the arrival of immigrants, who have come from the eastern provinces of the Dominion, the British Isles, Iceland, Russia, and other countries.

General education is provided for by free public schools.

220. **Towns.—Winnipeg**, on the site of Fort Garry, at the junction of Red River and the Assiniboine, is a well-built city of rapid growth. It has many fine churches and other public buildings, and is the seat of *Manitoba* and *St.*

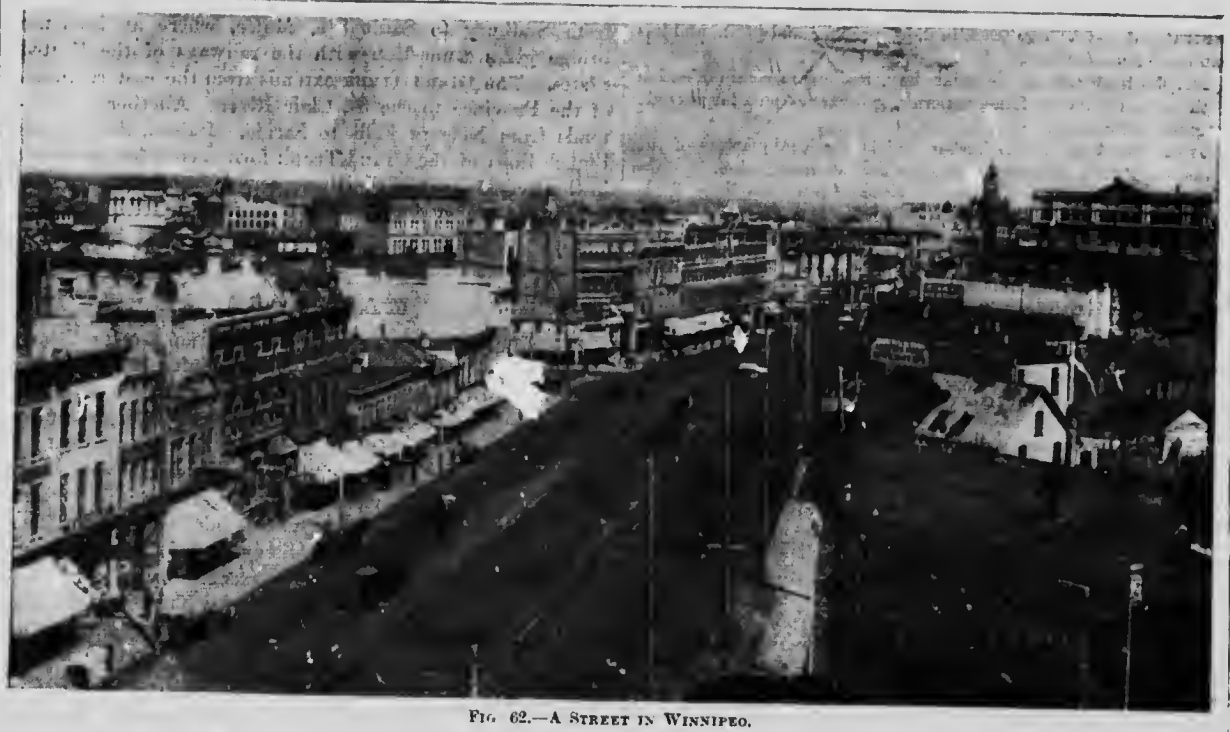


FIG. 62.—A STREET IN WINNIPEG.

John's Colleges **St. Boniface**, on the east side of Red River, opposite Winnipeg, is the seat of *St. Boniface College*.

221. **Brandon**, a rapidly-growing town on the Assiniboine, is the most important grain market in the Province, and the seat of a Government Experimental Farm. Its grain elevators have a combined capacity of 300,000 bushels.

222. **Portage-la-Prairie**, an important railway centre on the Assiniboine, surrounded by a fertile country, is also an important grain market.

223. **Emerson, Rapid City, Minnedosa, Selkirk, Nelson, Morris,** and **Birtle** are leading business centres.

224. Manitoba is divided into five counties, and also into twenty-four electoral divisions.

The Province is laid out in townships six miles square. Each township is subdivided into thirty-six equal square sections, which are again divided into quarter sections, each comprising 160 acres. A quarter section forms a farm; and provision is made for a road around each section, so that every farm has a road on two sides.

225. **Industries.**—The chief pursuits are agriculture, stock-raising, and dairying. Creameries and cheese factories are established in the principal towns. Grain, cattle, sheep, butter, and cheese are exported.

BRITISH COLUMBIA.

226. British Columbia was annexed to the Dominion of Canada in 1871.

227. The northern portion of the country was in its early history known as New Caledonia, while the more southerly portion was included in what was called the Oregon Territory. The term Columbia was first applied to the regions drained by the river of that name. From 1858 to 1866 the mainland and Vancouver Island formed separate Crown Colonies, but at the last-mentioned date they were united under the name of British Columbia.

228. British Columbia, situated between the parallels of 49° and 60° N. lat., including Vancouver Island and Queen Charlotte Islands, is the largest Province of the Dominion. A narrow strip of territory belonging to Alaska lies between the northern half of the Province and the ocean.

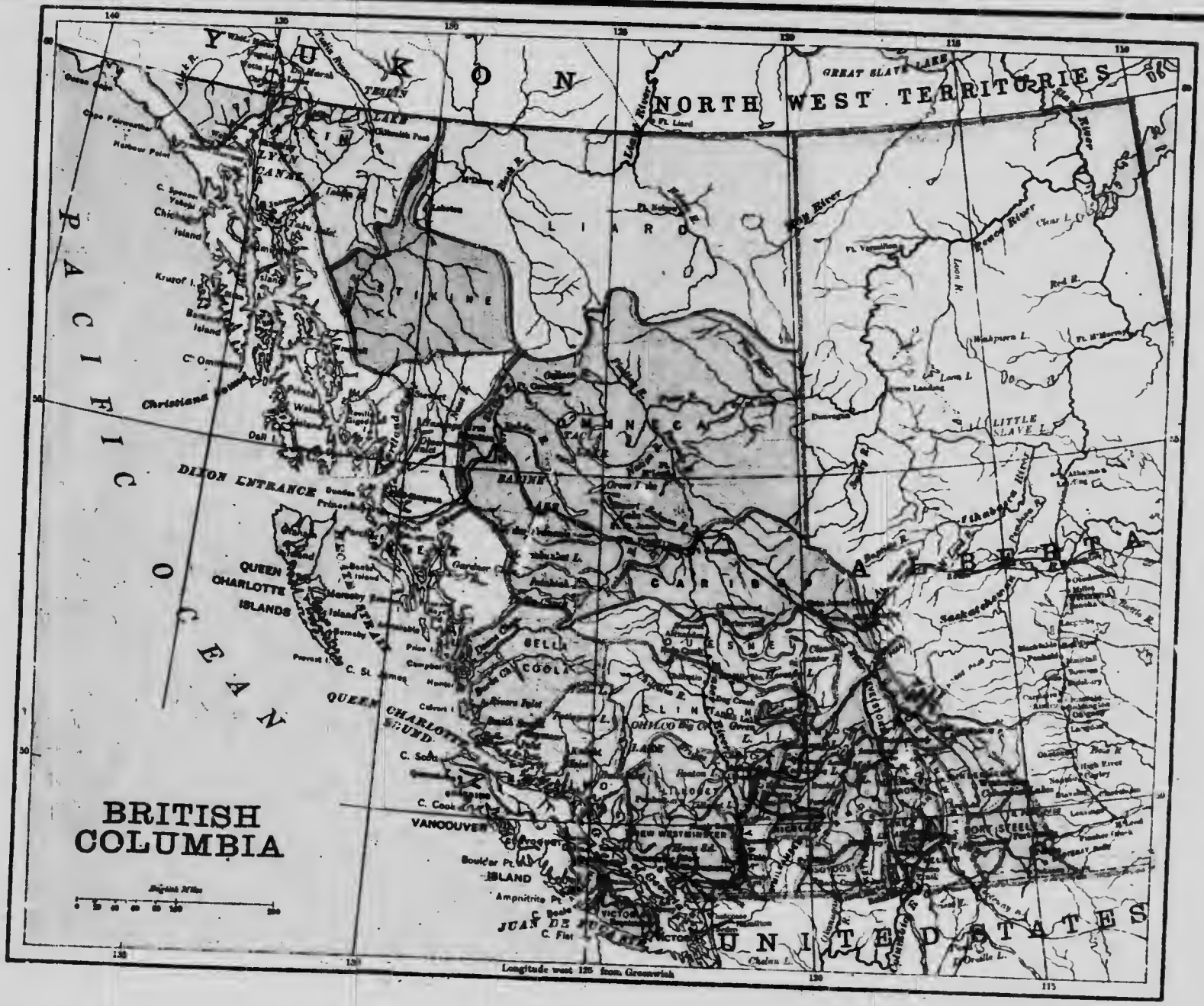
The length of the Province, north and south, is about 750 miles, and the breadth, east and west, is nearly 500 miles. The total **area** is estimated at 355,855 square miles.

229. The **coast** is remarkable for its fiords, or narrow bays, similar to those of Norway and Greenland. These inlets have high rocky shores, are thickly studded with islands, and afford many excellent harbors. The more important coast waters are *Queen Charlotte Sound*, *Gulf of Georgia*, and the *Strait of Juan de Fuca*. The principal **harbors** are *Esquimalt*, *Victoria*, and *Nanaimo*, in Vancouver Island, and *Prince Rupert*, *Vancouver*, and *Port Mann*.

230. The country is generally elevated and rugged. The Rocky Mountains lie on the east; and in the south-east, besides the main range, there are three parallel ranges known as the *Purcell*, the *Selkirk*, and the *Gold* Mountains. Farther north are the *Cariboo* Mountains.

231. On the west side of the Province is the *Cascade* or *Coast Range* of monntains, much broken by deep gorges or canyons, through which the rivers make their way to the ocean. Towards the north, glaciers extend down these gorges to the very border of the sea.

232. The interior of the Province is a vast plateau, elevated from 2,000 to 3,000 feet above the sea-level, and furrowed by deep gorges made by rapid streams.


YUKON
NORTH WEST TERRITORIES
PACIFIC OCEAN
BRITISH COLUMBIA
ALBERTA
UNITED STATES
DIXON ENTRANCE
QUEEN CHARLOTTE ISLANDS
QUEEN CHARLOTTE SOUND
VANCOUVER ISLAND
GREAT SLAVE LAKE
LITTLE SLAVE L.
Longitude west 125 from Greenwich

233. The principal **rivers** are the *Columbia, Kootenay, Fraser, Thompson, Skeena, Stikine, Liard,* and the *Peace* River. Although much broken by rapids and falls, these rivers give long stretches of water-way, which are of great value to the Province.

234. The **Columbia** rises in the south-east of British Columbia, flows northerly through East Kootenay, and turning abruptly at the Big Bend, flows southerly through West Kootenay. There are several lakes in its basin.

235. The **Fraser** has a total length of 740 miles. In its upper course it has two main branches. For the last 80 miles of its course it flows through a wide alluvial plain, formed largely by silt in times of overflow. The river is navigable for vessels drawing twenty feet of water to New Westminster, 15 miles from its mouth, and for river steamers to Yale, 110 miles.

236. The **Skeena,** next to the Fraser the largest river on the coast of British Columbia, flows through a densely-wooded country. Near its mouth are numerous salmon-canning factories and saw-mills.

237. The **Stikine,** which flows south-westerly, making its way through the Coast Mountains to the Pacific Ocean, is navigable for steamers of light draught to Glenora, and at times to Telegraph Creek, 150 miles from its mouth.

238. The **climate,** which is milder than places similarly situated on the east of the Dominion, varies much in different localities, according to the latitude and elevation. In the south-west there is little snow or severe frost, and spring begins in February. The highlands of the interior have severe winter climate, with hot days and cool nights in summer. Different portions of the Province vary much in regard to humidity. On the coast and on the western slopes of the mountain ranges there is heavy rainfall, while the plateaus have little rain.

239. With the exception of the dry table-lands, British Columbia is a country of magnificent forests of Douglas fir, cypress, pine, spruce, hemlock, and tamarack, yielding timber of the finest quality. On the west of the Coast Mountains and in the valleys of the Selkirk and Gold Ranges the Douglas fir grows to an immense size, sometimes attaining the height of three hundred feet, and having a circumference at the base of thirty or forty feet. In some parts the table-lands produce the low, brown sage-bush; elsewhere this arid country is covered with bunch grass and other nutritious herbs, adapting it to the rearing of cattle and sheep.

240. The cultivated **products** comprise the grains, vegetables, and fruits of temperate climates. Through irrigation the lower table-lands are made very productive. Grapes, peaches, and other fruit are easily grown in the warm valleys.

241. **Divisions.**—British Columbia is divided into large areas known as Districts. Those of the mainland are *New Westminster, Yale, Kootenay, Lillooet, Cariboo,* and *Cassiar.* Comox is partly on the mainland and partly on Vancouver Island.

242. **Vancouver Island,** the largest island on the west coast of America, is about 300 miles long, and has an area of 15,000 square miles. The west coast is much broken by deep inlets of the sea, bordered by precipitous, rocky cliffs. Much of the island is rugged and mountainous, the highest ridges ranging from 6,000 to 8,000 feet. The island has extensive forests of fir, hemlock, and cedar, yielding excellent timber; and it is rich in minerals, comprising coal, gold, and iron. The south-eastern portion has a fertile soil, and is well suited to agriculture and fruit-growing. The interior of the island is unsettled.

243. **New Westminster,** in the south-west of the Province, comprises the fertile alluvial valley of the Lower Fraser River. In some places the lowlands require to be protected by dikes from inundations of the river.

244. **Yale** lies east of New Westminster and Lillooet, in the dry belt. The district has great mineral wealth, comprising gold, copper, platinum, coal, and iron. It has excellent facilities for irrigation, and it has large areas of land in the river valleys suited to grazing, agriculture, and fruit-growing. The Nicola and Okanagan valleys are famous as grain-growing and fruit-growing districts, and they are also suited to the growth of hops and tobacco.

245. **Kootenay,** in the south-east corner of the Province, is divided by the Purcell Mountains into East and West Kootenay. This district has immense mineral wealth, including gold, silver, copper, lead, coal, and oil. In addition to its marvellously rich deposits of minerals, Kootenay has great resources in its forests and in its grazing and agricultural lands. The rivers, lakes, and railways bring all parts of this district into easy communication with each other.

246. **Lillooet** lies west of the northern part of Yale, comprising a large portion of the interior plateau. Although generally not adapted to agriculture, it has extensive grazing lands; and the southern portion is suited to fruit-raising. This district is sparsely settled, the inhabitants being chiefly along the margin of the Fraser River. It is rich in gold.

247. **Cariboo,** on the north of Yale and Lillooet, extends to the northern limit of the Province. In this district are the famous Cariboo mines, from which it is computed that gold to the value of at least $50,000,000 has been taken. This immense yield was the result of placer-mining, when facilities for the transport of machinery, such as is now used in hydraulic mining, were wanting.

248. That portion of **Comox** on the mainland lying south of Cassiar and west of Lillooet is a rugged, densely-wooded country, yielding the most important supply of timber furnished by the Province.

249. **Cassiar** is situated in the north-west of the Province, between Cariboo, on the east, and Alaska and the Pacific Ocean, on the west, including the Queen Charlotte Islands. It is rich in minerals, has valuable salmon fisheries, and extensive timber areas.

250. The total **population** of British Columbia, as enumerated in 1891, was 98,170. Of these, 65,527 were white people, 9,386 were Chinese, and 23,257 were Indians. The population according to the census of 1911 was 392,480. The inhabitants are chiefly in the southern part of Vancouver Island, and in the districts of New Westminster and Kootenay.

The educational system of the Province provides for free undenominational schools. At the head of the system is a Council of Public Instruction, which, as in Nova Scotia, consists of the members of the Executive Council.

251. The Indians of British Columbia are left more to care for themselves, and are thus trained to be less dependent on Government aid, than are those in the North-West. The greater number live by hunting and fishing, though some are fairly successful farmers. About one-half of the Indians are Roman Catholics, nearly one-third are Protestants, the others are pagans.

252. **Cities and Towns.—Victoria,** the capital, has a beautiful situation on the south-east coast of Vancouver Island. It is a port of call for ocean steamships between Vancouver City, on the mainland, and Japan, China, and Australia. Its industries comprise iron foundries and fac-

FIG. 63.—PARLIAMENT HOUSE, VICTORIA.

tories of various kinds. Parliament House, costing nearly $1,000,000, is one of the finest buildings of the kind in the Dominion.

253. **Esquimalt**, a strongly-fortified town on a good harbor three miles from Victoria, is the British naval station on the Pacific coast. The Imperial Government have here a dockyard and a hospital.

254. **Nanaimo**, 70 miles north of Victoria, is the centre of a great coal-mining district. A deep channel connects its harbor with Departure Bay, which affords safety to the largest ships. Nanaimo has steamboat communication with various points on the coast.

Wellington, six miles north of Nanaimo, with which it is connected by rail, also has important coal mines.

255. **Vancouver**, on Burrard Inlet, is a well-built city of rapid growth, and is now the largest city of the Province. It is the centre of a great lumber trade, and has other important industries, such as sugar-refining, fruit-canning, and iron works. It is the western terminus of the Canadian Pacific Railway, and is connected with Japan, China, and Australia by ocean steamers. **Prince Rupert** is the terminus of the Grand Trunk Pacific Railway.

256. **New Westminster**, on the Fraser River, 15 miles from its mouth, is in a rich farming district, and is a centre of the salmon-canning industry and of the trade in lumber. It is connected with Vancouver, 12 miles distant, by an electric tram-road.

257. **Steveston**, on the Fraser River, 12 miles from Westminster, is a centre of the salmon-canning industry, and during the season is largely populated.

258. **Chilliwack**, on the Fraser, 50 miles above New Westminster, is in a farming and fruit-growing district. **Kamloops** has a beautiful situation at the junction of the North and South Thompson Rivers. It is an important centre, and has a large trade with the farmers, ranchmen, and miners of the surrounding country.

259. **Ashcroft**, on the Thompson River, is a business centre, and the starting-point of a stage line to the northern districts. **Agassiz**, on the Canadian Pacific Railway, is the site of the Dominion Government Experimental Farm. **Revelstoke** is a railway centre.

Yale, at the head of navigation on the Fraser River, and **Greenwood**, the centre of a rich mining district, are important towns in Yale.

260. Many prosperous towns have recently sprung up in the Kootenay District in connection with the mining industries. The following are the more important:—

261. **Nelson** is an important mining town and trade-distributing centre. **Rossland** is the centre of rich gold and copper mines. **Trail**, on the Columbia River; **Kaslo**; **Ainsworth**, noted for its hot sulphur springs; **Silverton**; **New Denver**; **Slocan City**, on Slocan Lake; and **Sandon**, in the centre of the rich silver-lead mines of the Slocan district, are growing towns in West Kootenay.

262. **Golden**, on the Columbia River; **Fort Steele**, a mining centre on Kootenay River; **Cranbrook**, in a picturesque valley which is under the shadow of the Rocky Mountains; **Windermere**, the centre of a rich mineral district; and **Fernie**, near the Crow's Nest Pass coal mines, are the most important towns in East Kootenay.

263. **Port Simpson**, the most northerly port of British Columbia, has long been an important post of the Hudson Bay Company. **Hazelton** is an important post on the Skeena.

264. **Resources and Industries.**—British Columbia is a land of vast and varied resources, comprised chiefly in its minerals, its fisheries, and its forests, but having also agricultural and grazing capabilities of great importance.

In mineral wealth British Columbia ranks next to Ontario among the Provinces of the Dominion, and in its possibili-

North America

Dominion of Canada.
Newfoundland.
Colorado.
British Honduras.
Bermudas.
Bahamas.
Leeward.
Windward.
Trinidad
Jamaica.
Barbadoes.

South America.

Bt. Guiana.
Falkland Isles.

Europe.

Bt. Isles.
Gibraltar.
Malta.
Channel Isles.

Asia

India
Ceylon
Hong. Kong.
Aden.
Perim.
Straits Settlements.
North Borneo.
Cyprus.

Africa.

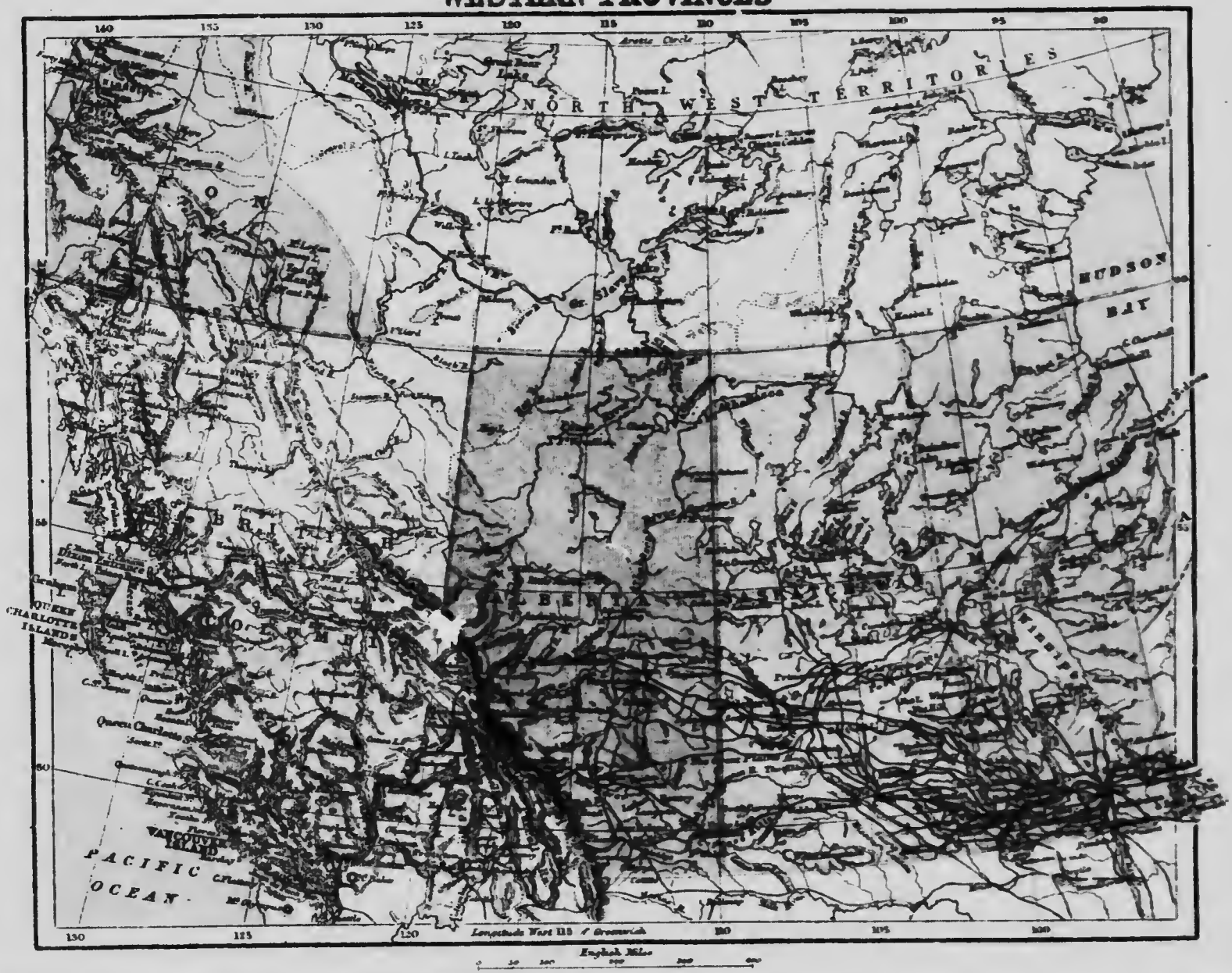
Bt. S. Africa { Cape Colony, Natal, Transvaal, Orange Free State.

Bt E Africa { Zanzibar, Somaliland, Soccotra, Uganda.

British E. African Protectorate.

Bt W Africa { Gold Coast, Sierra Leone, Nigeria, Lagos, Gambia.

WESTERN PROVINCES



ties is probably exceeded by few countries in the world. While other minerals are abundant in the Province, those of greatest value are coal, gold, silver, copper, lead, and iron.

265. The most important **coal** fields discovered are on the east coast of Vancouver Island, in the Queen Charlotte Islands, and in the Crow's Nest Pass, in East Kootenay District. The total output of coal for the past few years (chiefly from Vancouver Island) was about 1,000,000 tons per annum. This is being materially increased by the operations of the Crow's Nest Pass mines.

266. **Gold** is widely tributed, being found in every part of the Province, from Kootenay to Cassiar. There are rich mines in Kootenay, Yale, Cariboo, Lillooet, Vancouver Island, and in Cassiar District. The silver-lead mines of Kootenay carry very high values, and yield largely. The total product of gold for the Province, for 1914, was $5,546,356; silver, $1,7[illegible]0,590; copper, $5,606,966; and the total mineral value was about £24,203,000.

267. **The fisheries** of the rivers and coast waters are a source of great wealth, and give employment to many thousands of people. The salmon fishery ranks first in importance, the chief centres of the industry being on the Fraser River and in the northern part of the Province. The total annual value of fish taken is about $11,500,000.

The halibut fisheries rank next to salmon. This fish is obtained along the whole coast, but it is especially abundant and of very large size on the north of the Queen Charlotte Islands. Sturgeon, herring, oolakan, and trout are very abundant.

268. The lands suited to **agriculture**, when compared with the vast area of the Province, are not extensive. Warm valleys of limited area are suited to the growing of such fruits as grapes and peaches; but on account of the excessive humidity wheat does not ripen well on the coast.

FIG. 64.—SCENES IN THE NORTH-WEST TERRITORIES.

269. The total value of **exports** is about $34,000,000, made up chiefly of the products of the mines, the fisheries, and the forests. The value of the **imports** is about $58,000,000.

270. **Railways.**—Owing to the rugged and mountainous character of British Columbia, the navigation of the rivers is greatly obstructed by rapids, and the making of roads and railways is difficult and expensive. Three great railways connecting the Province with Central and Eastern Canada pass through British Columbia—the *Canadian Pacific*, with terminus at Vancouver; the *Canadian Northern*, with terminus at Port Mann; and the *Grand Trunk Pacific*, with terminus at Prince Rupert.

SASKATCHEWAN.

271. **Position and Area.**—Saskatchewan, lying between Manitoba and Keewatin on the east and Alberta on the west, extends from the United States border on the south to the parallel of 60° north. Its length north and south is about 760 miles, its breadth east and west about 340 miles, and its area 251,700 square miles.

272. The Province consists largely of rich prairie lands, varied with low hills. In the south-west are low ranges of hills known as the *Wood Mountains*.

273. The principal **rivers** are the *North Saskatchewan*, *South Saskatchewan*, *Qu'Appelle*, *Assiniboine*, and *Churchill*.

The **lakes** comprise *Athabasca*, *Wollaston*, *Reindeer*, and many of smaller size.

274. **Climate and Products.**—The southern and central portions of the Province have a climate and soil well suited to agriculture. The products are grain and vegetables of the finest quality, comprising wheat, oats, barley, potatoes, and other vegetables. The south-western section, owing to the light rainfall, requires irrigation for successful agriculture, but as a stock-raising and dairy country it is unsurpassed. The dry plains yield short herbage on which horses, cattle, and sheep thrive all the year. The winters here, tempered by warm, westerly winds, are so mild that domestic animals need little shelter. In the northern part of the Province are extensive forests.

275. The various settlements, rapidly increasing by immigration, are connected with each other and with the other Provinces by the great trans-continental railways and by local lines.

276. **Regina**, the capital, on the Canadian Pacific Rail-

way, is a thriving city. It is the seat of the Provincial Normal School. At **Indian Head** is an Experimental Farm maintained by the Dominion Government.

Among the other important places are **Prince Albert**, connected with Regina by railway, **Carlton, Battleford, Moose Jaw, Saskatoon, Moosomin, Yorkton.**

277. **The local Government** is like that of the older Provinces. The Legislature comprises but one House.

ALBERTA.

278. **Position and Area.**—Alberta, lying between Saskatchewan and British Columbia, and extending through eleven degrees of latitude from the United States boundary at 49° to 60° at the north, is a vast Province with an area of 255,285 square miles. Its physical features are much diversified, and its resources are vast and varied.

279. Southern Alberta has extensive level prairies in the east; towards the west it becomes broken by foot-hills of the Rocky Mountains. The *chinook* wind, blowing from the west, gives mild winters in this section. The fall of rain and snow here is light. Among the native grasses is that known as "bunch grass," on which cattle thrive in the open pastures throughout the year. Stock-raising and dairying are leading industries. The soil is fertile, and with irrigation it yields large crops of grain and vegetables. Numerous streams flowing from the highlands give facility for irrigation. For this purpose a system of canals and ditches, under supervision of the Government, has been introduced through the country between Calgary and the international boundary. This section has been a favorite field of immigrants, who have established many large and prosperous settlements along the line of the Calgary and Edmonton Railway.

280. Central Alberta is a well-watered country. Its principal rivers are **Red Deer, North** and **South Saskatchewan, Battle,** and **Athabasca.** Its soil of black mould is deep and rich, yielding immense crops of wheat, barley, oats, and vegetables of the best quality. Near the Rocky Mountains are large forests.

281. Northern Alberta, traversed by the great **Peace** and **Athabasca** and smaller rivers, has extensive prairie and forest lands. Large tracts are well suited to agriculture. It has few inhabitants, and its resources are undeveloped.

282. **The mineral wealth** of Alberta is very great, including gold and coal. Gold is obtained from the sand along the banks of the Saskatchewan. Coal mines are worked near Canmore, Lethbridge, Edmonton, and Anthracite.

The Canadian Pacific Railway crosses the southern portion of Alberta, with a branch line from Medicine Hat through the Crow's Nest Pass to Kootenay in British Columbia. The Grand Trunk Pacific and the Canadian Northern cross the central part of the Province.

283. **Edmonton,** the capital, on the North Saskatchewan, also on the line of the Grand Trunk Pacific Railway and the Canadian Northern, and connected by rail with Calgary on the Canadian Pacific, is a trade centre for farm produce, furs, and manufactured goods.

Strathcona, on the opposite side of the river, is a flonrishing town. **Calgary** is in the centre of a ranching district.

The other important places are **Wetaskiwin, Macleod, Lethbridge,** and **Red Deer.**

284. **Banff,** elevated 4,000 feet above the sea-level, has medicinal springs, and is a noted health resort. It is situated near *Rocky Mountain Park*, famous for its beautiful scenery.

285. The **Government** and Legislature are like those of Saskatchewan.

DISTRICT OF YUKON.

286. **YUKON,** having an area of 207,000 square miles, lies between British Columbia and the Arctic Ocean. Three-fourths of this vast territory are in the basin of the Yukon River.

287. Yukon lies wholly north of the parallel of 60° north latitude. Its year is made up of a long, dark, and cold winter, when the temperature often falls to 20° below zero, and sometimes to 50° below, and of a short, warm summer with very long days. In the interior, within the ice-clad mountains that lie between it and the sea, is a sheltered district in which, during this warm season, potatoes, turnips, barley, and other things that grow rapidly, are successfully cultivated.

Gold-mining is the chief industry. The mines are among the richest in the world. Gold is obtained chiefly from the sands of the Klondike and other tributaries of the Yukon by the process known as placer-mining. The annual yield was formerly as high as $20,000,000, but in 1914 it had fallen to $5,125,300. The value of silver obtained in 1914 was $36,960.

288. **Dawson,** on the Yukon, in the centre of the gold-producing region, is the capital and chief town.

The usual route to this country is by steamer from Vancouver or Victoria to Skagway at the head of Lynn Canal, thence by railway through the White Pass to Lake Bennett, and thence by lake and river to Dawson.

289. The **Government** of the Territory is lodged in a Governor appointed by the Dominion Government, and a Council of ten members, half of whom are appointed and half elected.

NORTH-WEST TERRITORIES.

290. That part of Canada lying north of the parallel of 60° north latitude, formerly included in the Districts of *Mackenzie, Keewatin,* and *Franklin,* is now called the *North-West Territories.* It extends northerly to the Arctic Ocean, including the Canadian islands in that ocean.

291. The territory consists mainly of a great plain. A height of land winding around on the west of Hudson Bay divides the plain into two great slopes, one inclining northerly to the Arctic Ocean, the other easterly to Hudson Bay, as shown by the river courses. The chief river of the northern slope is the *Mackenzie,* which carries to the ocean the surplus waters of Great Bear Lake, Great Slave Lake, Lake Athabasca, the Peace River, and other tributaries. The Mackenzie is navigable during the summer months for about 1,200 miles from its mouth. The influence of the Pacific winds makes the climate of the Mackenzie valley much milder than that of the Hudson Bay region.


NEWFOUNDLAND
English Miles
Railways open ——— constructing or projected
Telegraph Lines & Cables
LABRADOR
QUEBEC
Belle Isle Straits
GULF OF
ST LAWRENCE
ATLANTIC
OCEAN
WHITE BAY AND BONNE BAY
Notre Dame Bay
ST GEORGE'S BAY
BONAVISTA BAY
TRINITY BAY
BURGEO AND LA POILE
FORTUNE BAY
BURIN
Great Miquelon I. (to France)
Langley or Lt. Miquelon I. (to France)
Telegraph Cable to United States
Longitude West 58 of Greenwich

The largest river on the easterly slope is the *Churchill*, flowing into Hudson Bay. Owing to numerous rapids and falls, continuous navigation of this river for any long distance is practicable only by means of portages.

292. Extensive tracts of the North-West Territories have been only partially explored. The southern half comprises large forests of spruce and other valuable trees. Towards the north the trees become small and scrubby, and in the extreme north their place is supplied by sedges, mosses, and lichens. In the north-east, around Hudson Bay, are extensive barren, frozen plains.

293. The great feature of the North-West, which has given it historic interest, is centred in the wealth of its fur-bearing animals, including the beaver, fox, marten, and many others. The Hudson Bay Company, organized in 1670, still has its forts or trading posts at various centres in this north land.

294. Large flocks of wild geese, ducks, and other migratory birds visit the northern shores in the summer season. On the northern coasts, also, are many polar bears, walruses, and seals.

295. Buffaloes, once so numerous in the southern half of the territory and on the prairies still farther south, are now almost extinct.

296. The **resources** of the North-West Territories are but partially known. In addition to their wealth in lumber and furs, more thorough exploration will probably discover valuable mineral treasures.

FIG. 65.—FISHING ON THE BANKS OF NEWFOUNDLAND.

297. The **Government** of the North-West Territories is vested in an Administrator.

298. **Review of Canada's Resources.**—The resources of Canada are vast and varied. Not to speak of the older lands, the new Provinces of the west are capable of sustaining a population of many millions, and of yielding an immense surplus of food products for export. The great forests of the north lands can with proper care yield an unlimited supply of lumber, pulp-wood, and fuel. The fisheries of the Atlantic and Pacific coasts and of the rivers and lakes are unrivalled in their richness. In the production of gold, silver, coal, iron, copper, and petroleum, Canada ranks high among the countries of the world, while in nickel and asbestos she exceeds all other countries combined. For manufacturing industries Canada has unsurpassed facility for motive power, both as regards means for generating steam and in the possession of natural water-power.

For foreign commerce the Canadian harbors of the Atlantic and the Pacific stand open throughout the year. That great inland sea Hudson Bay, with its gateway Hudson Strait, hitherto little used, promises to become a connecting highway between the grain-producing lands of the interior and Western Europe. Then the River St. Lawrence and the Great Lakes with their canal systems afford a highway for water transport 1,800 miles into the interior. Again, numerous large rivers and lakes form natural roads for inland traffic such as few countries possess; and by the construction of canals for overcoming obstructions of falls and rapids, they can be greatly extended. Then, added to all these natural highways, Canada has about 25,000 miles of railway, to which every year adds hundreds of miles.

NEWFOUNDLAND.

299. Newfoundland, discovered by Cabot in 1497, is situated at the entrance of the Gulf of St. Lawrence, 60 miles north-east of Cape Breton. It is separated from Labrador, on the mainland, by the Strait of Belle Isle, which at the narrowest part is only 10 miles in breadth.

The island comprises an **area** of 42,000 square miles, or nearly double that of Nova Scotia, and is the ninth in size of the islands of the world.

The **coast**, in many parts guarded by high, rocky cliffs, presents scenery of great beauty. On account of the deep fiords which indent its shores, Newfoundland has often been called the Norway of the New World. Trinity Bay and Placentia Bay nearly divide the island into two parts, the south-eastern portion being known as the Avalon Peninsula. The principal bays are *Notre Dame, Hare, White, Bonavista, Trinity, Con-*

FIG. 66.—ST. JOHN'S HARBOR, NEWFOUNDLAND.

ception, St. Mary, Placentia, Fortune, St. George, and *Bay of Islands.*

The principal **islands** on the coast are *Belle Isle* (in the Strait of Belle Isle), *Bell Island* (in Conception Bay), *St. Pierre,* and *Miquelon.* There are also innumerable small islands in the bays around the coast. St. Pierre and Miquelon belong to France.

300. **The Banks.**—Off the south and east coasts is a submarine plateau about 600 miles in length by 200 in breadth. This plateau rises abruptly 9,000 feet above the ocean bed, in some places to within 50 feet of the surface of the water. The shallow waters here are the most celebrated cod-fishing grounds in the world, and they have been the resort of fishermen from different countries since the discovery of America. The coasts swarm with almost all kinds of fish, and they also abound in seals and porpoises.

301. **Physical Features.**—The surface of the island is varied, with low ranges of hills extending north-east and south-west, the greatest elevation being about 2,200 feet. The interior has been only partially explored, but it is known to comprise extensive rocky barrens and swamps. It is estimated that about one-third of the island is covered with small lakes.

302. The **Exploits,** about 200 miles in length, is the longest river. The **Humber,** one of the most important rivers, is celebrated for the beautiful scenery along its lower course.

Grand Lake, about 60 miles in length, is the largest lake.

303. **The agricultural capabilities** of the island are greater than was formerly supposed, there being much fertile soil along the river valleys and around the heads of the bays within a few miles of the coast. The principal **products** are barley, oats, hay, potatoes, turnips, and other vegetables. Wild fruit of all kinds is abundant.

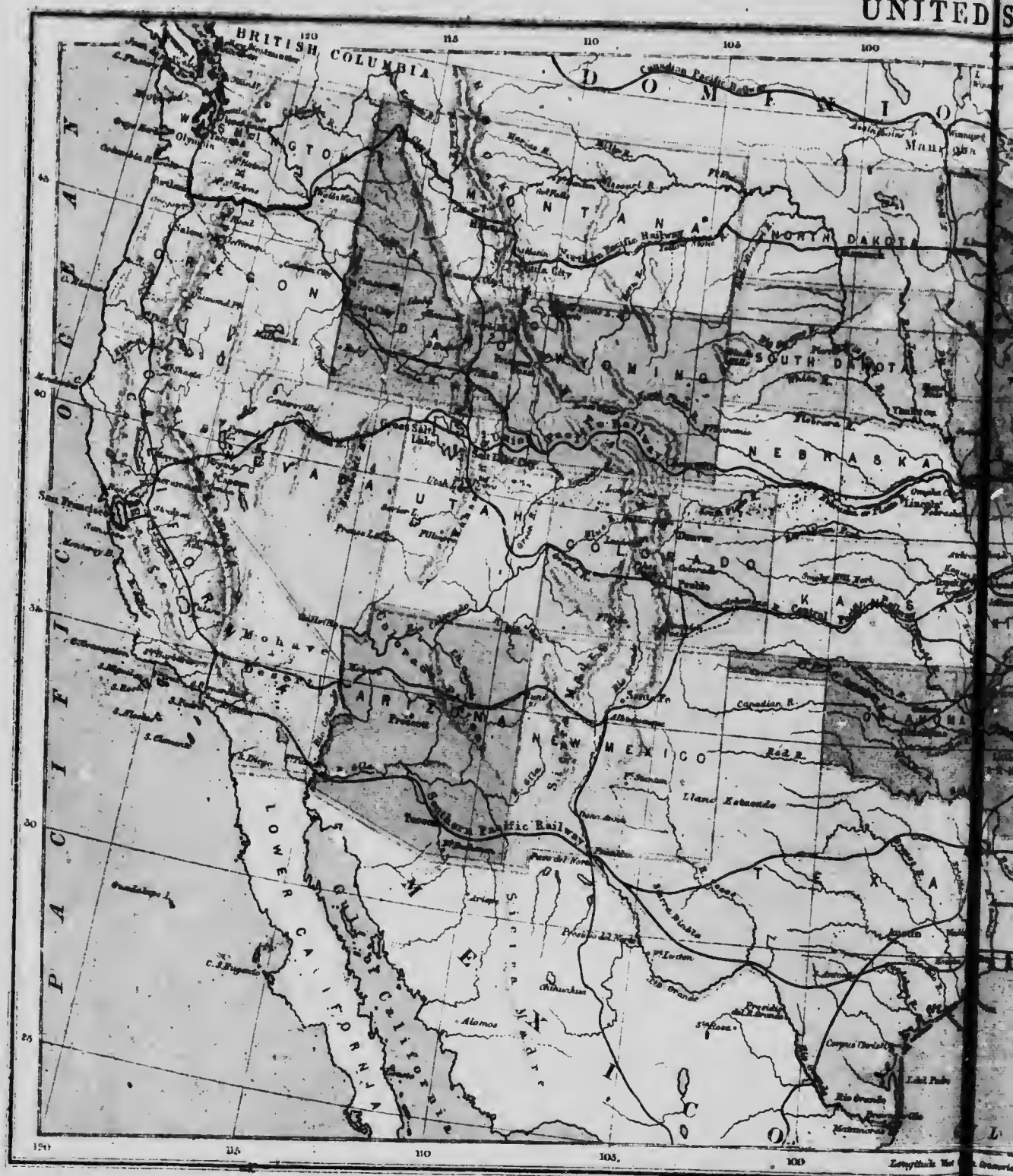
Newfoundland is not subject to such extremes of heat and cold as are Nova Scotia and New Brunswick, the thermometer seldom falling below zero in winter, or rising above 80° in summer. Vast quantities of ice brought down by ocean currents from the Polar Regions by the Arctic Current retard the progress of spring, and condense the vapors of the Gulf Stream, causing dense fogs during the early summer months on the south-eastern and southern coasts. The climate is healthful.

304. Extensive tracts of country on the west coast and along the river valleys are clothed with fine forests of pine, spruce, larch, fir, birch, and other trees. These forests comprise vast resources for the lumberman, and the pulp and paper manufacturer; and they are also the home of many deer, caribou, and various fur-bearing animals.

305. Newfoundland is rich in **minerals,** including iron, copper, lead, coal, asbestos, marble, gypsum, and petroleum; also silver and gold. The total value of minerals exported for the ten years ending in 1898 was nearly $8,000,000.

306. The most important *iron* mines are on Bell Island, in Conception Bay, twelve miles from St. John's. The ore, which is brown hematite, is very rich and easily obtained, it having a jointed cleavage, and lying so near the surface that no machinery is needed in mining it. The mines are owned chiefly by the Dominion Iron and Steel Company. The ore is exported to the smelting works of the company at Sydney, in Eastern Cape Breton, and also to New Glasgow, in Nova Scotia, where it is used in the manufacture of steel. Iron ore is also abundant in various places on the mainland.

Iron pyrites, obtained on Pilley's Island, is largely exported to


UNITED S
BRITISH COLUMBIA
D O M I N I O
WASHINGTON
MONTANA
NORTH DAKOTA
OREGON
IDAHO
WYOMING
SOUTH DAKOTA
NEBRASKA
NEVADA
UTAH
COLORADO
KANSAS
ARIZONA
NEW MEXICO
TEXAS
MEXICO
PACIFIC OCEAN
LOWER CALIFORNIA
Mohave Desert
Great Salt Lake
Colorado R.
Red R.
Rio Grande
Pecos R.
Canadian R.
Llano Estacado
Sierra Madre
Southern Pacific Railway
Northern Pacific Railway
Atchison, Topeka & Santa Fe Railway
Union Pacific Railway
Canadian Pacific Railway
San Francisco
Santa Fe
Chihuahua
Monterey
Matamoras
120
115
110
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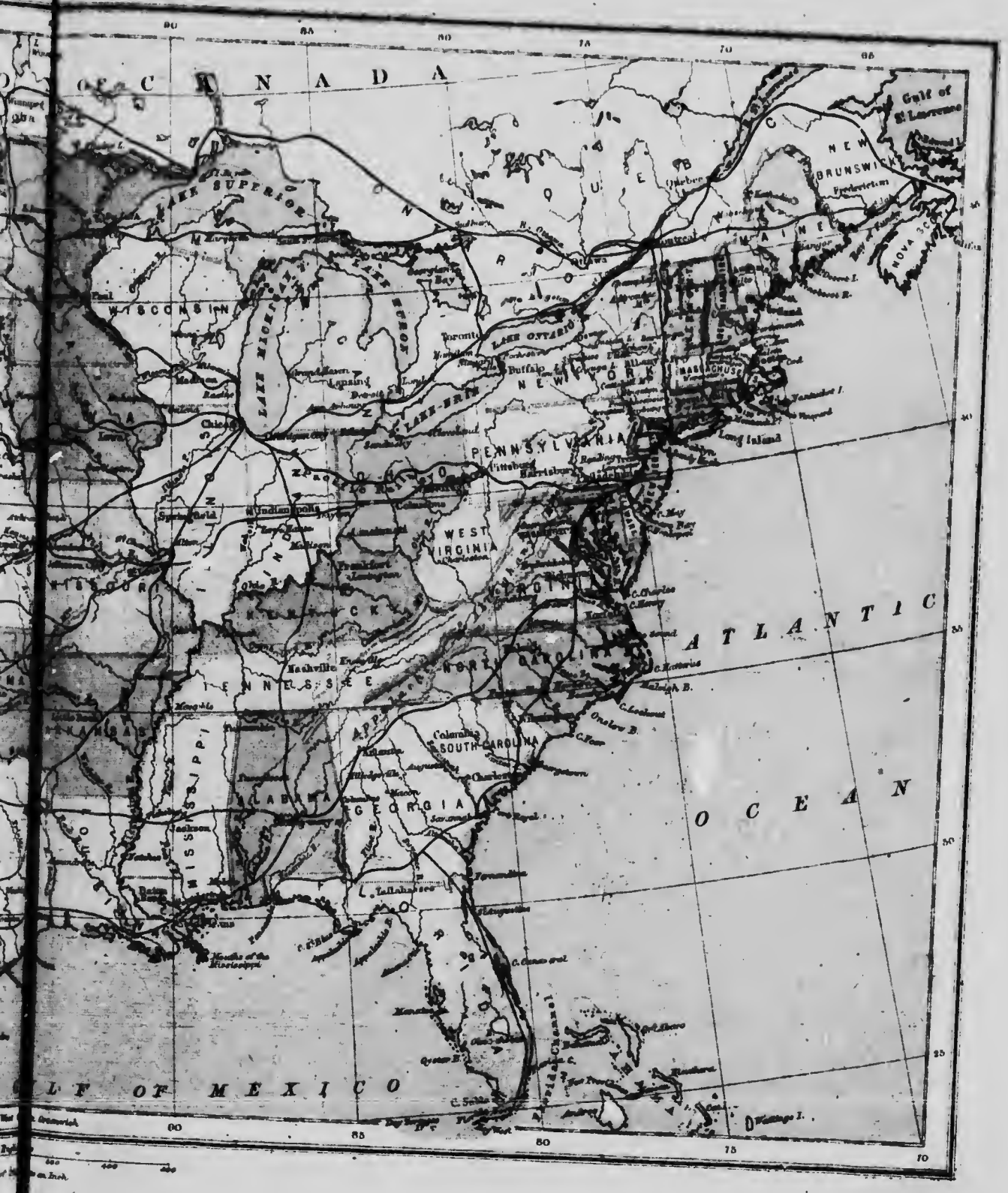
C A N A D A
Gulf of St Lawrence
NEW BRUNSWICK
MAINE
NOVA SCOTIA
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
LAKE ONTARIO
WISCONSIN
NEW YORK
PENNSYLVANIA
WEST VIRGINIA
ATLANTIC
OCEAN
SOUTH CAROLINA
GEORGIA
ALABAMA
MISSISSIPPI
TENNESSEE
GULF OF MEXICO

ths United States, where it is used in the manufacture of sulphuric acid. The value of the exports of this ore for the ten years ending in 1898 was $1,502,260.

307. Newfoundland ranks sixth among the *copper*-producing countries of the world. The principal mines are at Tilt Cove, Bett's Cove, and Little Bay.

Lead and *silver* are found near Placentia Bay. *Coal* is found on the south side of Bay St. George and Grand Lake.

308. The **inhabitants**, numbering about 210,000, live within a few miles of the sea, especially along the south-eastern coast. They are chiefly of English and Irish origin.

Over one-third of the inhabitants are Roman Catholics, about one-third Episcopalians, and about one-fourth Methodists.

General education receives due attention. The schools are denominational, each denomination receiving aid from the Government in proportion to the number of pupils.

309. **Cities and Towns.—St. John's**, the capital, has a superior landlocked harbor, which is connected with the sea by a narrow gap, 500 feet in width, between high, rocky cliffs. It is the centre of the cod and seal fisheries, and controls the principal trade of the island.

310. **Harbor Grace**, next to St. John's in size, has a good harbor and an extensive trade. **Carbonear, Bonavista, Brigus, Trinity, Burin,** and **Twillingale** are important places.

311. **Heart's Content** is the landing-place of the Atlantic Cable between Newfoundland and Ireland. The telegraph wires continue across the island to Placentia, where they are connected with the submarine cable to Cape Breton.

312. The **fisheries** form the most important industry of the island, giving an annual value of about $7,000,000, of which the cod fishery yields about three-fourths. Next in importance is the seal fishery.

313. The seals captured off the coasts of Newfoundland, unlike the fur seals of Alaska, are valuable for their skins, which are manufactured into a costly kind of leather, and for their oil, used in making soap and for lubricating machinery. Seal hunting is prosecuted in March, when the young seals are found on the floating ice off the coast. Next in order of value are the herring and salmon fisheries. The lobster fisheries, once of great importance, have declined much in value. Bay of Islands, on the west coast, is one of the finest herring fisheries in the world.

314. The **exports** and **imports** are pretty nearly equal, each amounting to about six or seven millions of dollars. The principal exports are codfish and herring, cod and seal oil, sealskins, canned lobsters, copper and iron ore, chiefly to Great Britain, Brazil, Canada, Portugal, and the United States. The imports, including flour, textiles and other manufactured goods, and tropical produce, are brought principally from Canada, Great Britain, and the United States.

By the Treaty of Utrecht France is allowed fishing privileges along the coast, from Cape Ray northerly, and around the north of the island to Cape St. John. France was also allowed to hold the islands of St. Pierre and Miquelon, on the south coast, as fishing stations. The French have greatly exceeded the rights guaranteed by the treaty, and have become a source of much annoyance to the people of Newfoundland.

315. A railway runs from St. John's, by way of Exploits River and Bay of Islands, to Port-aux-Basques, in the south-west of the island, with branches to Carbonear, Placentia, and Burnt Bay—in all, about 630 miles. Regular steamboat connection is made between Port-aux-Basques and Sydney, Cape Breton, 85 miles distant

316. The **government** is vested in a Governor, appointed by the Crown of Great Britain, a responsible Executive Council, and a legislature comprising a Legislative Council and an Assembly. The revenue is about $1,500,000, derived chiefly from duties on imports. The public debt is about $17,000,000.

317. The coast country of **Labrador**, extending from Cape Chidley to the Strait of Belle Isle, forms a part of the Province of Newfoundland. The inhabitants number about 4,000, who live mainly by fishing.

THE UNITED STATES.

318. The United States originally consisted of thirteen British colonies, situated on the Atlantic slope of North America. They declared their independence in 1776, which, after several years' war, was recognized by Great Britain in 1783.

The thirteen colonies referred to were New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, Virginia, North Carolina, South Carolina, and Georgia.

319. The territory of the United States has been greatly extended by purchase, annexation, and conquest. A large territory, known as Louisiana, was purchased from France in 1803; Florida was obtained from Spain in 1819. Texas was annexed by desire of the inhabitants in 1845; New Mexico and California were taken from Mexico in 1848; Alaska was purchased from Russia in 1867; the Hawaiian Islands were annexed by request of their government in 1898; and in the same year Porto Rico and the Philippine Islands were taken from Spain.

320. The main part of this great country lies on the south of the Dominion of Canada, in the southern half of the North Temperate Zone.

N. lat. 25° 32′—49°; W. lon. 67°—124°.

321. **Coast.**—The northern part of the Atlantic coast is generally high and rocky, affording excellent harbors. South of the mouth of the Hudson, and along the Gulf of Mexico, the coast is low and sandy, and the harbors are obstructed by sand-bars. The Pacific coast is elevated and regular, and has good harbors

322. The **area**, including Alaska, is slightly greater than that of Canada, comprising about 3,600,000 square miles.

323. **Physical Features.**—This country, like the Dominion of Canada, includes portions of the four great physical divisions of North America. (*See p.* 43.)

324. **Climate.**—The climate, except on the mountain heights of the west, is temperate. Throughout the greater part of the country the summers are hot, but the winters are much longer and colder in the north than they are in the south.

FIG. 67.—THE CAPITOL, WASHINGTON.

325. Owing to cyclonic storms, which with much regularity are constantly crossing the northern part of the continent, from west to east, great and sudden changes of temperature form a marked feature of the climate in the northern half of the country on the east of the Rocky Mountains.

The rainfall varies greatly in different sections. The most humid portions are along the Pacific coast, the Mississippi valley, and the Atlantic slope. The table-lands in the Western Highlands have very little rain.

326. **Vegetation.**—The cool, temperate region of the north produces the various grains, vegetables, fruits, and forest trees found in the Dominion of Canada. Those States which lie east of the Rocky Mountains, and north of the 36th parallel, yield wheat, maize, flax, tobacco, apples, grapes, and peaches; and the States on the south of this parallel yield cotton, rice, maize, sweet potatoes, sugar-cane, oranges, and other products of warm climates. The vegetation of the Pacific coast States is very luxuriant, and varies according to the latitude.

327. **Inhabitants.**—The total population of the United States in 1900 was 76,295,000. The eastern half of the country contains nearly nine-tenths of the whole population, and the northern half of this eastern section contains about two-thirds of all the people.

328. This country furnishes the most remarkable example of rapid national growth that the world has ever witnessed. Added to the natural increase, people have come in from almost every land, but especially from Great Britain, Ireland, and Germany, so that the population is now more than twenty times greater than it was at the time of the Revolution.

Negroes, whose ancestors were brought from Africa as slaves, are very numerous in the south—in some States forming more than half the population. Slavery was abolished in 1863. The Indians, the majority of whom are in the Western Highlands, number about half a million.

329. Throughout most of the States, general education is regarded as one of the highest interests of the country. Free schools, supported by State funds and taxes on property, prevail. High schools, colleges, technical schools of all kinds, and public libraries, are numerous. Among the higher institutions of learning are—*Harvard University*, Cambridge, Mass.; *Yale*, New Haven, Conn.; *Columbia*, New York, N.Y.; *Cornell*, Ithaca, N.Y.; the *University of Michigan*, Ann Arbor, Mich.; the *University of Chicago*, Chicago, Ill.; the *University of Pennsylvania*, Philadelphia, Pa.; *Johns Hopkins University*, Baltimore.

There is no established religion, and all denominations have equal civil privileges.

330. **Divisions.** — The country comprises forty-eight States, one Territory, and the District of Columbia, making in all fifty political divisions. These States may be grouped as follows:—

The New England Section; the Middle Atlantic Section; the East Central Section; the West Central Section; the Southern Section; the Highland Section; the Pacific Section.

In addition to the continental territory, the colonial possessions of the United States comprise the *Hawaiian Islands*, *Porto Rico*, the *Philippine Islands*, and *Tutuila* and adjacent small islands in the Samoan group. The Territory of *Alaska* lies west of Yukon.

331. **Cities.**—**Washington**, in the District of Columbia, is the capital of the United States. This is a beautiful city, carefully laid out with broad streets, situated on the Potomac River, about 100 miles from its mouth. It has many fine buildings, the most prominent of which is the Capitol, in which the meetings of Congress are held.

332. The large cities are chiefly in the northern half of the Atlantic side of the country.

New York is the largest city in America, and one of the largest cities in the world. **Chicago**, **Philadelphia**, **Boston**, **St. Louis**, **Baltimore**, **San Francisco**, and **Cincinnati** are very large cities.

333. **Industries.**—The leading industries are agriculture, herding, lumbering, mining, fishing, manufacturing, and commerce.

More people of the United States are engaged in **agriculture** than in any other pursuit. The States bordering on the Great Lakes, and those in the valley of the Mississippi, are among the best agricultural countries in the world. Wheat, corn, cotton, and tobacco are the most important products of the field. The United States yields one-fourth of the world's wheat, half of the tobacco, four-fifths of the corn, and four-fifths of the cotton.

334. **The herding of cattle** is an important industry on the dry plains. Many cattle and hogs also are reared in the corn-growing region of the central States. Sheep are numerous in the cooler northern States, and on the highland plains.

335. **Lumbering** is prosecuted chiefly in the half of the country lying east of the Mississippi, and on the mountain slopes of the Pacific coast.

336. The **mineral wealth** of the United States is very great and varied.

The value of the mineral products is said to be about one-third that of the whole world. In the order of their value they are—coal, iron, copper, gold, lead, silver, zinc, and aluminium. Total value (1900) about $1,520,000,000.

337. Coal and petroleum are abundant in Pennsylvania and other neighboring States. Iron is found in many States, but the greater portion of the product is obtained in the country on the south and west of Lake Superior, and from the Appalachian Mountains. Gold and silver are obtained principally from the Sierra Nevadas and Rocky Mountains. Copper is abundant on the north shore of Lake Superior, and near the source of the Missouri. Quicksilver is obtained in California; granite in Maine, New Hampshire, and Massachusetts; marble in Vermont; and salt in New York.

338. **Fishing** is an important business, though not of special prominence. Codfish and oysters are the most valuable products on the north Atlantic coast, and salmon on the Pacific.

339. **Manufacturing** takes high rank among the industries of the United States. Abundance of coal, iron, and other raw material, the large use of labor-saving machinery, and means of transport enable manufacturers to place their products on the markets of the world at minimum cost. The great manufacturing centres are chiefly in the northern half of the country east of the Mississippi, where the people are most numerous. The products are varied, but the most important are flour, woollen, cotton, leather, wooden, and iron goods, machinery, lumber, paper, and books.

340. **Foreign commerce** is promoted by many excellent harbors, especially on the North Atlantic coast; while all parts of the country are brought into easy communication with each other and with the harbors on the coast by the great lakes, numerous navigable rivers and canals, and by a wonderful network of railways.

341. The chief **seaports** through which foreign commerce is carried on are *New York*, *Philadelphia*, *Baltimore*, *Boston*, *Portland* (Me.), and *New Orleans*, on the Atlantic side, and *San Francisco* and *Portland* (Ore.), on the Pacific side.

342. The chief **lake ports** are *Buffalo*, *Cleveland*, *Detroit*, *Chicago*, *Milwaukee*, and *Duluth*. Large steamers run between these ports, carrying up the manufactured goods of the east, and bringing down grain, iron, and copper ore, and other raw material from the west. (*See Dominion of Canada*, pages 47, 48.)

343. **Government.**—The United States is a federal republic. Each State in the Union has a distinct government of its own for the regulation of such internal and local affairs as education and the various relations of man with man; while all the States are united under a general government, which has control over those matters which concern the country as a whole, and which bring it into relation with foreign countries, as coinage of money, postal arrangements, tariff, carrying on war, and making treaties.

344. The chief executive officer, styled the **President**, is elected for the term of four years. The Legislature, or Congress, comprises the Senate and the House of Representatives. The people do not vote directly in the election of the President, but each State chooses electors for this purpose.

The **Senate** consists of two members from each State, chosen for the term of six years by the State legislature.

The House of Representatives is chosen directly by the people for the term of two years, each State being entitled to one member for every 135,000 inhabitants. Each organized Territory has one member, who has the privilege of speaking in the house, but is not allowed to vote.

345. The President is assisted by nine advisers called the Cabinet. The members of the Cabinet are not members of either branch of the legislature, as they are required to be in Canada, but they are selected from outside by the President, to whom they are responsible.

346. The **local government** of each State is modelled after the plan of the general government. The Territories have their own local legislatures, but they do not choose their own governors and other public officers as do the States, these officers being appointed by the President.

NEW ENGLAND.

347. This section comprises six States. Numerous bays on the coast afford fine harbors, which give shelter to many vessels engaged in foreign commerce, coasting-trade, and fishing. The river valleys are fertile, but the uplands

are not well suited to agriculture. Market gardening and dairying are important industries. Extensive forests in the north give employment to lumbermen. The southern and central portions are densely peopled, and are covered with a close network of railways. A large proportion of the people live in the cities, where they make manufacturing and trade their chief business. The most important products are cotton and woollen goods, boots and shoes, paper, clocks and watches, jewellery, light hardware, machinery, and rubber goods. Coal is obtained from Nova Scotia and Pennsylvania; flour and meat are brought from the west.

FIG. 68.—BOSTON.

348. **Maine** has extensive forests, which supply valuable lumber, material for pulp, and fuel. The farm products are similar to those of New Brunswick. Granite, slate, lumber, and fish are important exports.

Augusta, the capital, manufactures cottons, boots, and shoes. Portland, the largest city, has a fine harbor, and being connected with Montreal by the Grand Trunk Railway, forms a convenient winter port for that city. **Bangor**, on the Penobscot, is a great lumber depot. **Bar Harbour** is a summer resort.

349. **New Hampshire**, sometimes called the "Granite State," has beautiful mountain scenery. Mount Washington is in this State. Cattle, butter, cheese, granite, and lumber are important products. The State also ranks high in the manufacture of cotton goods.

Concord, the capital, has important granite quarries and carriage factories. **Manchester**, **Nashua**, and **Dover** are chief centres of the cotton manufacture.

350. **Vermont**, which means green mountain, takes its name from its mountains, which are clad with forests of pine and spruce. Dairy farming, grazing, lumbering, and the quarrying of marble, granite, and slate, are the leading industries. Maple-sugar is an important product. Trade is carried on with Canada over Lake Champlain.

Burlington, the chief city, has a fine lake harbor, and is a centre of the lumber trade. **St. Albans** deals largely in dairy produce.

351. **Massachusetts** is a wealthy and populous State. Its great industries are manufacturing and commerce. It produces half the boots and shoes, and a large part of the cotton and woollen goods, and of the finer grades of paper, made in the United States. It ranks first among the States in the quarrying of granite, and in the value of cod fisheries.

Boston, the capital, and the largest city in New England, is a great commercial centre. It is noted for its institutions of learning, its libraries, and its numerous publishing houses. **Lowell**, **Lawrence**, **Fall River**, and **New Bedford** are the great centres of cotton and woollen manufacture. **Worcester** has great variety of manufactures, including engines and machinery. **Lynn**, **Brockton**, and **Haverhill** are noted for boots and shoes; **Springfield** for firearms; **Holyoke** for paper; **Salem** for its tanneries; **Gloucester** for its [illegible] in cod and mackerel fisheries.

352. **Rhode Island**, about half as large as the Island of Cape Breton, is the smallest State in the Union, but it is the most densely peopled. The water-power furnished by its streams has given rise to many manufacturing towns and villages, and the State takes high rank in the manufacture of cotton, woollen, worsted, and rubber goods.

Providence, a railway and manufacturing centre, and the seat of Brown University, ranks second in population among the cities of New England. This city and **Newport**, a famous summer resort, are the alternate capitals of the State.

353. **Connecticut** is about one-fourth the size of Nova Scotia. It has extensive and varied manufactures, including hardware, firearms, silk, cotton, and woollen goods, sewing-machines, clocks.

Hartford, the capital, is a wealthy manufacturing city, and an important centre of insurance business, and the seat of many benevolent institutions. **New Haven**, the seat of Yale University, manufactures carriages and firearms. **New London** is an important centre of fisheries, and a summer resort.

MIDDLE ATLANTIC STATES.

354. This section includes seven States and the District of Columbia. The interior is hilly and mountainous. The Adirondacks and the Catskill Mountains are in New York, the Alleghanies and the Blue Ridge in Pennsylvania. The coast south of New York is low and sandy. A marshy tract in Virginia is called the Great Dismal Swamp.

This is a very wealthy and thickly-settled section. The leading industries are agriculture, mining, manufactures, and commerce. A very large part of the foreign commerce of the United States is carried on through the great cities on New York Bay, Delaware Bay, and Chesapeake Bay.

355. **New York**, the Empire State, exceeds every other State in population, manufactures, commerce, and wealth. It holds the second place in agriculture, yields one-third of the salt made in the United States, and stands high in dairy products and in the yield of barley and hops. Among its leading manufactures are carpets, woollens, clothing, flour, and beer.

New York City, including within its limits Brooklyn and several suburbs, thus forming "Greater New York," has a land area of 360 square miles. It has a large, safe harbor, and through it more than half of the foreign trade of the country is carried on.

FIG. 69.—ELEVATED RAILROAD, NEW YORK.

The making of clothing and the refining of sugar and petroleum are important industries. Crude petroleum is conveyed by pipes from western Pennsylvania.

Albany, the capital, on the Hudson, manufactures stoves and lumber. The State house in this city is a magnificent building. **Buffalo**, on Lake Erie, is a great commercial city, at which wheat, flour, and meat from the west, and coal, salt, and manufactured goods from the east, are transhipped. **Rochester** is noted for the manufacture of flour and clothing; **Syracuse** for clothing, agricultural tools, chemicals, and salt; **Troy** for its iron works; **West Point** for its military academy; **Saratoga** as a summer resort; **Utica** as a cheese market.

356. **Pennsylvania** is a populous and wealthy State. It stands first among the States in the production of coal and petroleum, and is second in the value of manufactures. In the manufacture of iron and steel it surpasses all the other States combined. The eastern plains and the valleys are rich in the yield of wheat and corn; the mountains are covered with valuable forests. Soft coal is obtained in the western part of the State; anthracite from the north-eastern part.

Philadelphia is a great manufacturing and commercial city, its products including woollens, carpets, clothing, locomotives, machinery, steel ships, and refined sugar. Large ocean steamers come up the river to the city. Large quantities of coal are shipped from the neighboring mines. **Harrisburg** is the capital.

Pittsburg and **Allegheny**, in the centre of the bituminous coal and petroleum region, are famous for the making of coke, iron, steel, and plate glass. **Scranton** is an important manufacturing city in the anthracite region. **Erie** carries on trade over the lakes.

357. **New Jersey** is a small State. Its leading industries are manufacturing and market gardening. This State ranks first in the manufacture of silk, pottery, and iron pipe. Its beaches are a favorite summer resort.

Trenton, the capital, is noted for the manufacture of pottery; **Paterson** for silk; **Newark** for machinery, leather, and thread; **Jersey City**, near New York, for chemical works.

358. **Delaware** is, next to Rhode Island, the smallest State in the Union. Manufacturing is the chief industry in the northern section; the raising of peaches and other fruit and vegetables in the southern.

Wilmington, the principal city, has large shipyards, and manufactures railway cars, leather, and gunpowder.

359. **Maryland** is divided into two sections by Chesapeake Bay. This bay has good harbors and valuable oyster beds. Fruit, vegetables, tobacco, and corn are extensively cultivated in the eastern section. In the western section are important coal mines.

Baltimore has a good harbor, and is a great shipping port for the products of the west. The canning of fruit and oysters, and the manufacture of tobacco, are important industries.

Annapolis is the seat of the United States Naval Academy.

360. **Virginia** has a fertile soil. Agriculture is the chief pursuit, the staple products being tobacco, corn, wheat, and pea-nuts. This State has also valuable coal and iron mines. Luray Cave, with its enormous stalactites, and Natural Bridge, an arch of limestone, 200 feet above the water of a small river, are remarkable natural features in a valley west of the Blue Ridge.

Richmond, the capital, and **Petersburg** manufacture tobacco. **Norfolk** has a superior harbor and a United States Navy Yard.

361. **West Virginia** has rich and varied resources. It has extensive forests and grazing lands on the eastern highlands, while the lands towards the west are well suited to agriculture. The State is rich also in coal, petroleum, and natural gas. Harper's Ferry, where the Potomac breaks through the Blue Ridge, is among the places of interest.

Wheeling, the capital, near the coal mines, manufactures iron, steel, and glass.

362. The **District of Columbia** comprises about 70 square miles on the east side of the Potomac. It is under the immediate control of Congress, but has no representation in that body. **Washington**, the national capital, is its chief city.

THE SOUTHERN SECTION.

363. The southern section comprises eleven States. The coast region is low and sandy, is fringed along the sea with low islands, and has few harbors. The Cumberland Mountains and the Blue Ridge extend through the borders of North Carolina and Tennessee, terminating in Alabama

Fig. 70.—Natural Bridge, Virginia.

and Georgia. Agriculture is the chief industry. In the southern portion the principal crops are cotton, rice, corn, sugar, sweet potatoes, oranges, and peaches. Cotton, of which the finest is grown on the sea islands along the Atlantic coast, is the most important product. In the northern parts wheat, corn, pea-nuts, and sweet potatoes are important crops. Horses and hogs are numerous here, and on the dry higher plains of the west many cattle and sheep are reared.

364. **North Carolina** yields rice, tobacco, pea-nuts, and sweet potatoes. Extensive pine forests in the coast region yield lumber, turpentine, tar, pitch, and rosin.

Wilmington, the chief seaport, exports the various products of the State. **Charlotte** manufactures cotton. **Asheville** is a noted health resort. **Raleigh** is the capital.

365. **South Carolina** is a great cotton and rice producing State. Fruit and vegetables are raised for northern markets. The pine forests yield lumber and naval stores. The valuable fertilizer, phosphate of lime, is obtained in large quantities.

Charleston, a leading city of the South, has a good harbor and a large trade. The Civil War began in 1861, by an attack on Fort Sumpter in Charleston harbor. **Columbus** manufactures cotton.

366. **Georgia** is one of the most prosperous of the Southern States. Its leading products are cotton, rice, peaches, sweet potatoes, sugar, lumber, turpentine, and rosin. The manufacture of cotton, lumber, and naval stores is important.

Savannah, on the Savannah River, exports the various products of the State. **Atlanta** is a great railway centre, manufactures cotton, and has a large commerce. **Augusta**, **Columbus**, and **Macon** manufacture cotton, lumber, and fertilizers.

367. **Florida** is very low and level. The southern part of the State, known as the Everglades, is a marshy tract, formed by coral reefs raised slightly above the water surface. The inhabitants are mostly in the north. The products include oranges and other fruits of hot countries.

Jacksonville, an important port, and **St. Augustine**, the oldest town in the United States, are noted winter resorts. **Key West**, on an island, manufactures cigars.

368. **Alabama** ranks first among the Southern States in the production of coal, and third in the Union in the production of iron. Cotton, corn, and sweet potatoes are the leading agricultural products.

Mobile exports much cotton, and has large lumber mills. **Montgomery**, the capital, is a trade centre. **Birmingham** and **Anniston** are the chief centres of the iron manufactures of the State.

369. **Mississippi** is a land of broad, fertile plains, largely devoted to the growth of cotton. **Jackson** is the capital.

Vicksburg and **Natchez** are large cotton markets.

370. **Tennessee** is varied in physical features and in products. The eastern part is mountainous, and produces coal, iron, and timber. In middle Tennessee, which is the

Fig. 71.—Picking Cotton, Mississippi.

most populous section, the raising of corn, wheat, and tobacco, and the care of stock, claim chief attention. Cotton and tobacco are the staples in the western section.

Nashville, the capital, is an important commercial city. **Memphis**, on a high bluff overlooking the Mississippi, is a great cotton market, and manufactures cotton-seed oil. The river is here spanned by a great bridge, making Memphis an important railway centre. **Knoxville** has foundries, rolling-mills, and sawmills.

371. **Arkansas** has extensive river plains, which yield large crops of cotton, corn, and peaches. The higher lands have valuable forests. Coal is an important product.

Little Rock, the capital, manufactures cotton-seed oil and lumber.

372. **Louisiana** has large river plains, which are protected from inundation by levees. These lowlands yield most of the sugar-cane and half of the rice produced in the United States. Cotton also is an important product of the State.

New Orleans is situated on both sides of the Mississippi, a hundred miles from its mouth. It is protected against inundation by embankments, over which the drainage of the city is pumped into Lake Pontchartrain by steam power. **New Orleans** is the greatest cotton shipping port in the world. **Baton Rouge** is the capital.

373. **Texas** is the largest State in the Union. The south-eastern portion is low, and near the coast it is swampy. This section yields sugar-cane, but its chief product is cotton, in which Texas ranks first among the States. Through the middle of the State are vast prairie lands of great fertility, yielding wheat, corn, and fruit. This section, as well as the more arid plains farther west, is a great grazing country.

Austin is the capital. **Galveston**, the chief seaport, exports the products of the State. **Dallas** and **Fort Worth** are railway centres.

374. Oklahoma and Indian Territory were united and organized as a State under the name of **Oklahoma** in 1907. Its chief products are maize, wheat, oats, flax, cotton, potatoes, and the fruits of warm-temperate climates. The western portion of the State is devoted largely to stock-raising.

Petroleum, coal, lead, and zinc are among the mineral products. The manufactures are confined chiefly to flour and cotton-seed meal. Indians form about one-tenth of the population.

375. **Guthrie** is to be the capital until 1913, after which another city may be chosen. **Oklahoma** is the largest city.

EAST CENTRAL SECTION.

376. This section, comprising six States between the Mississippi and the Alleghanies, is noted for the production of wheat, corn, tobacco, and flax; also for its iron, copper, lead, and coal mines. Cattle, sheep, and hogs are numerous, and in the northern part are extensive forests.

377. **Kentucky** ranks first among the States in the production of tobacco and hemp. Indian corn is the staple crop. Many horses, cattle, sheep, and hogs are reared. The celebrated Mammoth Cave is in this State.

Louisville manufactures tobacco, leather, and malt and distilled liquors.

378. **Ohio** has immense sources of wealth in its soil, mines, and trade facilities. It yields great crops of wheat, corn, tobacco, and fruit. It ranks first in the Union in the production of wool, second in petroleum, and has valuable coal and iron mines.

Cincinnati, on the Ohio, manufactures clothing, distilled and malt liquors, machinery, and other goods, and has a large trade in grain and pork. **Cleveland** carries on extensive trade over the lakes in iron ore, grain, and pork, and manufactures iron, steel, machinery, lumber, and ships. **Columbus** is the capital.

Indiana is a leading agricultural State, standing high in the raising of wheat, corn, oats, and potatoes. Cattle, sheep, and hogs are numerous.

Indianapolis, the capital, situated in a rich agricultural country, is a great railway centre. The manufacture of flour and meat-packing are important industries.

379. **Illinois** is a great food-producing State, comprising among its products, wheat, corn, and meat. Its coal mines are of great value.

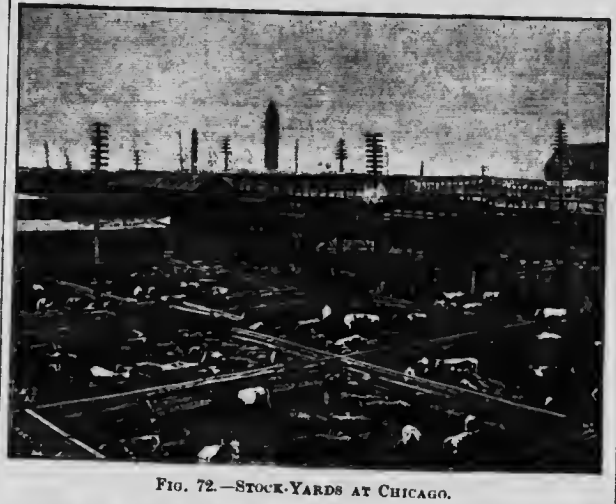

FIG. 72.—STOCK-YARDS AT CHICAGO.

Chicago is one of the greatest grain and meat markets in the world. Its factories, mills, and tanneries are busy hives of industry. It has every facility for trade through lake and railway transport. The Chicago River is connected with the Illinois by a canal, giving a water road from Lake Michigan to the Mississippi. **Springfield**, the capital, is near a coal-mining district. **Quincy** manufactures flour, **Rockford** agricultural implements, **Elgin** watches, **Joliet** iron and steel.

380. **Michigan** consists of two peninsulas. The northern section is rich in copper, iron, salt, and pine forests. The southern section is a fertile agricultural country, yielding wheat, apples, dairy produce, and wool.

Detroit manufactures lumber, railway cars, machinery, and tobacco. It has a large trade. **Lansing** is the capital.

381. **Wisconsin** has extensive pine forests and rich iron ore in the northern part; the southern part is a prairie country, yielding oats, barley, wheat, and tobacco.

Fig. 73.—City Hall, Milwaukee.

Milwaukee is a great shipping port for grain and lumber. It has large breweries and distilleries. **Lacrosse** and **Oshkosh** are centres of the lumber trade. **Madison** is the capital.

WEST CENTRAL SECTION.

382. This section comprises seven States situated between the Mississippi River and the Rocky Mountains. The eastern half of the section is a vast prairie country of wonderful fertility, yielding wheat, corn, barley, oats, tobacco, and flax. The more elevated western half is an arid country, and, except where aided by irrigation, is not adapted to agriculture. Stock-raising is here the great industry. The young cattle reared on the arid plains are sold to the farmers of the grain-producing lands on the east, to be fattened for the city markets. Some of the States of this section have vast resources in their mines and their forests.

383. **Minnesota** is the greatest wheat-growing State in the Union. The fertile alluvial valley of Red River is almost unequalled for the growth of wheat. About half of this State is covered with forests. Pine abounds in the north, oak in the south-west of the State. The iron mines in the north-eastern section are of unsurpassed richness.

St. Paul, at the head of navigation on the Mississippi, and **Minneapolis**, near the Falls of St. Anthony, though having distinct corporations, are so built up as to form practically one great city. The falls give Minneapolis vast water-power, which have led to its becoming one of the greatest lumber and flour-producing cities in the world. **Duluth** has an excellent harbor at the head of navigation on Lake Superior, and ships large quantities of wheat, flour, lumber, iron ore, and copper.

384. **Iowa** is a fertile prairie State, and holds high rank among the States in the producing of corn, wheat, barley, oats, hay, potatoes, cattle, dairy produce, hogs, and coal.

Des Moines, the capital, is a railway centre in a grazing and mining region. **Dubuque** manufactures lumber and carriages.

385. **Missouri** comprises a prairie region in the northern part of the State, in which the raising of grain, sorghum, cattle, and swine are the chief industries; and a highland region in the south, in which lumbering and grazing are leading pursuits. Coal, zinc, and lead are also important products.

St. Louis ranks fourth as regards population among the cities of the United States. Its leading manufactures are flour, malt liquors, and tobacco. The city is a great trade centre for the products of the Mississippi valley. **Kansas City**, **St. Joseph**, and **Springfield** are important cities.

386. **Kansas** comprises a grazing and stock-raising region on the west, and an agricultural region on the east. Coal-mining is also an important industry.

Kansas City is situated on the Missouri River, opposite Kansas City in Missouri, and, like it, has meat-packing as a leading industry. **Topeka**, the capital, manufactures flour. **Wichita** and **Leavenworth** are important cities.

387. **Nebraska**, like Kansas, has a grazing country on its west side, and an agricultural country on the eastern.

Omaha is connected with Council Bluffs in Iowa, on the opposite side of the Missouri, by a great railway bridge. Among its industrial establishments are great breweries, silver-refining works, and meat-packing houses. **Lincoln**, the capital, is a trading centre.

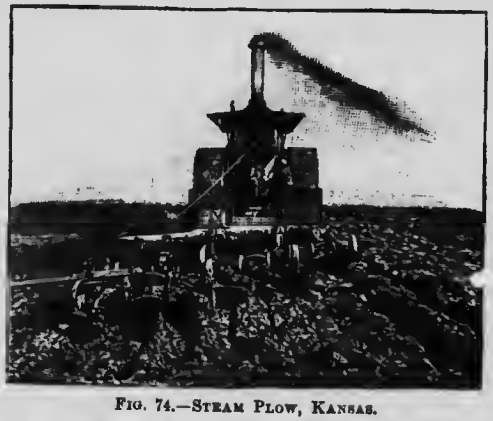

Fig. 74.—Steam Plow, Kansas.

388. **South Dakota** has an agricultural section on the east, in which wheat and flax seed are leading products. The Black Hills in the west yield gold, silver, and tin.

Sioux Falls and **Deadwood**, in the mining region, are the chief towns.

389. **North Dakota** has immense wheat farms in the east, and vast grazing lands in the west.

Fargo and **Grand Forks** are the leading towns.

THE HIGHLAND SECTION.

390. This section is situated on the table-land and mountains of the west, comprising eight States. It is noted for the grandeur of its physical features and the richness of its mineral products, including gold, silver, copper, and lead. In the north the winter season is very cold; in summer the days are hot and the nights cool. The mountains have abundant rainfall, and their lower slopes are covered with forests. Except where watered by irrigation, the table-lands are too dry for agriculture; but they yield a coarse grass which affords good pasturage for cattle and sheep. The animals reared on the plains are sent to the grain-producing States to be fattened.

391. **Montana** yields copper, silver, and gold. Many cattle and sheep are reared. Portions of the State are held as Indian reservations.

Helena, Butte, and **Anaconda** are mining centres.

392. **Idaho** is a great gold, silver, and lead-producing State. In the north, where there is considerable rain, grain is successfully cultivated, and the forests yield valuable lumber.

Boisé, the capital, is in the neighborhood of gold and silver mines.

393. **Wyoming** is remarkable for its wild mountain scenery. National Park, around Yellowstone Lake, is celebrated for its canyons, waterfalls, geysers, and hot springs. This State, in addition to gold and silver, has valuable coal mines. Mining and the rearing of cattle and sheep are the chief industries.

Cheyenne, Laramie, and **Rock Springs** are the principal towns.

394. **Colorado** is rich in minerals, producing more silver than any other State, and standing next to California in gold. Stock-raising receives much attention. Through irrigation, agriculture is made profitable, especially on the east of the Rockies.

Denver is a railway centre, and in business affairs is closely connected with the mining and grazing industries of the State. **Pueblo** manufactures iron, and refines petroleum. **Colorado Springs** is a health resort. **Leadville** is near rich lead and silver mines.

395. **Utah** was first settled by Mormons, and they still form the majority of the population. It yields much lead, silver, and wool. Through the aid of irrigation, agriculture is successfully carried on in the region lying west of the Wahsatch Mountains.

Salt Lake City is the largest city, and is the headquarters of Mormonism. The Mormon Tabernacle and Temple, erected at immense cost, are imposing buildings.

FIG. 75.—THE TABERNACLE AND THE TEMPLE, SALT LAKE CITY.

396. **Nevada** is principally within a basin-like plateau, surrounded by mountains. Its chief products are gold, silver, and lead. Agriculture is practicable along the Humboldt River, and in certain mountain valleys.

Virginia City is a famous mining centre. **Carson City** is a health resort. **Reno** is a trading centre.

397. **New Mexico** is now a State. Stock-raising and the mining of coal, gold, and silver are the chief industries. People of Spanish descent and Indians form a large part of the population. The Indians live in communal villages, many families occupying one large brick building, each having its own room.

Albuquerque, Las Vegas, and **Santa Fé** are the chief towns.

398. **Arizona** is a very hot, arid country. Watered by irrigation, some districts yield sub-tropical products. The mining of copper and silver is the most important industry. Indians and people of Spanish descent are numerous.

Phenix and **Tucson** are the chief towns.

THE PACIFIC SECTION.

399. This section comprises three States. It has much grand mountain scenery. On the Pacific coast the winters are very mild, and the heavy rainfall is chiefly at this season. On the east of the mountain ranges there is little rain, and there is great difference between winter and summer temperature. The warm coast valleys are very fertile, yielding wheat and other grain, grapes, oranges, and many other kinds of fruit in great abundance. Many cattle and sheep are reared on the drier lands of the interior. The gold mines on the western slopes of the Sierra Nevadas are among the richest in the world. Magnificent forests cover the western slopes of the mountains.

FIG. 76.—POPOCATEPETL.

400. **Washington** has great wealth in its forests, and the manufacture of lumber is a great industry, especially along Puget Sound. In this region also, as in other parts, agriculture is an important pursuit. The salmon fisheries of the Columbia River are a source of much wealth.

Seattle, in a lumbering and coal-mining region, **Tacoma**, and **Spokane** are the chief places.

401. **Oregon** has valuable pine forests on the western slopes of the mountains, important salmon fisheries in the Columbia River, and rich gold mines in the mountains. Wheat, fruit, and wool are also important products.

Portland, on the Williamette, is the chief trade-centre; **Salem** manufactures flour; **Astoria** is the centre of the salmon-canning industry.

402. **California** is a large State, with vast and varied resources. Its products comprise wheat, apples, grapes, plums, oranges, wool, gold, quicksilver, and lumber. Wine-making, sugar-refining, and fruit-canning are important industries. The gigantic redwood trees, on the western slopes of the Sierra Nevadas, are unsurpassed in size by the world's forests.

San Francisco is the largest city on the Pacific coast of America. It has a fine harbor on a large bay, the entrance to which is called the Golden Gate. The city has a vast trade with Asia and Australia, with Europe, and with the Eastern States. **Oakland**, on the opposite side of the bay, has close business relations with San Francisco. **Sacramento** is in a rich agricultural region. **Los Angeles** is in the orange-growing region.

403. **Alaska** comprises a large peninsula between the Pacific and Arctic Oceans, and a coast country about thirty miles wide on the west of the Canadian North-West. The southern coast country is mountainous, has a mild, humid climate, and is clad with forests. The interior is varied with forests and treeless plains, and has very long, cold winters. Grasses and vegetables grow well on the south coast, but the climate is too humid for grain to ripen.

The inhabitants are mostly Indians and Eskimos. Hunting fur-bearing animals, fishing, and gold-mining are the chief industries. The yield of gold in 1904 was $9,000,000.

404. The **Pribyloff Islands**, off the coast, are noted as the breeding ground of the fur seal of the northern Pacific.

Sitka, on Baranoff Island, is the capital. **Juneau** and **Nome** are mining towns. Alaska is ruled by a governor and board of commissioners.

MEXICO.

405. **Physical Features.**—Mexico lies south of the United States, from which it is separated in part by the Rio Grande. The interior and greater part of the country is table-land, varying in height from 4,000 feet in the north to 8,000 feet toward the south. On the eastern and

western sides of this plateau are mountain ranges, of which the western range, known as the Sierra Madre, is the more elevated and continuous. The highlands rise abruptly from the Pacific coast; the ascent from the broader plain in the east is more gradual.

Several volcanic peaks, in a line east and west near the 19th parallel, rise like colossal mounds from the plateau. The most noted of these are *Orizaba*, *Popocatepetl*, and *Iztaccihuatl*. Earthquakes are of common occurrence throughout the whole country.

406. The **climate** varies according to the elevation, from tropical heat on the low coast to perpetual snow on the extreme mountain heights. The hot, humid region of the Gulf coast, extending about 50 miles inland, is very unhealthy, especially in the rainy season, when the sun is north of the Equator. The northern part of the plateau has but little rain.

407. **Products.**—Vegetation varies with the elevation. The forests of the table-lands yield mahogany, rose-wood, rubber trees, dye-woods, and vanilla. The cultivated crops in this hot region comprise sugar-cane, rice, coffee, cassava, tobacco, indigo, and tropical fruits. The highland plains yield the products of temperate climates. Wheat and beans are the most important crops. Large tracts of country on the table-lands are too dry for agriculture, but they are valuable as pasture lands for cattle, horses, mules, and sheep.

408. The maguey or century plant, a species of agave, is cultivated for various uses. Its sap, when fermented, is the favorite Mexican beverage called pulque. Another species of the same plant, grown chiefly in Yucatan, yields the valuable fibre known as henequen or sisal hemp, which is made into rope and paper.

Mexico is rich in **minerals**, of which gold, silver, lead, copper, and onyx are the most important. It stands first among the countries of the world in the production of silver, and sixth in gold.

409. **Inhabitants.**—It is estimated that about one-fifth of the people are of pure Spanish descent, about one-half are mixed Spanish and Indian, and the rest are pure Indian. Roman Catholicism is the principal religion. The general education of the people is provided for by statute, but the law is not rigidly enforced.

410. When Mexico was first visited by Europeans, it was inhabited by a comparatively civilized people called Aztecs. The people were conquered and subjected to Spain in 1521. There are still extant in Mexico many remains of the old Indian civilization, such as ruins of cities, aqueducts, statues, pyramids, and various works of art. The most remarkable of these are the ruins of Chichen in Yucatan, and the pyramid of Cholula near Puebla.

411. **Cities.—Mexico City**, the capital, on the site of the Aztec capital, is 7,470 feet above the sea, and is overlooked by lofty volcanic mountains. It is a beautiful city. Many of the houses are of stone or adobe, and enclose courtyards with flower-gardens in a central open space.

412. Puebla is the chief manufacturing city. Among its products are Puebla blankets. Onyx is obtained near the city. Vera Cruz, Tampico are the chief ports on the Gulf. Vera Cruz has a poor harbor, so that vessels must lie off, and be loaded and unloaded by the aid of boats. The city is connected with the capital by railway. **Matamoros** is a river-port. **Guaymas**, connected with the United States by railway, **Acapulco**, and **Mazatlan** are the principal ports on the Pacific coast.

413. The **trade** of Mexico is chiefly with the United States, and with Great Britain. The principal **exports** are

FIG. 77.—MARKET-PLACE, CITY OF MEXICO.

silver, gold, copper, animals, hides, hemp, coffee, cabinet woods, and vanilla. The **imports** are manufactured goods of cotton, woollen, linen, and iron. Mexico has about 7,000 miles of railway.

414. Mexico is a **federal republic** of twenty-seven States, with a constitution similar to that of the United States. After many years of settled government and prosperity under the rule of President Diaz, the peace of the country has recently been much disturbed by civil war.

CENTRAL AMERICA.

415. Central America, so called from its position, naturally embraces the country between the Isthmus of Tehuantepec and the Isthmus of Panama. Politically it is less extensive, the northern portion of this territory belonging to Mexico, and the southern to Colombia.

416. The **physical features** are similar to those of Mexico, but the plateau of the interior is not so high as that of Mexico. The western mountain range has several active volcanoes, of which *Agua* is the most noted. Earthquakes are of frequent occurrence.

417. The **climate** on the low coast is very hot, and in the rainy season, beginning towards the end of May, it is very unhealthy. The highlands of the interior are less humid and more salubrious.

418. The **products** are coffee, bananas, tropical fruit, tobacco, indigo, sugar, corn, wheat, and beans. The forests yield mahogany, dye-woods, rubber, and medicinal plants. The dry highlands afford pasturage for cattle and other animals. Gold and silver are obtained in considerable quantity.

419. Many of the **inhabitants** are of mixed origin—Spanish and Indian—and over one-half are pure-blooded Indians. Those of pure Spanish descent are not numerous, but they include the chief men of affairs. Nearly all are Roman Catholics.

420. **Divisions.**—Central America comprises six republics —*Guatemala*, *Honduras*, *San Salvador*, *Nicaragua*, *Costa Rica*, and *Panama*—and the Crown Colony *British Honduras*. Panama separated from Colombia and became independent in 1903.

On gaining their independence of Spain in 1823, the various States formed themselves into a federal republic This was, after a few years, dissolved. The peace and progress of the country have been greatly disturbed by internal strife. In 1896, Honduras, San Salvador, and Nicaragua united under the name of the Greater Republic of Central America for purposes affecting their foreign relations, each State still managing its own internal affairs. Through the action of San Salvador this union has not gone into effect.

The **foreign commerce** is chiefly with the United States, Great Britain, France, and Germany. The **exports** are coffee, indigo, bananas, tobacco, sugar, dye-stuffs, rubber, mahogany, and hides. The **imports** comprise cottons, woollens, machinery, and iron.

421. **Guatemala** has great resources, comprising fertile soil, extensive forests, and mines of gold and silver. While it is further advanced in modern improvements than the other States, its resources are largely undeveloped. Coffee is the most important export.

New Guatemala is the capital and largest city.

422. **Honduras** has a very fertile soil, and rich resources in its forests and mines. It has also good harbors both on the Atlantic and Pacific coasts. Little has been done, however, by the people to make the natural wealth of their country available. The public roads are in a wretched condition, and money borrowed for the construction of railways has been diverted from its proper object. The chief **exports** are live stock, bananas, coffee, and mahogany Trade is chiefly with the United States.

Tegucigalpa, in the interior, is the capital. **Amapala** and **Puerto Cortez** are the chief ports.

423. **San Salvador**, next to Panama the smallest of the six republics, is second in population, and the first in wealth and enterprise. A large part of the soil is under cultivation. The products are coffee, indigo, and tobacco. The minerals include gold, silver, and copper.

New San Salvador, the capital, has suffered much from earthquakes.

424. **Nicaragua** has great wealth in its fertile soil, grazing lands, forests, mines, and fisheries. The country has been much disturbed by almost constant civil wars, due to the rivalry of cities and of ambitious men. The chief **export** is coffee; the **imports** are manufactured goods of various kinds.

Managua is the capital. **Leon** is the largest city.

425. **Costa Rica** is one of the most prosperous States of Central America. The country is thinly settled, but the people are progressive, and lovers of good order. The chief **exports** are coffee, bananas, hides, and various kinds of wood.

San José is the capital. **Lamon**, on the Caribbean Sea, and **Punta Arenas**, on the Pacific, are the chief ports. A railway, when completed, will connect these cities.

426. **Panama**, on the narrow isthmus, is crossed by a railway between Colon and Panama. A ship canal, about 50 miles long, joining the Atlantic and the Pacific, has been constructed by the Government of the United States.

Panama is the capital of the republic.

427. **British Honduras**, on the Caribbean Sea, yields coffee, bananas, and other tropical fruits. The staple products are mahogany and logwood. The people are mostly colored. The trade is chiefly with Great Britain.

Belize, the capital, is the chief town.

WEST INDIES.

428. The West Indies comprise three groups—the *Bahamas*, the *Great Antilles*, and *Little Antilles*. The Great Antilles are the four large islands, *Cuba*, *Haiti*, *Jamaica*, and *Porto Rico*. The Little Antilles comprise the *Virgin Isles*, the *Leeward Isles*, and the *Windward Isles*. Viewed with respect to the trade wind, the names of the two last mentioned should be reversed.

429. The Bermudas, comprising about 300 islets and rocks, with a total area of about 20 square miles, are not included in the West Indies. They have a delightful climate, and are a favorite health resort. The products are Easter lilies, tomatoes, onions, potatoes, oranges, and bananas. The capital is *Hamilton*, on Main Island. The islands form an important British naval station.

430. The **Great Antilles** have low coast lands, and highlands in the interior. Most of the Little Antilles are elevated.

The total **area** of the West Indies is estimated at 94,000 square miles, of which the Great Antilles comprise over seven-eighths, and Cuba alone comprises nearly half.

The **climate** is hot and humid. Frost sometimes occurs in the highlands, but snow is unknown. The rainy season, which is from the first of July to November, is very unhealthy, especially for persons not accustomed to the climate. The islands are often visited by earthquakes and by violent and destructive hurricanes.

Sugar is the staple **product**. It is estimated that the West Indies yield one-fourth of the world's cane-sugar. The other important products are coffee, cacao, bananas, pine-apples, oranges, limes, cocoa-nuts, pimento, and tobacco. There are large forests on the larger islands, which yield cabinet and dye-woods.

431. A large proportion of the **inhabitants** of the West Indies are negroes, whose ancestors were brought from Africa as slaves. Nearly all the people in Haiti are negroes, and in Jamaica and the smaller islands negroes are much more numerous than are white people. In Cuba and Porto Rico white people, chiefly of Spanish origin, form about five-eighths of the population.

432. In Trinidad and some others of the British Islands, many laborers, known as Coolies, have been brought from India to work on the plantations. They come under contract to work for a certain number of years, and at the expiration of the term they have their choice of free lands for settlement, or a free passage to their native land.

433. **Cuba** was released from Spanish rule in 1898, and is now a republic under the protection of the United States. The island is about 750 miles in length. It is accounted the greatest producer of cane-sugar in the

WEST INDIES

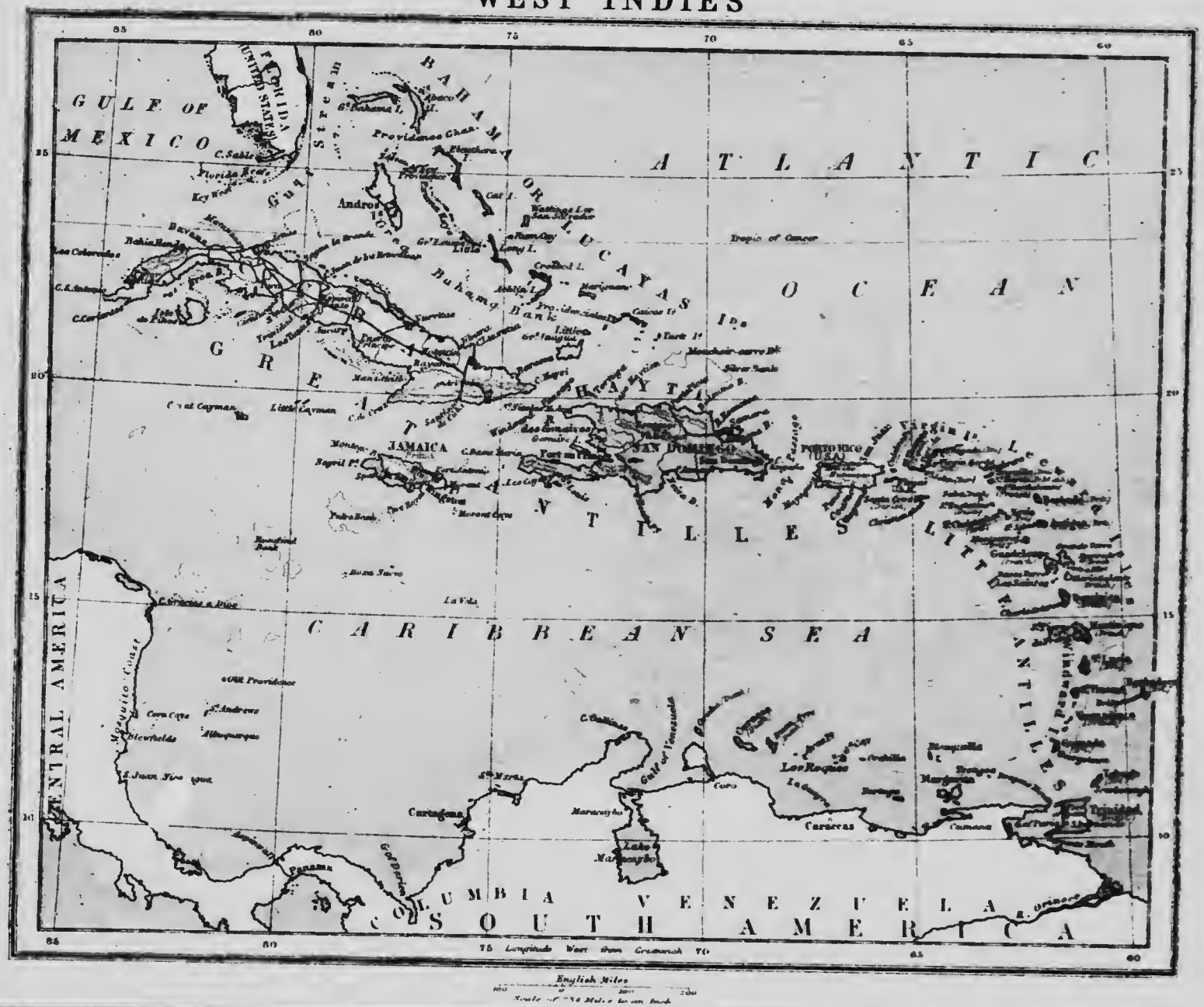
GULF OF MEXICO
ATLANTIC OCEAN
BAHAMAS
GREAT ANTILLES
LESSER ANTILLES
CARIBBEAN SEA
CENTRAL AMERICA
SOUTH AMERICA
FLORIDA (U.S.A.)
Florida Keys
Key West
C. Sable
Andros I.
Providence Chan.
Bahama Bank
Great Bahama I.
Grand Cayman
Little Cayman
JAMAICA
Port Royal
HAYTI
SAN DOMINGO
PORTO RICO (U.S.A.)
Virgin Is.
La Vela
C. Gracias a Dios
Mosquito Coast
Old Providence
Curaçoa
Gulf of Venezuela
Los Roques
Caracas
Maracaybo
Lake Maracaybo
Panama
COLUMBIA
VENEZUELA
Orinoco R.
Tropic of Cancer
75 Longitude West from Greenwich 70
English Miles

FIG. 78.—SUGAR PLANTATION.

world. Other important products are tobacco, fruit, honey, wax, and mahogany. Its sugar and tobacco are sent chiefly to the United States. The imports are manufactured goods, flour, fish, beef, and rice. Cuba has about 1,000 miles of railway. About two-thirds of the inhabitants are whites. The remainder consists mainly of negro and mixed races.

Havana, the capital, has a superior harbor and large trade. Havana cigars have high repute. **Santiago de Cuba** exports iron-ore, copper, and manganese. **Matanzas, Puerto Principe, Santo Espiritu, Holguin**, and **Cienfuegos** are important cities.

434. **Porto Rico**, considered the best of the West Indies, was ceded to the United States by Spain in 1898. It is about 108 miles long, and about one-third of that in width. The soil is very fertile, and the climate is delightful, the heat being modified by cool winds. Sugar is the staple product on the lowlands; coffee and tobacco are grown on the highlands. Bananas are the chief food of the poor.

San Juan is the capital; **Ponce** is the chief trade centre.

435. The island of **Haiti** is about as large as New Brunswick. The soil is fertile, producing tobacco, coffee, cocoa, bananas, and sugar-cane. The forests yield mahogany and logwood. The island consists of two republics—*Haiti* on the west, and *Santo Domingo* on the east.

436. **Haiti** comprises over one-third of the island. Nine-tenths of the people are negroes, the others chiefly mulattoes. This part of the island formerly belonged to France, and a corrupt form of French is the language of the people.

Port-au-Prince, the capital, has a good harbor.

437. **Santo Domingo** comprises nearly two-thirds of the island. The people are chiefly of mixed origin—Spanish and Indian, or Spanish and negro. Spain formerly owned this part of the island, and Spanish is still the language of the republic.

Santo Domingo is the capital.

THE BRITISH WEST INDIES.

438. The British West Indies are divided into six political divisions—the *Bahamas, Jamaica, Leeward Isles, Windward Isles, Barbados, Trinidad.* Each division has a distinct government, having its own governor and legislature. In some the legislature comprises a representative Assembly; in others it consists of a Council appointed by the Crown.

439. The **Bahamas**, including many rocky islets of coralline-formation, are very numerous, but only twenty, of which Andros is the largest, are inhabited. The entire area is about one-fourth that of Nova Scotia. The climate, tempered by sea-breezes, is free from extremes of heat and cold, and is very salubrious. The products are pine-apples, oranges, and other fruit; also sisal,

yielding a valuable fibre used for cordage. Collecting sponges is an important industry. **Nassau** is the capital.

440. **Jamaica**, the largest of the British West Indies, has an area about one-fifth that of Nova Scotia. In a population of 640,000, only about 15,000 are white people, the others being negroes, mulattoes, and East Indians. The exports are sugar, molasses, rum, coffee, bananas, cacao, cocoa-nuts, and spice. The imports are manufactured goods, flour, fish, and rice. *Turks Island*, which yields salt, *Caicos*, and some other small islands, are attached to the government of Jamaica. **Kingston**, the capital of Jamaica, has a fine harbor.

441. The **British Leeward Isles**, including also the *Virgin Isles*, have only about 5,000 white people out of a total population of over 125,000. The products are sugar, pine-apples, limes, and other fruit. **St. John's**, on Antigua, is the capital.

442. The **Windward Isles** comprise Granada, St. Vincent, the Grenadines, and St. Lucia. The products are sugar, cocoa, spices, and fruit. These islands are united for certain common purposes, but each has a separate government.

443. **Barbados** properly belongs to the Windward group. Nearly all the land is under cultivation. The exports are sugar, rum, and molasses. **Bridgetown**, the capital, is the principal city.

444. **Trinidad** is varied with lowlands and mountains. It has a celebrated pitch lake, from which large quantities of asphalt are obtained. The exports are sugar, molasses, coffee, cocoa-nuts, fruit, and asphalt. Much of the labor is performed by coolies from India. **Port of Spain**, the capital, has a good harbor. The island of Tobago is attached to the government of Trinidad.

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445. The **French West Indies** comprise *Guadeloupe*, *Martinique*, and several very small islands in the Little Antilles. Sugar is the chief product. The islands also yield coffee, cacao, tobacco, bananas, sweet potatoes, and manioc.

446. **Guadeloupe** consists of two islands—*Basse-Terre* and *Grande-Terre*—separated by a narrow channel. Pointe-a-Pitre is the chief place. **Martinique** is mountainous. St. Pierre is the chief port.

447. The **Danish West Indies** are *St. Croix*, *St. Thomas*, and *St. John*. Most of the inhabitants are negroes. Sugar is the chief product.

448. The **Dutch West Indies** comprise *Curaçao*, *Bonaire*, *Aruba*, *St. Eustache*, *Saba*, and the southern part of *St. Martin*. The products are maize, beans, fruit, and salt.

Willemstadt is the capital.

DANISH AMERICA.

449. In addition to her small possessions in the West Indies, Denmark owns the islands of Greenland and Iceland in the Arctic Ocean.

450. **Greenland** is of unknown extent, its northern limit not being exactly ascertained; nor is it known whether it is a single island or consists of several islands, for the greater part of it is covered over by a vast mass of ice. In many places great glaciers extend down to the coast, where huge icebergs break off and float out into the ocean. As the summer days are long, the heat is sufficient for hardy vegetables to mature on the southern coasts; but the vegetation consists chiefly of shrubs, grasses, and lichens. The animals comprise the reindeer, musk ox, polar bear, fox, walrus, seal, and aquatic birds.

The inhabitants are chiefly Eskimos, who have been converted to Christianity by Moravian missionaries. They live by hunting and fishing, clothe themselves in fur, and dwell in rude huts made of stone or of ice and snow. There are small trading settlements of Danes along the coast, of which *Upernavik* (72° 48′) is the most northerly. The exports are seal oil, seal-skins, furs, and eider-down.

Fig. 79.—Eskimo and Dogs.

451. **Iceland** is a rugged, mountainous country. The mountain sides are covered with vast glaciers. There are several active volcanoes, of which *Hecla* is the most noted. Large tracts of country, once grazing lands, are covered with broken lava which at different times has issued from the volcanoes. Hot springs and geysers are a remarkable feature. **Great Geyser**, generally a small pool, at irregular intervals throws boiling water to a height of 100 feet.

The southern coast is washed by warm ocean currents, which so temper the winds coming over them as to give Iceland a climate less severe than is generally found in countries as far north. Potatoes, turnips, and other vegetables are cultivated, but the chief industries are the rearing of cattle and horses, and fishing.

452. The **inhabitants**, chiefly of Norwegian descent, are intelligent, well educated, and profess the Lutheran religion. **Reikiavik**, near the south-west coast, is the capital. The government of Iceland is vested in a Governor, appointed by the Crown of Denmark, and a representative Assembly.

SOUTH AMERICA

SOUTH AMERICA.

FIG. 80.—CHIMBORAZO.

1. The whole of South America, except Patagonia, was conquered and colonized by the Portuguese and Spaniards early in the sixteenth century. Brazil thus became subject to Portugal, the remainder to Spain. During the last quarter of the nineteenth century, the Spanish states, after severe struggles, gained their independence. They have since been much disturbed, and their prosperity has been greatly retarded, by internal dissensions. Brazil became independent in 1822. It was ruled by a branch of the royal family of Portugal until 1889, when it became a republic.

Guiana is the only portion of South America now owned by Europeans.

2. **Position.**—The greater part of South America lies south of the Equator, and about three-fourths of its area are in the Torrid Zone.

Lat. 12° 28′ N.—55° 55′ S.; lon. 35°—81° 30′ W.

3. **Coast.**—The coast line is remarkably regular.

4. The islands off the coast are *Trinidad*, and several of the smaller West Indies; *Joannes* or *Marajo*, in the mouth of the Amazon; *Falkland Isles; Tierra del Fuego; Cape Horn Island;* a chain extending northerly from Cape Horn, ending with *Chiloe; Juan Fernandez;* and *Galapagos.*

5. **Marajo**, in the mouth of the Amazon, belonging to Brazil, is about 180 miles in length. Large herds of cattle feed on its luxuriant grasses.

6. The **Falkland Isles**, 300 miles east of Patagonia, consist of about 200 islands, of which only two, East Falkland and West Falkland, are of considerable size. The islands afford pasturage for many cattle, horses, and sheep, and their good harbors are a refuge for southern whalers and for ships passing around Cape Horn. They belong to Great Britain. Population, 1,800.

7. **Tierra del Fuego** (*Land of Fire*), separated from the mainland by the Strait of Magellan, comprises several rocky, volcanic islands. The natives are of small stature, and are among the most degraded savages. The islands are divided between the Argentine Republic and Chile.

8. **Juan Fernandez**, 400 miles east of Chile, to which it belongs, is a rocky islet 18 miles in length. It is noted as the scene of the adventures of Robinson Crusoe.

9. The **Galapagos**, belonging to Ecuador, 700 miles from the mainland, comprise a group of thirteen volcanic islands, the largest of which is 60 miles in length. The highlands are covered with tropical forests. The islands are noted for large turtles. Population about 200.

10. **Area.**—South America has an area of about 7,300,000 square miles. Its length is 4,550 miles; breadth, 3,200 miles.

11. **Physical Features.**—South America, like North America, has a great highland region on the west, another of less elevation on the east, and a central plain between them.

12. The **Andes** extend along the western side of the continent from 50 to 150 miles from the Pacific Ocean. In the north there are three ranges separated by river valleys; throughout the middle of their course there are two ranges, separated by high table-land; and in the south there is but one range. The most elevated peaks, which are exceeded only by the Himalayas in Asia, are four and a half miles in height.

13. The table-lands between the parallel ranges are from 6,000 to 13,000 feet in height. They have an extreme breadth of about 100 miles in Bolivia. Ages ago, when the climate was more humid, the plateau of Bolivia was occupied by great lakes, which now have been greatly reduced in size or have entirely disappeared. Titicaca, about half the size of Lake Ontario, is the largest of those that remain.

FIG. 81.—RELIEF MAP OF SOUTH AMERICA.

14. The summits of the Andes are barren and rocky, with numerous snow-clad peaks rising above the general level. The average height is greatest in Ecuador and Bolivia, and here also are found some of the highest peaks.

15. *Nevada de Sorata*, in Bolivia, according to some measurements, rises to the height of 24,000 feet. *Chimborazo*, in Ecuador, has an elevation of 20,498 feet above the sea-level. Its height above the valley of Quito at its base is 11,958 feet. It was once thought to be the highest mountain in the world.

Farther south, the general height of the Andes is much less; but the peak of *Aconcagua*, in Chile, rising far above the ordinary level, has an elevation of 23,080 feet.

16. The Andes abound in deep gorges, sometimes called *quebradas*, at the bottom of which are rushing, foaming streams. These breaks are sometimes from 2,000 to 3,000 feet in depth. They often present almost insuperable difficulties to the traveller crossing the mountains, taxing to the utmost his courage and powers of endurance. Sometimes his path lies along the edge of rocky precipices, with scarce a foothold, where a single false step would hurl him into the depths below; sometimes it leads him beneath impending

rocks which threaten to dash him in pieces; and sometimes it lies over a yawning chasm, bridged by chains suspended from side to side, or by the trunk of a tree. Often the native Indian alone is competent for the perilous task, and the traveller is borne upon his back.

17. Numerous **volcanoes** form a remarkable feature of the Andes. There are about thirty-six in a state of activity, but the eruptions of some of these at long intervals. *Cotopaxi*, 19,613 feet high, is one of the most noted volcanoes in the world. *Pichincha*, *Antisana*, and *Chimborazo* are also noted volcanoes.

18. The Andes and the countries in their neighborhood are often visited by tremendous earthquakes, by which many cities have been destroyed and thousands of lives lost.

19. The **Atlantic Highlands** of South America are divided into two sections by the low valley of the Amazon.

20. The **Northern Plateau**, between the basins of the Orinoco and the Amazon, is much the smaller, but it has the greater elevations. Its principal mountains extend east and west, and have an extreme elevation of about 10,000 feet.

21. The **Southern Plateau**, comprising a large part of Brazil, slopes gently to the central plain, and more abruptly to the Atlantic Ocean. It has several irregular mountain ranges, generally extending north and south.

22. The **lowland plain** extends north and south between the eastern and western highlands, through the middle of the continent. It is separated by two low divides into three great river basins. In the valleys of the Amazon and the La Plata, the lowlands extend to the Atlantic coast. This great plain is generally very level, especially towards the north, where there is scarcely a divide between the basins of the Orinoco and the Amazon. The lowland plains of South America are, for the most part, included in three great divisions—the *Llanos* in the north, the *Selvas* in the middle, and the *Pampas* in the south.

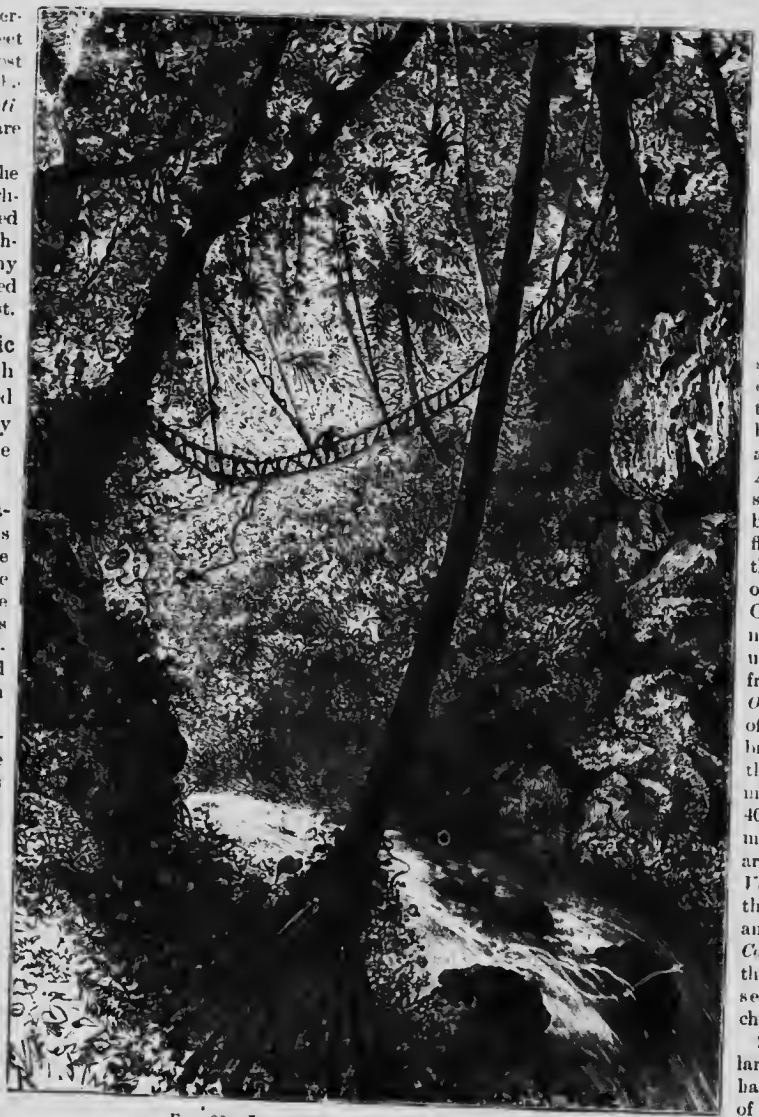


Fig. 82.—Liana Bridge, Andes of Colombia.

23. **Rivers.**—The Andes form the great water-shed of South America, throwing all the important rivers of the continent to the eastern side. The streams on the Pacific slope are short and rapid. The **great river systems** are those of the *Orinoco*, the *Amazon*, and the *Rio de la Plata*. These rivers drain the most humid portion of the earth, and are consequently very large in proportion to the area of their basins.

24. The **Orinoco**, the smallest of the great rivers of South America, rises in the Parima Mountains; but it receives many affluents from the Andes. A few miles from its source it bifurcates. One branch, the *Cassiquaire*, flows southerly, and joins the Rio Negro, a tributary of the Amazon. The Orinoco is about 1,600 miles in length, and it has uninterrupted navigation from the sea to the *Orinoco Falls*, a distance of nearly 900 miles. Its breadth, 250 miles from the sea, is about four miles. It receives over 400 large tributaries, the most important of which are the *Guaviare*, the *Vichada*, the *Meta*, and the *Apure*, from the left; and the *Ventuare*, the *Cuura*, and *Caroni*, from the right. It enters the sea through several channels.

25. The **Amazon** is the largest river in the world, having an extreme length of about 3,300 miles, and carrying to the Atlantic the drainage of about a third of South America. It has its principal sources in the Andes, and drains the whole eastern slope for the distance of 1,400 miles. It flows through a remarkably humid region, acquiring such a vast body of water that for the last 450 miles of its course it is never less than four miles broad. It enters the sea by two principal mouths, enclosing Joannes or Marajo Island, and it flows with such impetus

that its waters are distinguishable 500 miles from the shore. The largest mouth is about 50 miles in breadth.

During the rainy season, the Amazon submerges vast tracts of low land along its banks. It abounds in small islands, and is bordered with swampy regions, rendered almost impenetrable by the most luxuriant vegetation. This great river is the home of alligators, turtles, and many kinds of fish. Of the latter, 1,300 species have been found in its waters. A large part of the basin of the Amazon is covered with dense and unexplored forests.

The Amazon is navigable for small steamers to a point within 300 miles of the Pacific Ocean, and, including its affluents, it is estimated to afford 50,000 miles of inland navigation. Through the Cassiquiare it has navigable connection with the Orinoco, and it is separated from the La Plata system by a portage of only 18 miles. Some of the exports brought down the Amazon are india-rubber, cocoa, cotton, tobacco, nuts, sarsaparilla, coffee, cabinet-woods, and hides.

26. The **Rio de la Plata**, properly an estuary of a great river system, is formed by the *Parana* and the *Uruguay*, from the confluence of which to the sea the distance is about 150 miles. It is

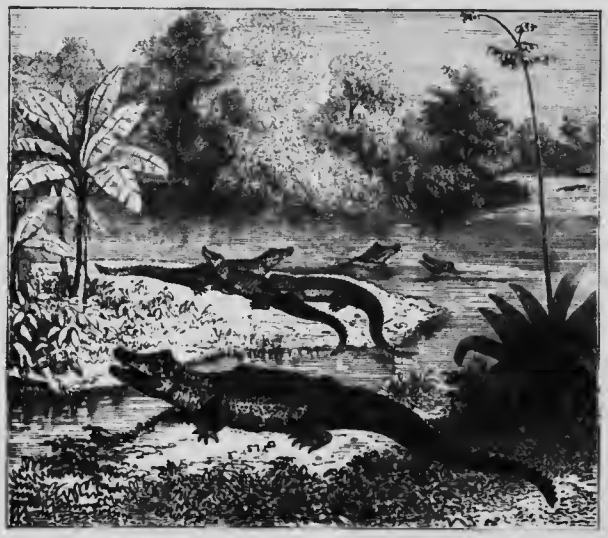


Fig. 83.—Alligators on the Amazon.

29 miles broad at Buenos Ayres, and 140 miles broad at its mouth. Its waters are turbid, and can be traced 200 miles from the shore. It is estimated that the basin of this river system comprises nearly one-fifth of South America.

27. The **Magdalena** is a large river navigable far into the mountain valley.

The **San Francisco** is a large river flowing from the eastern highlands. Its navigation is interrupted in its lower course by rapids and falls.

28. South America has very few lakes. The most important are *Maracaybo* and *Titicaca*.

29. **Lake Maracaybo** is about 110 miles in length and from 5 to 10 miles wide. It is connected with the Gulf of Maracaybo, an inlet of the Caribbean Sea, by a strait 20 miles in length.

30. **Titicaca**, on the table-lands of Peru, 12,645 feet above the level of the ocean, is one of the most elevated lakes in the world, and is overlooked by some of the loftiest peaks of the Andes. It is about 100 miles in length, and has an area of 3,200 square miles. A stream called the *Desaguadero* flows from Titicaca to a small lake on the south, but there is no outlet to the ocean.

31. **Climate.**—Between the tropics every variety of temperature is sometimes found in succession within a few miles—intense heat on the lowlands, the mildness of spring on the table-lands, and perpetual winter on the mountain heights. (*See Physical Geography*, 204.) The extreme south of the continent is very cold. The heat of the tropical regions of South America is much less intense than in the corresponding portions of Africa.

32. A large part of South America is noted for the humidity of its climate. The humid portion comprises the whole of the continent east of the Andes and north of 30° south latitude, including, for the most part, the basins of the three great rivers. On the west of the Andes, from the Equator to 30° south latitude, including the coasts of Peru, Bolivia, and Northern Chile, rain seldom falls; also, south of this parallel, on the east of the Andes, there is little rain.

33. Over the whole continent north of 30° S. the rain-winds blow from the Atlantic—the north-east and south-east trade winds; and the year consists principally of two seasons, a wet and a dry. During the dry season rain seldom falls, but the ground is watered by copious dews. Throughout the wet season the rain pours in torrents over the whole tropical region east of the Andes, the cold heights of these mountains exhausting the air of moisture. Accordingly, on the west of the Andes, from Cape Blanco to 30° S. lat., there is little or no rain. North of Cape Blanco the Andes take a north-easterly course, and the rain-winds crossing the isthmus are not obstructed by cold highlands, and accordingly bring their moisture to this part of the Pacific coast. South of 30° S. lat. the rain-winds blow chiefly from the Pacific, and cross the region east of the Andes as dry winds. This region, however, is partially watered by rain brought by variable winds from the Atlantic.

34. **Minerals.**—In the Andes are rich mines of gold, silver, copper, and other minerals. The highlands of Brazil yield gold, iron, and diamonds. One of the most important mineral products of the Andes is nitrate of soda, obtained from old lake beds. It is much used as a fertilizer and in the manufacture of gunpowder.

35. **Vegetation.**—Except in the rainless regions, the extreme mountain heights, and Patagonia, South America has a most luxuriant vegetation. Its forests contain palms, tree-ferns, dye-woods, cabinet-woods, and medicinal plants of the greatest value. The cinchona, growing on the mountain slopes, yields the valuable medicine called quinine; and the caoutchouc yields a juice from which india-rubber is made.

One of the most remarkable plants of South America is the *Victoria Regia*, a gigantic water-lily, found in the rivers of Brazil and Guiana. Its leaves are from eight to twelve feet in length, and from four to eight feet in breadth, and the flower is a foot in diameter.

36. The forests and general vegetation of the Andes vary with the elevation, from those of a tropical character at the base, through all the varieties of temperate climates along the slopes,

FIG. 84.—WILD CATTLE OF THE LLANOS.

to the ...ved Alpine flowers and the mosses and lichens of the hig... (*See Physical Geography*, 204.) The cultivated product... coffee, Indian corn, sugar-cane, cotton, cacao, cassava, t...co, in the torrid zone; and in the temperate region the various grains, vegetables, and fruits of other temperate climes.

37. **The Llanos.**—On the west and north of the Orinoco are the vast treeless plains called *llanos*. During the rainy season they are covered with tall grass, and stocked with almost countless herds of wild cattle and horses. Before the end of the dry season every plant perishes, the ground is parched and barren as a desert, and clouds of dust fill the air. The cattle and horses retreat to the lower mountain slopes for pasturage, and the alligators and other reptiles crawl into the mud of the drying pools, where they remain in a torpid state till the rains return.

38. **The Selvas.**—The plains in the basin of the Amazon are called *selvas*, a Spanish word meaning forests. No other part of the world has such extensive, majestic, and dense forests. Here are found tall palms of a hundred different species, ferns, dye-woods, and other valuable trees, interspersed with shrubbery, and the whole so overgrown with climbing plants that the traveller must cut a path before him.

39. **The Pampas.**—South-west of the La Plata are plains called *pampas*, treeless like the llanos, but covered with a coarser grass intermingled with rank trefoil. In some parts at certain seasons the pampas are covered with forests of thistles ten feet high, which, after coming to maturity, are broken down and blown to powder by violent winds from the Andes, called *pamperos*. Millions of cattle, horses, and sheep roam over these plains.

40. **Animals.**—South America has no animals as large as some of those found in Asia and Africa. The largest is the tapir, which, though much smaller, somewhat resembles the elephant. The condor, which is the largest bird of flight in the world, inhabits the lofty mountains.

41. The llama and alpaca are peculiar to the higher slopes of the Andes. The llama, which is tamed and used as a beast of burden on the mountain steeps, is called the camel of South America. The alpaca resembles the llama, and, like it, belongs to the camel tribe. It is covered with a valuable hair or wool.

In the selvas are found the armadillo, sloth, and ant-eater, which are peculiar to South America; here also are the jaguar or South American tiger, the puma, troops of monkeys, birds of varied and beautiful plumage, the alligator, boa-constrictor, and various other kinds of serpents, and innumerable insects. The vast herds of cattle and horses which roam wild over the llanos and pampas do not belong to the native wild animals, but were introduced by the early Spanish and Portuguese colonists.

42. **Inhabitants.**—The population of South America is estimated at 46,000,000, consisting of whites, Indians, negroes, and mixed races. The white inhabitants, who form about one-third of the whole population, are chiefly Portuguese in Brazil, and Spanish in the other States, except a few English, Dutch, and French in Guiana. The

mixed races, white and Indian, or black and Indian, form another third. The negroes were originally introduced as slaves. All are now free, the last to obtain their freedom being the negroes of Brazil, who were emancipated in 1888. Most of the manual labor is still performed by the negroes and mixed races. The prevailing religion in all the States is Roman Catholic. Except in the cities, public education is much neglected. Many of the Indians have made little advance in civilization.

43. When America was discovered, Peru was occupied by Indians comparatively civilized. They had a regular government, large cities, temples richly ornamented, monuments, and good roads. They made cloth and ornaments of gold and silver, irrigated their lands, and cultivated corn and other crops. There are yet in the country many remains of this Indian civilization.

44. **Divisions.**—South America comprises thirteen political divisions, as in the following table. The capital is in black letter.

Name.	Principal Cities.
Colombia	**Bogotá**, Barranquilla, Cartagena, Medellin, Bucaramanga, Cucuta.
Ecuador	**Quito**, Guayaquil, Cuenca, Riobamba, Ambato, Loja.
Venezuela	**Caracas**, Valencia, Maracaibo, Barquisimeto, Ciudad de Cura, Barcelona.
British Guiana	**Georgetown.**
Dutch Guiana	**Paramaribo.**
French Guiana	**Cayenne.**
Brazil	**Rio de Janeiro**, Bahia, Pernambuco, Para, San Paulo, Ceara, Maranhao, Porto Alegré, Parahyba.
Peru	**Lima**, Callao, Arequipa, Cuzco.
Bolivia.	**Sucre**, Oruro, La Paz, Cochabamba, Potosi.
Chile	**Santiago**, Valparaiso, Talca, Concepcion, Chillan, Serena, Iquique.
Argentine Republic	**Buenos Ayres**, Cordoba, Rosario Tucuman, Mendoza, Parana, Corrientes, La Plata, Santa Fé.
Paraguay	**Assumption**, Villa Rica, Concepcion.
Uruguay	**Montevideo**, Colonia.

45. **Cities.—Buenos Ayres** and **Rio Janeiro** are the largest cities in South America. Many of the cities on the western side of the continent are upon the elevated table-land, where they have suffered greatly from earthquakes. **Pasco**, in Peru, has an elevation of 13,720 feet; **Potosi**, in Bolivia, of 13,330 feet.

46. **Industries.**—The chief industries are agriculture, herding, and mining. The most important agricultural districts are in the river valleys of the north, the southeast of Brazil, and in the basin of the Rio de la Plata. The herding districts are in the llanos and the pampas. The **cattle** roam at large over the plains, giving little trouble to their owners except when it is required to catch them. Manufacturing is almost wholly neglected.

47. The **foreign trade** is chiefly with Great Britain, the United States, Germany, and France.

48. The chief **exports** are wool, hides, tallow, beef, mutton, coffee, sugar, rubber, nitrate of soda, gold, silver, and various products of the forest.

49. The **imports** comprise manufactured goods of all kinds.

50. **Government.**—All the States of South America, except the three divisions of Guiana, which are respectively subject to Great Britain, Holland, and France, have republican governments. In Brazil, Argentina, and Venezuela the various provinces elect their own local officers, as is done in the United States. In the other republics the central government appoints these officers.

The governments in South America are not strong. Most of the countries have been disturbed by civil wars and revolutions. The strongest and most progressive States are Argentina, Brazil, and Chile, sometimes called the Three Great Powers of South America.

COLOMBIA.

51. Colombia is in the north-west of the continent, and extends southerly to the equator. The western side of the country is mountainous, being crossed by the three ranges of the Andes; the eastern side is within the llanos.

52. The **climate** varies with the elevation, so that in the course of a day's journey a traveller may find every variety of climate and product. The chief agricultural districts are in the valleys of the Magdalena and Cauca Rivers. The **products** are cassava, bananas, coffee, cacao, tobacco, corn, potatoes, wheat, and other grain. The forests yield cabinet and dye woods and rubber. Cattle, horses, sheep, and goats are extensively reared.

53. The country is rich in **minerals**, including gold (in the production of which it stands first among the countries of South America), silver, copper, iron, and emeralds. The **inhabitants**, more than half of whom belong to the mixed races, live chiefly along the higher parts of the river valleys.

54. The foreign trade is largely with Great Britain. The **exports** are coffee, cacao, tobacco, rubber, dye-woods, hides, gold, and silver. The **imports** are manufactured goods of all kinds.

55. The larger cities are on the highlands. **Bogotá** is the capital and largest city. Its houses are built low on account of earthquakes. **Medellin** is in a gold-mining district. **Barranquilla**, on the Magdalena, and **Cartagena** are important commercial towns. **Bucaramanga** and **Cucúta** are important centres in the coffee trade.

Lack of roads and means of transport greatly retards the prosperity of Colombia. Many of the roads are mere mule tracks.

ECUADOR.

56. The western side of Ecuador is mountainous; the eastern part belongs to the forest plains of the Andes. There are many lofty volcanic peaks, as Chimborazo, Cotopaxi, Pichincha, and Antisana.

The high valleys and table-lands between the parallel mountain ranges and the Pacific slopes of the Andes comprise the principal cultivated lands. The **products** are cacao, coffee, rice, and corn.

57. About two-thirds of the **inhabitants** are Indians, and one-fourth are mixed races.

The trade of the country is very small. Cacao is the chief **export**; other exports are cinchona bark, sarsaparilla, india-rubber, and coffee. The **imports** comprise manufactured goods of all kinds. There is little facility for transport and travel. The roads are mostly bridle-paths.

FIG. 85.—QUITO.

58. **Quito**, near the Equator, 9,528 feet above the sea, has a delightful climate, but is sometimes visited by destructive earthquakes. **Guayaquil** is the chief port and trade centre.

VENEZUELA.

59. Venezuela is mountainous in the north-west and south-east. Between these highland regions lie the extensive grassy plains of the Orinoco. The **agricultural products** are coffee, sugar-cane, cacao, tobacco, and cereals. The forests yield rubber and dye-woods. The plains furnish pasturage for innumerable cattle, horses, sheep, and other animals. The country is rich in gold and other minerals.

The **foreign trade** is chiefly with Great Britain, the United States, and West Indies. The chief **exports** are coffee, cacao, rubber, hides, cattle, gold, and copper. Manufactures of all kinds are imported.

The **inhabitants** live chiefly on the highlands in the north-west.

60. **Caracas** is situated over half a mile above the sea-level. In 1812 it was visited by a terrible earthquake, by which 12,000 people lost their lives. The city is connected with its port, La Guayra, by a railway eight miles in length. **Puerto Cabello** and **Maracaybo** are important ports. The other chief cities are **Valencia** and **Barquisimeto**.

BRITISH GUIANA.

61. The coast country, from 10 to 40 miles in breadth, which is the chief seat of the population, is low; the interior is elevated and mountainous. The climate is hot and humid. The rainy seasons, of which there are two, are very unhealthy. The chief **products** are sugar-cane, maize, yams, cotton, coffee, and tropical fruits. The forests yield dye-woods and medicinal plants. Gold-mining is an important industry. The **exports** are sugar, molasses, rum, and gold. The **imports** are flour, pork, butter, lumber, fish, and manufactures. The trade is chiefly with Great Britain.

About one-third of the people are negroes, and about one-third are East Indian coolies.

62. **Georgetown** occupies a low, damp position at the mouth of the Demarara. Yellow fever, once very common, now seldom occurs.

DUTCH AND FRENCH GUIANA.

63. Dutch Guiana, sometimes called Surinam, is similar to British Guiana in physical features, climate, and products.

The trade is chiefly with Holland and Great Britain. The **exports** and **imports** are like those of British Guiana.

A large proportion of the inhabitants are negroes.

64. **Paramaribo**, on the Surinam, is the chief centre of trade. Its streets are adorned with orange, lemon, and tamarind trees.

65. **French Guiana** resembles the other divisions of Guiana in physical features, climate, and products. It is used by France as a place of exile for criminals. Its trade is of small value.

Cayenne, on the island of Cayenne, is the capital.

BRAZIL.

66. Brazil is nearly as large as the Dominion of Canada. The northern part of the country belongs to the forest plains of the Amazon, and is covered with dense forests; the southern part is table-land crossed by mountain ranges. Brazil is remarkable for the richness and variety of its vegetation. In the vast forests of the Amazon plains are huge trees from eight to twelve feet in diameter, tall and graceful palms, bamboos, and myrtles; also Brazil wood, dye-woods, rosewood, and mahogany. Agriculture is carried on chiefly in the south-east. The most important **product** is coffee, of which Brazil yields more than all other countries in the world. The other products are sugar-cane, cotton, tobacco, and cassava. Maté, cultivated in the valley of the Parana, is used as a substitute for tea. The forests yield rubber, timber, and medicinal plants. Cattle-raising is extensively followed in the south

The **minerals** are gold, silver, iron, lead, quicksilver, and diamonds.

The trade is chiefly with Great Britain, the United States, Germany, and France.

67. The chief **exports** are coffee, cacao, sugar, cotton, rubber, beef, and hides. The **imports** are flour, fish, wines, coal, and various manufactures. Brazil has several thousand miles of railway.

68. White people, who are most numerous in the cities, and mixed races are about equal in number, and together form four-fifths of the population. Indians are most numerous in the north. Public schools are established in the cities, but throughout the country education is in a backward state.

69. **Rio de Janeiro**, the second in size of the cities of South America, has an excellent harbor, and exports large quantities of coffee. **Bahia** and **Pernambuco** export tobacco and sugar; **Para** is the shipping port for rubber; **Maranhao** exports raw cotton, **Porto Alegre**, dried beef and hides.

PERU.

70. Peru extends about 1,300 miles along the Pacific coast. It comprises three great natural divisions—the coast, the sierra, and the montaña. The coast region, varying from 30 to 60 miles in breadth, is a rainless, sandy desert. The sierras comprise the mountain ranges and the intervening table-lands. The valleys of the western slopes of

FIG. 86.—LLAMAS.

the mountains, watered by irrigation, are very productive in coffee, sugar, cotton, rice, tobacco, and maize. The table-lands yield the products of temperate climes, and also afford pasturage for many goats, llamas, and alpacas. The montaña, lying east of the Andes, including two-thirds of the whole country, forms part of the humid forest plains of the Amazon. This region is mostly uninhabited, but its forests are rich in valuable products—as cinchona, cacao, and rubber.

71. On the table-lands are rich silver mines; in the northern part of the country petroleum is abundant, and on the islands along the coast are found large deposits of guano.

More than half the people are Indians, and nearly one-fourth are mixed races, and about one-fifth are whites of Spanish origin.

The **foreign trade** is chiefly with Great Britain and Germany. The **exports** are sugar, cotton, tobacco, silver, copper ore, guano, alpaca wool, and skins. The **imports** are manufactures of all kinds.

72. **Lima**, about seven miles from the sea, is connected by railway with its seaport *Callao*. It was founded by Pizarro, whose remains are deposited in its cathedral. Its university is said to be the oldest in America. In 1746, Callao was entirely destroyed by an earthquake, and of 3,000 inhabitants only sixteen escaped. **Cuzco**, in the interior, was the capital of the Incas. **Arequipa**, more than a mile and a half above the sea-level, is on the line of railway across the mountains **Mollendo** is an important seaport.

73. Peru has done much to develop its resources by the construction of railways connecting the fertile districts along the rivers of the coast country with the seaports. A line of railway extends from Arequipa to Puno, on the shores of Lake Titicaca, and another line, recently completed, from Lima to Cerro Pasco, winds its way along the edge of fearful precipices, crosses chasms by bridges at dizzy heights, and pierces the Andes by a tunnel 15,645 feet above the sea-level.

BOLIVIA.

74. Bolivia is wholly inland. Its physical features are much diversified. The mountains are high and rugged, rising in many lofty volcanic cones. The mountains contain rich mines of silver, tin, and copper. Bolivia ranks first among the countries of South America in the production of silver. The plateau between the mountain ranges here attains its greatest breadth. It yields wheat, maize, potatoes, and other products of the temperate zone. The raising of cattle, sheep, and llamas is also an important industry. From the forest country on the east of the Andes are obtained cinchona, cacao, and rubber.

75. The **inhabitants** live chiefly on the plateau. The Indians form about half the population; the other half is divided pretty equally between whites and mestizos, or mixed races.

76. The **foreign trade** is chiefly with Germany and Great Britain. The **exports** are silver, tin, copper, rubber, cinchona, wool, and hides. The **imports** comprise hardware, textiles, and other manufactures.

As a result of a war, Bolivia was compelled to cede her coast country, with all her seaports, to Chile. Her foreign trade is now carried on through Antofagasta and Arica, in Chile, and Mollendo, in Peru.

Fig. 87.—Buenos Ayres.

The products of the forest are exported by way of the Madeira and Paraguay Rivers.

77. **Sucre**, noted for its cathedral and its ancient ruins, is near the rich silver mines of Potosi, once the most famous in the world. **La Paz**, situated in a deep gorge that once formed the outlet of Lake Titicaca, is the chief commercial centre. **Oruro** is also near important silver mines. Each of these three cities has been in turn the seat of government.

CHILE.

78. Chile is one of the most prosperous of the countries of South America. Extending north and south through thirty-seven degrees of latitude, it has great variety of climate and products. A large part of the country is made up of mountain ridges separated by deep valleys.

79. *Aconcagua*, the highest mountain peak in America, is on the borders of Chile. The country is noted for earthquakes. One of great violence occurred in 1822, when an extent of coast fifty miles in length was elevated three feet above its former level.

The northern part of Chile is a hot, rainless desert, but it is rich in silver, copper, gold, and nitrate of soda. In the central regions, where the climate is temperate and the rainfall moderate, agriculture is the chief pursuit. The **products** here are wheat, grapes, and other grain and fruits. Many cattle, sheep, and goats are reared in this region. Still farther south lumbering is an important pursuit. Coal and gold are also obtained in the south.

80. The **people** are energetic and enterprising. The public schools are free, and are supported by the government.

81. The **foreign trade** is chiefly with Great Britain, Germany, United States, and France. The **exports** are nitrates, copper, silver, iodine, wheat, and wool. The **imports** are textiles, machinery, clothing, and food substances. Chile has over 3,000 miles of railway.

82. **Santiago**, the largest city, about half a mile above the sea-level, is situated in a fertile plain. Its seaport, 50 miles distant, is **Valparaiso**, the terminus of steamship lines to Europe, *viâ* the Strait of Magellan. **Iquique** is the chief shipping port for the mineral products of the north. The other important cities are **Talca, Concepcion, Chillan, Antofagasta**, and **Serena**.

ARGENTINA.

83. Argentina is principally in the South Temperate Zone, extending from 21° south latitude to Cape Horn. The northern half of the country belongs to the region known as the *pampas*, in the basin of the La Plata; the southern portion, cut off from the rain-bearing winds by

the Andes, is lacking in humidity. It is one of the most prosperous countries in South America, and it has attracted many immigrants from Europe, chiefly Italians, Spaniards, French, English, and Germans. Of its population of 6,000,000, nearly one-third is foreign.

84. Argentina is a great agricultural and grazing country. The lower Parana valley yields large quantities of wheat, corn, and flax. Sugar and grapes are also important **products.** Millions of cattle, horses, sheep, and goats are reared on the plains. Owing to the lack of fuel for power, there is little manufacturing.

85. The **foreign trade** is chiefly with Great Britain, Germany, France, the United States, and Belgium. The **exports** comprise live animals, wheat, corn, beef, mutton, hides, and wool. The **imports** are cottons, woollens, machinery, and iron. Argentina has several thousand miles of railway. British capital is largely invested in Argentina railways and other industrial undertakings.

86. **Buenos Ayres,** the largest city in South America, is on the La Plata, 150 miles from the sea. It is the chief port through which the foreign trade of the country is carried on. It is connected by rail with Valparaiso, in Chile. Over half its population of 1,250,000 are foreigners. The other important cities are **Rosario, Cordoba, Tucuman, La Plata, Santa Fé, Mendoza,** and **Bahia Blanca.***

PARAGUAY.

87. Paraguay is wholly inland, situated between the rivers Parana and Paraguay. It is hilly and mountainous in the north-east; the south is varied with gentle slopes, covered with luxuriant forests, rich alluvial plains of wonderful fertility, and extensive marshes.

88. The agricultural **products** are maté, Indian corn, cassava, tobacco, cotton, sugar-cane, and coffee. The rearing of cattle, horses, mules, and goats is an important industry. Among the forest-trees are rubber, various gum trees, rosewood, and dye-woods.

89. Extensive tracts of land have been sold by the government in large estates. A tract of about 500,000 acres was ceded to an Australian company as a home for a colony.

90. The chief **exports** are maté, tobacco, hides and skins, and timber. The **imports,** which are principally from Great Britain, are manufactured articles of various kinds. Trade is largely through Brazil and Argentina.

91. **Assumption,** the capital, is situated at the confluence of the Pilcomayo and Paraguay. The other important cities are **Villa Rica, Concepcion,** and **San Pedro.**

URUGUAY.

92. Uruguay is varied with hilly districts and extensive plains. The agricultural **products** are wheat, corn, tobacco, olives, and grapes. The rearing of cattle and sheep is the leading industry. The minerals include gold, silver, and copper.

93. The **exports** are chiefly animals and animal products. The **imports** comprise cottons, woollens, and other manufactures. Trade is chiefly with Britain, Germany, France, and Argentina.

94. **Montevideo,** the capital, near the mouth of the La Plata, is a large city, and the chief centre of trade.

* NOTE.—The three most prosperous and influential countries of South America are **Argentina, Brazil,** and **Chile.** They are spoken of as "the A B C Republics of South America."

EUROPE


ARCTIC OCEAN
ICELAND
Arctic Circle
NORWAY
SWEDEN
FINLAND
RUSSIA
BRITISH ISLES
NORTH SEA
ATLANTIC OCEAN
Bay of Biscay
FRANCE
GERMANY
Poland
Galicia
AUSTRIA
Hungary
SPAIN
Corsica
Sardinia
MEDITERRANEAN SEA
ADRIATIC SEA
Bosnia
Servia
Bulgaria
BLACK SEA
CASPIAN SEA
TURKEY IN ASIA
Cyprus
Malta
AFRICA
Meridian of Greenwich
Longitude East from Greenwich
English Miles

Andrew to Mr. Fitch.

EUROPE.

FIG. 88.—MOUNT ETNA.

1. **Position and Area.**—Europe, which is principally in the North Temperate Zone, is a large peninsula, forming the north-western portion of the Eastern Continent. With the exception of Australia, it is the smallest of the great divisions of the earth, but it ranks first in influence and power.

N. lat. 36°—71° 10′; long. 9° 32′ W.—68° E.

The boundary line between Europe and Asia is formed by the Ural Mountains, Ural River, Caspian Sea, Caucasus Mountains, Black Sea, the Bosphorus, Sea of Marmora, and the Dardanelles.

The **area** is 3,800,000 square miles, or about one-fourteenth of the land surface of the earth. It is about one-sixth larger than the Dominion of Canada.

2. **Coast.**—Europe is greatly broken by inlets of the sea, on account of which it has a longer coast-line in proportion to its area, and more easy intercourse with other parts of the world, than has any other great division.

The **Mediterranean Sea** gives off more water by evaporation than it receives from the rivers flowing into it. The balance is maintained by a current flowing in through the Strait of Gibraltar, and also by a similar current from the **Black Sea**, which receives more water from the rivers than it loses by evaporation.

FIG. 89.—RELIEF MAP OF EUROPE.

The **Baltic Sea** is very shallow, not exceeding 1,100 feet in depth. It sends a current to the North Sea.

It is interesting to compare these three seas, as regards saltness, with the waters of the ocean.

3. The chief **islands** on the coast are :—

In the Arctic Ocean—the *Lofoden*, belonging to Norway and Sweden ; *Spitzbergen* and *Nova Zembla*, to Russia.

In the Atlantic Ocean—*The Faroe*, belonging to Denmark ; the *British Isles*, an independent kingdom ; and the *Azores*, belonging to Portugal.

In the Baltic Ocean—*Fünen*, *Zealand*, *Laaland*, and *Bornholm*, belonging to Denmark ; *Oland* and *Gottland*, to Sweden ; and *Oesel*, *Dago*, and the *Aland Archipelago*, to Russia.

In the Mediterranean—the *Balearic Isles*, belonging to Spain ; *Sicily*, *Sardinia*, *Elba*, and the *Lipari Isles*, to Italy ; *Corsica*, to France ; *Malta*, to Great Britain ; the *Ionian Isles*, *Negropont* or *Eubœa*, and the *Cyclades*, to Greece ; *Samothraki* and *Lemnos* or *Stalimni*, to Turkey. *Candia*, or *Crete*, has an autonomous government under the suzerainty of Turkey.

4. The **Maltese group** embraces *Malta*, *Comino*, and *Gozo*. They were taken from France by Great Britain in 1800. The products are cotton, corn, and tropical fruits. The inhabitants, numbering about 170,000, are mostly Roman Catholics.

Malta, the largest and most important of the group, has an area of 95 square miles. From its commanding position, and from the great strength of its fortifications, it is accounted one of the most valuable possessions of Great Britain, and is the headquarters of her fleet in the Mediterranean. *Valetta*, the capital, is a beautiful city, noted for its fortifications, which are mostly hewn from the solid rock. The history of the Maltese group is full of interest, extending back for many centuries.

5. **Physical Features.**—The main body of Europe comprises two general slopes, a north-westerly and a southerly, as indicated by the courses of the rivers. The continent may be divided into a lowland region in the north-east, and a highland region in the west and south-west.

Without including the highlands of Scandinavia, the elevated portion lies generally south-west of a line drawn from the mouth of the Dannbe to that of the Elbe.

6. **Low Europe**, embracing two-thirds of the whole area, is an immense plain, bounded on the north by the Arctic Ocean ; on the east by the Ural Mountains and Caspian Sea ; on the south by the Caucasus Mountains, the Black Sea, and the Carpathian Mountains ; and on the west by the North Sea and the Scandinavian Mountains. Throughout this whole extent, the Valdai Hills, which rise by a gentle swell to the height of 1,100 feet, forming the parting ground between the two slopes, are the greatest elevations.

7. The **Scandinavian Mountains**, in the north western peninsula, form a wall along the Atlantic coast from Cape Nordkyn to the Naze. The middle portion of this range is called the *Dovrefield*; the northern, the *Kiölen Mountains*. The system is much broken by deep and almost inaccessible ravines. The extreme height is 8,670 feet, and the height of the snow-line about 5,000 feet.

8. The **Ural Mountains** extend from the Arctic Ocean southerly about 1,300 miles. The average height is about 2,000 feet; the extreme height, 5,400 feet. The range separates the great plains of Europe and Asia.

9. The **Caucasus Mountains** stretch from the Caspian to the Black Sea, about 700 miles. The average height is about 8,500 feet. *Elbrus*, 18,526 feet, is the highest peak in Europe. The snow-line has an elevation of 11,000 feet.

10. The **south-west of Europe** is very mountainous. The Alpine system is the most important. It comprises the *Alps*, stretching in a curve line from the Gulf of Genoa to Vienna, 600 miles; the *Carpathian Mountains*, forming another curve on the north of the Danube; the *Apennines*, in Italy; the *Balkans*, extending south-easterly from the Adriatic to the Black Sea; and the *Pindus*, in Greece. The *Vosges* and *Cevennes*, on the west of the Rhine and the Rhone, and the *Black Forest Mountains*, on the east of the Rhine, may also be included in the same system.

Fig. 90.—The Mer de Glace, Mont Blanc.

11. The **Alps** are the grandest mountains of Europe, and, excluding the border Caucasus, contain the highest point. They are very wild and broken, and are celebrated for the beauty and sublimity of their scenery. Many of their summits are covered with snow throughout the year. The Alps are especially distinguished for the vast masses of ice, called *glaciers*, which are found in the high valleys.

The **glaciers** present a very interesting study. They are formed by the compacting of masses of snow. Some of them are 15 miles

Fig. 91.—The Iron Gate of the Danube.

in length, with a breadth from 1 to 2 miles, and are supposed to be several hundred feet in depth. The great pressure from above causes them to move slowly down their bed, until they reach the warmer lowlands, where they are changed to streams of water. The Rhone, Rhine, and other rivers, have their origin in the glaciers. There are often crevasses or deep fissures in the glaciers, which, when concealed by light snow, are very dangerous to tourists. The *Mer de Glace*, on Mont Blanc, is one of the most noted glaciers.

There are several **passes** over the Helvetian and Rhetian Alps. The *Stelvio Pass*, across the latter, having an elevation of 9,055 feet, is the highest carriage road. The most frequented carriage road between France and Italy is across *Mont Cenis*, 6,860 feet above the sea-level. Near this pass the mountain is pierced by a railway tunnel 7½ miles in length.

Mont Blanc, 15,781 feet, is the highest point of the Alps. Other noted peaks are *Mount St. Gothard*, the *Simplon*, the *Finsteraarhorn*, *Jungfrau*, and *Matterhorn*.

12. The **Carpathian Mountains** extend in a curve line, 800 miles in length, from Presburg on the Danube to the *Iron Gate* on the same river, partly enclosing Hungary and Transylvania. The highest peak, 9,528 feet high, is in Transylvania.

13. The **Balkan** or **Hæmus Mountains**, in the Balkan Peninsula, are generally clothed with forests to their summits. Their greatest height is 7,800 feet. They throw off subordinate ranges, one of which, on the north, terminates abruptly at the Danube, opposite the southern extremity of the Carpathians. The narrow defile through which the river flows is called the *Iron Gate*.

14. The **mountains of the Hellenic peninsula** are not generally very elevated. The snow-line is about 9,000 feet above the sea. *Olympus*, the fabled abode of the ancient Grecian gods, has an elevation of 9,754 feet. Farther south are the bold peaks of *Ossa* and *Pelion*. Between Olympus and Ossa is the beautiful and celebrated *Vale of Tempe*.

15. The **Apennines** extend throughout the whole of the Italian peninsula to the Strait of Messina. With a slight interruption at the strait, the range is continued through the Island of Sicily. The average height is from 2,600 to 5,000 feet. Near the middle of the range are several peaks from 7,000 to 8,000 feet high. *Monte Corno*, 9,590 feet, is the highest summit.

16. **Mount Etna**, an isolated mountain in Sicily, is one of the

most celebrated volcanoes in the world. From a base of about ninety miles in circumference, it rises like an immense cone to the height of 10,835 feet.

17. **Vesuvius**, a detached peak, ten miles from Naples, is the only active volcano on the continent of Europe. Its height, which varies at different times, is about 4,000 feet.

18. The **Spanish peninsula** consists mainly of an elevated plateau, with several mountain ranges extending east and west. The principal ranges are—the *Pyrenees*, the *Cantabrian Mountains*, the *Sierra Gredos*, the *Sierra Toledo*, the *Sierra Morena*, and the *Sierra Nevada*.

19. The **Pyrenees**, between France and Spain, have an extreme elevation of 11,168 feet; the **Sierra Gredos**, of 8,693 feet; and the **Sierra Nevada**, of 11,420 feet. The snow-line in the Pyrenees has an elevation of 8,000 feet. The northern slopes are generally covered with forests, whilst the steep rocky walls on the south are destitute of trees.

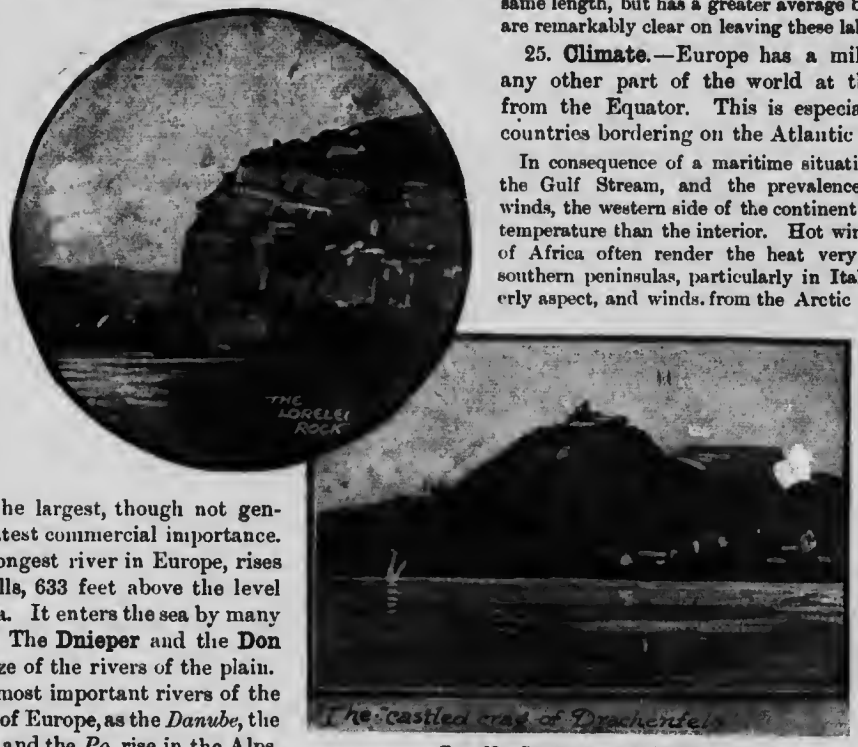


Fig. 92.—Scenes on the Rhine.

20. **Rivers.**—The rivers of Europe drain less extensive basins, and hence are smaller, than those of the other continents. The rivers of the great plain are the largest, though not generally of the greatest commercial importance. The **Volga**, the longest river in Europe, rises in the Valdai Hills, 633 feet above the level of the Caspian Sea. It enters the sea by many shallow mouths. The **Dnieper** and the **Don** are the next in size of the rivers of the plain.

Several of the most important rivers of the highland division of Europe, as the *Danube*, the *Rhine*, the *Rhone*, and the *Po*, rise in the Alps.

21. The **Danube** is the second in size of the rivers of Europe. It is of great importance to the commerce of Germany, Austro-Hungary, and Turkey.

22. The **Rhine** is noted both as a great highway for trade, and on account of the fine scenery along its middle and upper course. In its upper course the Rhine flows into a deep basin, forming *Lake Constance*. A few miles below the lake are the *Falls of Schaffhausen*, the most noted waterfall in Europe.

23. Many of the rivers of Europe are connected by canals, forming a water-route across the country. Thus boats can pass from the Black Sea to the Baltic and White Seas, and from the Mediterranean to the Bay of Biscay or the English Channel.

24. **Lakes** are numerous, especially in the north, but none of them are very large. The principal lakes are—*Ladoga*, *Onega*, *Saima*, and *Peipus*, in Russia; *Wener*, *Wetter*, and *Mälar*, in Sweden; *Constance*, *Zurich*, *Lucerne*, and *Neuchâtel*, in Switzerland; and *Maggiore*, *Como*, and *Garda*, in Italy.

Ladoga, the largest lake in Europe, is 120 miles long, and has an area of 6,800 square miles.

The lakes of Switzerland and Italy are smaller than those of the north, but their beauty is the admiration of tourists and the theme of the poet's song.

The *Lake of Geneva*, or *Lake Leman*, in the basin of the Rhone, is 50 miles long, 8 miles in extreme breadth, and is 1,150 feet above the sea. *Constance*, in the basin of the Rhine, is about the same length, but has a greater average breadth. The rivers are remarkably clear on leaving these lakes.

25. **Climate.**—Europe has a milder climate than any other part of the world at the same distance from the Equator. This is especially true of those countries bordering on the Atlantic Ocean.

In consequence of a maritime situation, the influence of the Gulf Stream, and the prevalence of south-westerly winds, the western side of the continent has a more equable temperature than the interior. Hot winds from the deserts of Africa often render the heat very oppressive in the southern peninsulas, particularly in Italy; whilst a northerly aspect, and winds from the Arctic Ocean, cause severe cold in the north. (*See Physical Geography*, 209.) The humid south-westerly winds give much rain to the Atlantic coast. The quantity of rain decreases towards the north. In the southern countries the rain falls most abundantly in winter; in the central countries, in autumn; and in the northern, in summer. Within a limited district on the coast of Portugal the annual depth of rain is 111 inches; on the west of Ireland, 47 inches; and in Eastern Europe, only 15 inches.

26. **Products.**—The vegetation of the southern portion of Europe is sub-tropical, including palms, mulberries, grapes, olives, figs, oranges, and lemons. Southern Europe is the greatest wine-producing region in the world. The northern countries within the Arctic Circle are destitute of trees, and their plant life consists principally of shrubs, lichens, and mosses. The region between these extremes yields almost every variety of products belonging to the temperate zone. The plains of Southern Russia, and the valleys of the Danube, the Po, the Rhone, and other rivers,

are very fertile, yielding large crops of wheat and other grain. In Russia, Norway, Sweden, and the mountain slopes of Central and Southern Europe, are extensive forests. In Western and Central Europe the forests are carefully protected. Only a limited number of trees are allowed to be cut each year. Dead trees and windfalls are removed, and young trees are planted in vacant places. The forests have thus a park-like appearance.

27. **Animals.**—Wild animals are not numerous or of large size. Fur-bearing animals and the reindeer are the most important in the northern regions. The forests of the central countries abound in bears, wolves, wild boars, and various kinds of deer.

The chamois is a beautiful animal inhabiting the high peaks of the Alps. It is noted for dexterity in leaping from crag to crag on the mountain heights. Large eagles are also found among the Alps. Barbary apes are found in the south of Spain. The reptiles of Europe are small and generally harmless.

The coast waters on the north-west abound in cod, herring, and mackerel; those on the south and south-west, in sardines, anchovies, tunny-fish, and sturgeon. Coral is abundant along the shores of the western part of the Mediterranean, sponges along those of the eastern half.

28. **Minerals.**—The precious metals are less plentiful than in the other great divisions, but all the most useful minerals are abundant.

The richest **gold** and **silver mines** are in the Carpathian Mountains. Gold, diamonds, and platinum are obtained from the Ural Mountains. Iron is widely distributed, and is very plentiful in Britain, Scandinavia, and France. Coal is most abundant in Britain and Belgium; copper in Britain, the Ural Mountains, and Norway; lead in England and Spain; tin in England and Germany; quicksilver in Spain and Hungary; marble in Italy and Greece; sulphur in Italy; and salt in Austria, Germany, England, and Russia.

29. **Inhabitants.**—The population of Europe is about 392,000,000. The most densely peopled countries are Belgium and England. The inhabitants are generally much more intelligent and more highly civilized than are those of Asia and Africa.

The great majority of the inhabitants belong to the Indo-European section of the Caucasian race, and although the different families are considerably mixed, they are divided into four great divisions:—

(1.) The **Teutonic family** in the middle and north-west, including the *English*, *Lowland Scotch*, *Norwegians*, *Swedes*, *Danes*, *Dutch*, and *Germans*.

(2.) The **Celtic family** in the west, including the *Irish*, *Highland Scotch*, *Welsh*, *French*, and *Belgians*.

(3.) The **Græco-Latin family**, including the *Greeks* and the *Italians*.

(4.) The **Slavonic family**, including the *Russians*, and the *Slavs* of Austria, Servia, and Rumania.

There are several small tribes of Mongolians, or Turanians, who resemble the inhabitants of Central Asia. The chief of these are the *Finns*, *Lapps*, and *Samoiedes*, near the Arctic Ocean; the *Kalmucks*, north of the Caucasus; the *Magyars*, in Hungary; and the *Turks*, in Turkey.

The **Christian religion** is embraced by nearly all the inhabitants of the Caucasian race. The *Protestant* form of Christianity prevails generally in the centre and north-west; the *Roman Catholic*, in the south; and the *Greek Church*, in the east and north. The Turks are *Mohammedans*.

Roman Catholics form nearly half the population; Protestants and Greeks nearly a fourth each. Mohammedans and heathens number about 8,000,000; Jews, about 9,000,000.

30. **Historic Note.**—Europe was settled at a very early period by people from Asia, who continued long in a savage state, whilst civilized and powerful nations flourished in Western Asia and Northern Africa. The peninsula of Greece, emerging first from barbarism, at length, about 400 years before the Christian era, outstripped all other parts of the world in civilization, literature, and power.

The central peninsula, or Italy, next obtained the pre-eminence, and gave laws to the world. Rome, a small state, said to have been founded 753 B.C., extended its power gradually, until, at the Christian era, it embraced within its empire Southern and Central Europe, Western Asia, and Northern Africa.

Northern Europe was still occupied by barbarous hordes, who at different times had threatened the Roman Empire with destruction. Finally, in 476 A.D., when the citizens of this once powerful empire were enfeebled by luxury and vice, the northern barbarians, who had already established themselves in the provinces, rushed in and took possession of the capital. Throughout Europe all was now in a state of unrest and anarchy. Civilization and learning were well-nigh extinguished, and the darkness of the Middle Ages ensued.

The Mohammedans entered Europe by the Strait of Gibraltar in 711. Having seized nearly all the south-western peninsula, they crossed the Pyrenees, and marched northwards, bidding fair to overrun the whole continent. When near the middle of France, they were defeated and driven back by Charles Martel, 732 A.D.

Then (779–814) arose in the west a great conqueror, Charlemagne, who brought under his power France, Germany, and Italy. On his death his empire fell to pieces. During the next two centuries, the principal nations of Modern Europe were organized by the blending together of numerous petty states.

The twelfth and thirteenth centuries were remarkable for those expeditions called the Crusades, sent from Western Europe to take Palestine from the Mohammedans.

The close of the fifteenth and beginning of the sixteenth centuries witnessed several events which largely influenced the political and social condition of Europe. Among these may be mentioned the invention of printing, the discovery of America, the discovery of the passage round the Cape of Good Hope, the Reformation, the overthrow of the Byzantine Empire by the Turks, and the study of Grecian literature.

At the commencement of the nineteenth century nearly the whole of Europe was disturbed by the wars of Napoleon I. The most important political changes of more recent times are:—

The union of the various Italian States under one sovereign (1860–1870); the organization of the powerful German Empire (1871); and the partial breaking up of Turkey into small independent States (1878 and 1913).*

31. **Divisions.**—Europe is very unequally divided into about twenty political divisions or sovereign States. Great Britain, Germany, France, Russia, Austria-Hungary, and Italy are the leading States. They are called the "**six Great Powers.**"

32. **Towns.**—Europe contains many large and flourishing cities. **London** surpasses every other city in the world in wealth, commerce, and population. **Paris**, ranking next in size among the cities of Europe, is the first in splendor. The next in respect to population are **Berlin, Vienna, Petrograd, Moscow,** and **Constantinople.**

Hammerfest (N. lat. 70° 40′), in Norway, is the most northerly town in Europe.

EXERCISE ON THE GLOBE.—Find the length of the longest day and of the shortest day at Hammerfest.

* The Great European War now (March 1916) going on will probably result in important changes in the map of Europe.

Fig. 93.—Houses of Parliament, Westminster.

33. **Industries.**—The chief pursuits of Europe are—agriculture, manufacturing, mining, fishing, and commerce.

Agriculture is the leading pursuit, giving employment to over half the people. It is prosecuted with greatest skill in Great Britain, France, Belgium, and Germany. Cattle and sheep are very numerous, especially throughout the central countries. In many countries hogs are allowed to roam in the forests, where they feed on nuts of various kinds. Manufacturing is a leading industry throughout the whole of the western portion of Europe, comprising all kinds of products used in civilized countries. Manufacturing in the eastern half of Europe is carried on mostly by hand. Great Britain, France, and Germany are great manufacturing countries. The commerce of Western Europe is very extensive, the leading **exports** being the manufactured products; and the **imports**, raw material used in manufacturing, and articles of food.

34. **Railways** are most numerous in the western and central countries. Russia, however, is making rapid progress in the construction of railways to connect the various parts of her vast empire.

35. **Government.**—The governments of Europe are generally hereditary limited monarchies. The laws are made by legislatures in which the people through their representatives have a voice, and the sovereign is guided in his public acts by responsible ministers.

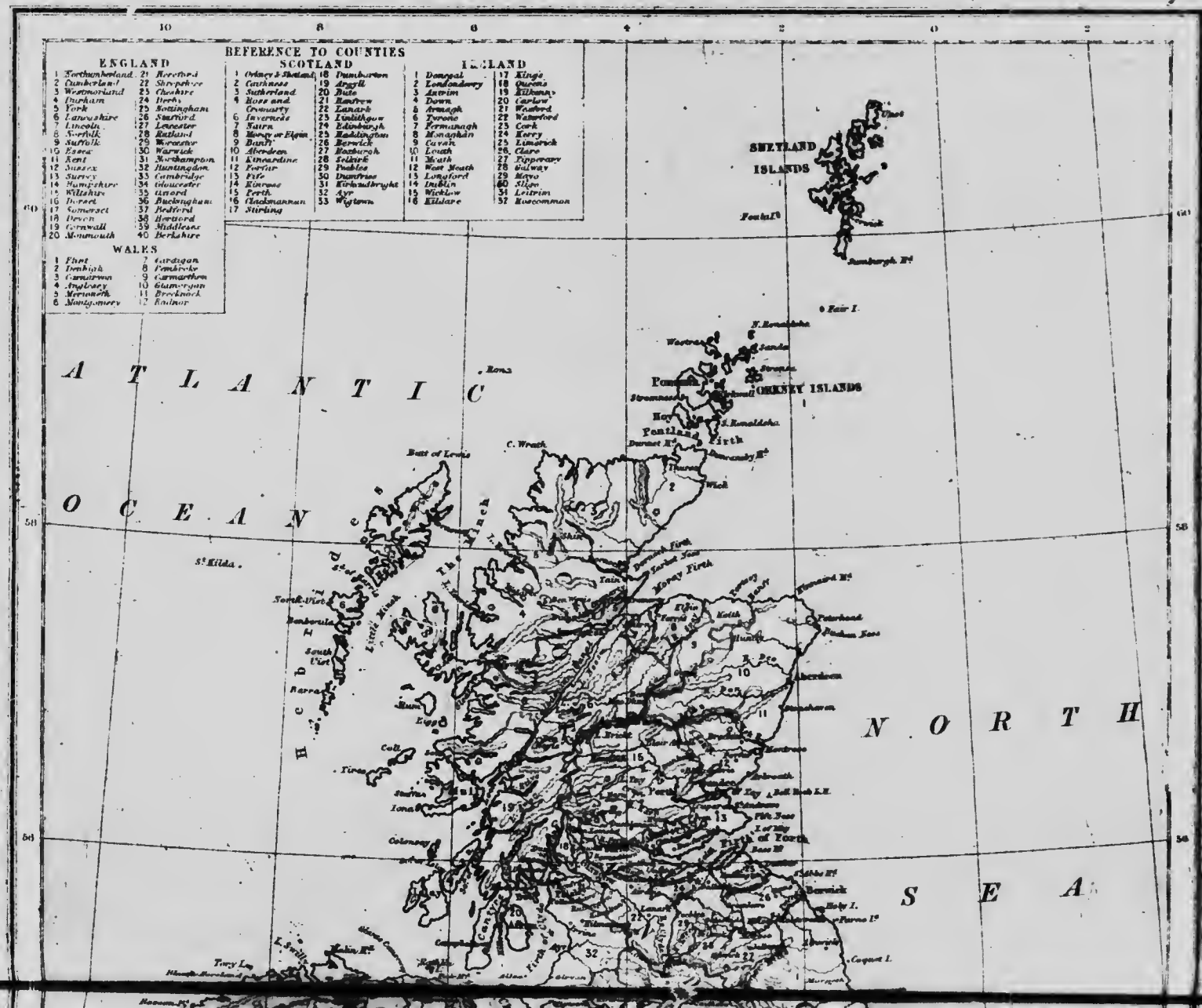
Russia and Turkey have lately become limited monarchies, with representative legislatures. France and Switzerland are republics. Russia, Germany, and Austria are called empires.

THE BRITISH ISLES.

36. The British Isles consist of Great Britain and Ireland, and many small islands in their neighborhood. They are situated in the northern part of the North Temperate Zone, and nearly in the centre of the land hemisphere. Great Britain is separated from the continent of Europe by the Strait of Dover, which at the narrowest part is 21 miles in breadth. The British Islands have many excellent harbors, and are most favorably situated for commerce. While the islands have about the same latitude as the frozen peninsula of Labrador, a branch of the Gulf Stream, drifting past the coast, so tempers the prevailing westerly winds that the climate is mild and humid. The British Isles lie mainly between the parallels of 50° and 60° N. The learner will find it interesting to follow the belt between these parallels around the world, and compare the climates of the various countries included.

Great Britain is the largest European island, and it ranks as eighth in size among the islands of the world. It includes three divisions—England in the south, Wales in the west, and Scotland in the north—having a united area of 88,774 square miles. The island is about 600 miles long, and 320 in extreme breadth.

BRITISH ISLANDS




IRISH SEA
Isle of Man
Anglesey I.
Cardigan Bay
St George's Channel
Bristol Channel
ATLANTIC
OCEAN
ENGLISH CHANNEL
Isle of Wight
Channel Islands
Jersey
Guernsey
Scilly Is.
Donegal B.
Dublin B.
Galway B.
Tralee B.
Cork Harbour
Milford Haven
St Brides B.
Carmarthen Bay
Swansea B.
Cardiff Bay
Bridgewater B.
Lyme Bay
Portland Pt.
Start Pt.
Plymouth
Falmouth
Land's End
Lizard Pt.
The Wash
Yarmouth
Ipswich
Colchester
Harwich
The Nore
Reading
Southampton
Portsmouth
Brighton
Dover
Strait of Dover
Calais
Boulogne
Havre
Rouen
FRANCE
Longitude West from Greenwich
English Miles
Scale of 60 Miles to an Inch.

ENGLAND AND WALES.

37. England and Wales have a united area about three times larger than the Peninsula of Nova Scotia. The surface of England is generally level or undulating. There are three general slopes—an eastern, a southern, and a western. In the eastern part of the country are extensive tracts called the *fens*, which being below the level of the sea at high water are protected by dikes. The mountains, which are of moderate height, are in the west and north, comprising the *Cheviot Hills*, between England and Scotland; the *Pennine Mountains*, extending from the south-western extremity of the Cheviot Hills to the Peak of Derby; the *Cumbrian Mountains*, lying west of the Pennines; and the *Cambrian Mountains*, in Wales. The mountains of Wales have the greatest elevation. *Snowdon* (3,560 feet) is the highest point. *Scafell Pike* (3,210 feet) is the highest point in England.

38. The largest **rivers** are on the long eastern slope. The principal rivers are the *Humber*, *Thames*, *Great Ouse*, and *Severn*.

39. **Keswick Lake**, or Derwentwater, about 10 miles in length, **Windermere**, and **Ulleswater**, situated in what is known as the "Lake District" among the Cumbrian Mountains, are noted for their beautiful scenery, and have long been a favorite resort of tourists, artists, and poets.

40. The **climate** is very humid, particularly on the west coast, and is remarkably free from extremes of heat and cold. The winters are short, with but little snow. Cattle are sent to pasture early in March.

England is a rich farming and grazing country. The middle and south-eastern portions are best suited to tillage. Wheat, barley, oats, potatoes, turnips, and flax are important **products**. The fruits are similar to those grown in Nova Scotia. The south-western counties are celebrated for fine orchards. Hops are extensively cultivated in the county of Kent. The humidity of the climate is particularly favorable to the grasses, and cattle and sheep form a large part of the wealth of the country. Great care is taken to improve the breeds. More mutton and wool are produced in Great Britain than in any other country of Europe, excepting Russia. While Great Britain produces much grain and meat, she requires to import large quantities of these articles and other food-stuffs to feed her people.

41. The **mineral** wealth of the country is very great. The highlands in Wales and Western England are among the richest coal and iron regions of the world. The most important coal-fields are in Northumberland, Durham, York, Stafford, and South Wales. Other important minerals are copper and tin—found in Devon and Cornwall—lead, and salt. The coal raised in England and Scotland is nearly 250,000,000 tons annually.

42. England is one of the most densely peopled countries in the world. Its population is 30,805,466; that of Wales, 1,720,609. The people of England are mostly descendants of the Anglo-Saxons and Normans; those of Wales, of the ancient Britons. They are generally well educated, except the lowest classes, who are very illiterate. The most celebrated institutions of learning are the ancient *Universities of Oxford* and *Cambridge*, renowned for classical learning, and the *Universities of London* and *Durham*. The Church of England is the established religion of the country, and its clergy are paid by the State.

43. The Sovereign and the Lord Chancellor must be of the Protestant faith; in other respects the adherents of all religions have the same privileges. The country is divided in two archbishoprics, Canterbury containing twenty bishoprics, and York containing six.

44. **Counties.**—England is divided into forty counties, Wales into twelve. Most of the counties are subdivided into *Hundreds*, a name which is supposed to refer to a hundred heads of families originally included in the division.

45. **Cities.**—England has many large cities. Seventy-five cities have over 50,000 inhabitants; twenty-two have over 100,000; eight have over 250,000; and London, the metropolis, has nearly one-seventh of the total population of England and Wales.

46. **London**, the capital of the British Empire, is situated on both banks of the Thames, about 40 miles from its mouth. The portion of London which is under the jurisdiction of the Lord Mayor covers but a small area, and comprises a population of about 30,000; but "Greater London" has an area of 690 square miles, and a population of six and a half millions. It is the largest, wealthiest, and most commercial city in the world. Among its magnificent public buildings are *St. Paul's Cathedral*, *Westminster Abbey*, *Houses of Parliament*, *Westminster Hall*, and *Buckingham Palace*. The *Zoological Gardens* in Regent's Park, the *Botanical Gardens* at Kew, and the *Crystal Palace* are among the interesting objects in the neighborhood of London. **Greenwich**, a suburb of London, contains the Royal Observatory, from which longitude is reckoned. London does not take high rank in exports. Its foreign trade is chiefly in imports, of which it is a great distributing centre.

47. **Liverpool**, near the mouth of the Mersey, is the second city in population, and, in connection with **Birkenhead**, on the opposite side of the river, it rivals London in its trade. Its commercial importance is due mainly to the fact that its position makes it the chief port of traffic between America and the manufacturing towns of the west of England. Among its imports are raw cotton, wool, and provisions. It exports manufactured goods.

48. **Manchester** and **Salford**, separated by the Irwell, forming one great city, are the centre of the cotton manufacture. It is connected with Liverpool by a ship canal.

49. **Leeds**, in Yorkshire, is the chief centre of the woollen manufactures.

50. **Birmingham** exceeds all other places in the world in the manufacture of hardware, including firearms and all kinds of metallic goods. **Sheffield** is specially noted for its cutlery; **Macclesfield** for the manufacture of silks. **Stoke-upon-Trent** is the centre of a district called the "Potteries," noted for the manufacture of porcelain and pottery. **Wolverhampton** is in the midst of collieries and foundries. **Newcastle-on-Tyne**, **South Shields**, and **Sunderland** are noted coal-shipping ports.

51. **Hull** is a great seaport, having a large trade with all the ports of the Baltic and the North Sea. **Derby** is noted for the manufacture of silks; **Nottingham** for lace and hosiery. **Leicester** is in the centre of an agricultural and sheep-farming district. It has important manufactures.

52. **York**, an ancient city, is the seat of one of the archbishoprics of England. *York Minster*, built in the Middle Ages, is the finest Gothic cathedral in the kingdom. **Lincoln** also has a fine cathedral. **Northampton** is noted for the manufacture of shoes; **Luton** and **Dunstable** for straw hats and bonnets. **Yarmouth**, on the North Sea, is celebrated for its herring fisheries. *Yarmouth Roads* is a sheltered channel between the shore and extensive sand-banks along the coast.

53. **Southampton** is the chief steam-packet station for the ports of the Mediterranean, the East and West Indies, and South Africa. **Winchester**, the ancient capital of England, has a fine cathedral which contains many objects of interest. **Brighton** and **Hastings** are celebrated watering-places. **Portsmouth**, a strongly-fortified city, and the headquarters of the British navy, has a fine harbor and extensive docks. **Plymouth**, a strongly-fortified city, is an important naval station. It carries on a large trade with the ports of the Baltic and Mediterranean, and also with Australia, the West Indies, and South America. Plymouth and Devonport, two miles distant, form in effect one great city. **Sheerness**, on Sheppey Island, **Chatham**, and **Woolwich** are noted for their dockyards and arsenals.

FIG. 94.—ST. PAUL'S CATHEDRAL AND WESTMINSTER ABBEY.

54. **Bristol** is a great commercial city, having a large trade with Canada, the United States, West Indies, and South Europe. It has also extensive manufactures. **Worcester** is noted for the manufacture of gloves and porcelain; **Kidderminster** for carpets; **Coventry** for ribbons, watches, and bicycles. **Bath**, **Cheltenham**, and **Leamington** are celebrated for their mineral springs.

55. **Canterbury**, the seat of the Primate of all England, has a noted cathedral. **Oxford** and **Cambridge** are the seats of the two great universities. **Eton**, **Bedford**, **Rugby**, and **Westminster** are noted for their schools for boys.

56. **Merthyr-Tydvil**, one of the largest towns in Wales, is of rapid growth, owing its prosperity to its coal mines and iron works. **Swansea**, a port in Wales, is the chief seat of the copper-smelting. Besides the native ore, large quantities are brought from Australia and Chile. It also manufactures tinplate. **Caernarvon**, a seaport, is noted for its castle, in which Edward II. was born. **Cardiff**, an important port of Wales, exports coal and iron.

57. **Industries.**—The chief branches of industry are agriculture, mining, manufacturing, and commerce. Much of the land in England is owned by a few wealthy people; and while the soil is fertile and yields large crops, only a small proportion of it is under tillage. Great Britain exceeds every other country in the world, except perhaps the United States, in the variety and value of her manufactures, including cotton, woollen, silk, leather, and all kinds of metallic goods and earthenware. Her greatness as a manufacturing country is largely dependent on her abundant supply of coal, found in the western and northern counties. It is estimated that more than half of the working population is engaged in manufacturing. In foreign commerce Great Britain ranks first among the countries of the world. Her **exports** consist chiefly of manufactured goods, cottons forming by far the largest item, metallic goods ranking second, and woollens third. Total annual value of exports from the United Kingdom is about $1,200,000,000. The chief **imports** are cotton, wool, silk, and other raw material used in the manufactures; also

flour, grain, cattle, sugar, wine, brandy, and various tropical products.

58. Great Britain is a free-trade country, the chief articles on which duties are levied being wine and other liquors, tobacco, and tea. Total annual value of imports, $2,200,000,000. The total value of exports and imports is much greater than that of any other country —Germany, France, and the United States coming next in order. England imports wool from Australia and Cape Colony; cotton from the United States, Egypt, and India; wheat from the United States, Russia, South America, Canada, Rumania, and India. She also imports lumber, cattle, cheese, and apples from Canada. In addition to her own trade, much of the foreign commerce between other countries is carried on in British vessels, which comprise nearly half the shipping of the world. The greater portion of the foreign trade is carried on through the ports on the Thames, Humber, Tyne, and Forth, on the east coasts; and those on the Bristol Channel, the Mersey, and the Clyde, on the west.

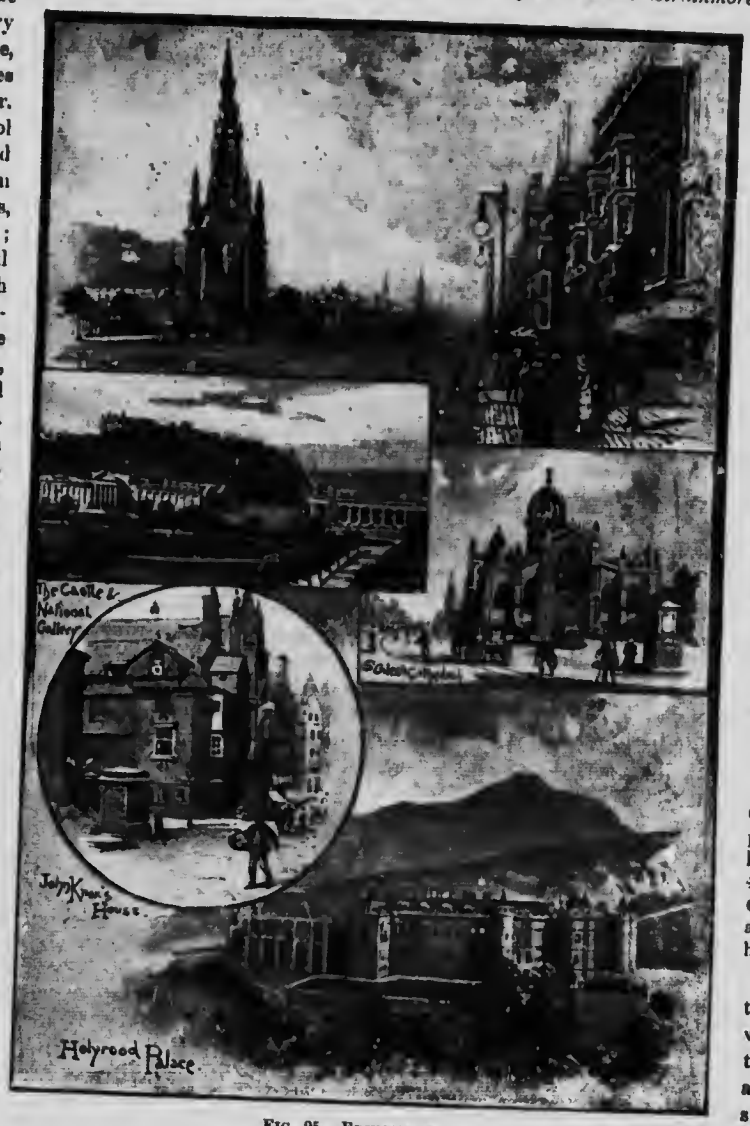


FIG. 95.—EDINBURGH.

SCOTLAND.

59. Scotland is slightly larger than the Province of New Brunswick.

Its coast is much broken by deep bays called *firths*, and it is also fringed by numerous islands. The Firths of Forth and Clyde, on opposite sides, are connected by a canal 38 miles in length; Moray Firth and Loch Linnhe are connected by the Caledonian Canal. The beautiful scenery along this canal makes it a favorite tourist route. Solway Firth is very shallow, and a large portion of it is left uncovered at ebb tide.

60. Scotland comprises two divisions—the **Lowlands**, in the south and east; and the **Highlands**, in the north and west. A plain called *Strathmore*, or the Great Valley, extending across the country north-easterly from the estuary of the Clyde, forms the northern limit of the Lowlands. The basin of the Clyde inclines towards the west, but the general slope of the country is easterly.

61. The **Highlands** are rugged and wild, and are often broken by deep glens. *Glenmore*, or the Great Glen, which stretches across the country from Loch Linnhe to Moray Firth, divides the Highlands into two sections — the Northern Highlands, which form a rugged plateau on the north, and the Grampians on the south, which are the highest mountains in the British Islands.

62. **Ben Nevis**, in the Grampians, the highest peak in the British Islands, has an elevation of 4,406 feet. *Ben Macdhui*, *Cairn Gorm*, *Ben Lomond*, and *Ben Attow*, are other high points.

63. With the exception of the Clyde, which flows westerly, the principal **rivers** are on the eastern slope. The *Tay*, 130 miles in length, navigable for small vessels to Perth, is the longest river. The *Clyde*, 100 miles in length, is noted for its beautiful scenery, and for the building of iron steamships along its banks.

64. Small **lakes**, called *lochs*, are very numerous, particularly in the Highland region. They are generally in mountain glens bordered

with high cliffs, which invest them with beauty and grandeur. *Loch Lomond*, 24 miles in length, is the largest lake in Great Britain.

65. The **climate** in the south-east of Scotland is similar to that of England; in the Highland region it is cold and more humid. The Lowlands, in the south-east, are fertile, and agriculture is in a very advanced condition. The crops comprise wheat, barley, oats, and the various vegetables of the temperate zone. Only about one-fourth of the country is suitable for cultivation. The Highlands afford fine pasturage, and sustain large numbers of cattle and sheep. Some portions of the Highlands are clothed with natural forests, or with trees planted during the past century.

66. Like England, Scotland is rich in coal and iron. These minerals are obtained chiefly from the country between Fifeness and the Firth of Clyde.

67. Scotland has two-thirds as many **inhabitants** as the Dominion of Canada. In the Highlands the people are mostly of the Celtic race, and speak Gaelic; in the Lowlands they are of Saxon and Scandinavian origin.

Presbyterianism is the prevailing religion. In the Outer Hebrides most of the inhabitants are Roman Catholics. The Scotch are industrious, brave, and intelligent. Scotland has four universities—*Edinburgh*, *Glasgow*, *Aberdeen*, and *St. Andrews*.

Scotland is divided into thirty-two counties, which are subdivided into parishes.

68. **Cities.**—**Edinburgh**, the capital of Scotland, near the Firth of Forth, is an old city, and one of the most beautiful in Europe. It is a noted educational centre, having a distinguished university and several first-class publishing houses. The most noted buildings are the *Castle*, on a precipitous rock 437 feet high, and *Holyrood House*, the ancient palace of the Scottish sovereigns. The trade of Edinburgh is carried on through **Leith**, a port two miles distant.

69. **Glasgow**, on the Clyde, in a district abounding in coal and iron, is well situated for manufacturing and commerce. It ranks first among the cities of the world in the making of iron steamships. Among its other important manufactures are cottons, engines, and machinery of all kinds.

70. **Greenock**, on the Clyde, is extensively engaged in the building of iron ships and in sugar-refining, and carries on large trade with America and other parts of the world. **Port-Glasgow**, on the Clyde, also builds iron ships, and has considerable foreign trade.

71. **Paisley** is an old town, celebrated for its extensive manufactures of thread, cottons, worsteds, starch, and other goods. It was once famous for its shawls. It has an interesting abbey, founded in 1163. **Hawick**, **Selkirk**, and **Galashiels** have important manufactures, including tweeds, blankets, and other woollen goods. **Melrose** contains the ruins of an ancient abbey. Three miles distant is *Abbotsford*, once the residence of Sir Walter Scott.

72. **Dumfries**, the burial-place of the poet Burns, has a large cattle-market. **Ayr** is an important seaport. **Kilmarnock** is noted for the manufacture of carpets. **Rothesay**, on the island of Bute, is a health resort.

73. **Dundee**, an important port on the estuary of the Tay, is the third in size among the cities of Scotland. It ranks first among the cities of Great Britain in the manufacture of coarse linen and jute fabrics.

74. **Perth**, once the capital of Scotland, is beautifully situated on the Tay, with the lofty heights of the Grampians in the background. The famous stone on which Scottish kings sat during their coronation is now in Westminster Abbey. **Arbroath** and **Montrose**, on the North Sea, manufacture jute and linen.

75. **St. Andrews** is the seat of the oldest university in Scotland. **Stirling**, noted for its castle, has important woollen manufactures. Two miles south is *Bannockburn*. **Dumbarton**, noted for its ancient castle, builds iron steamers.

76. **Aberdeen**, a seaport, and the most important city of Northern Scotland, has extensive commerce and manufactures. On the Dee, about 40 miles from Aberdeen, is *Balmoral Castle*.

77. **Peterhead**, on the North Sea, is largely engaged in the whale and herring fisheries. **Inverness**, sometimes called the capital of the Northern Highlands, is an old town at the entrance of the Caledonian Canal. **Wick**, on the North Sea, is extensively engaged in the herring fishery.

78. **Industries.**—Pastoral husbandry, agriculture, mining, manufacturing, shipbuilding, commerce and fishing are the chief pursuits. Large numbers of cattle and sheep are sent to the English markets. The manufactures embrace cottons, woollens, linens, engines, machinery, and hardware. Shipbuilding is an important business on the banks of the Clyde and other places. The fisheries are of great value, especially the salmon fisheries of the rivers and the herring fisheries on the coast.

IRELAND.

79. Ireland, which is about one-fifth larger than the Province of New Brunswick, is separated from Wales by St. George's Channel, from England by the Irish Sea, and from Scotland by the North Channel.

80. The eastern **coast** is generally low, and its harbors are obstructed by sand-banks. The other sides, deeply indented with bays and fine harbors, are rocky and bold.

FIG. 96.—GIANT'S CAUSEWAY.

81. The **surface** is generally low—a broad plain covering a large portion of the interior, and low mountains or hills lying near the coast. A large tract across the middle of the island, estimated at one-tenth the whole area, consists of bogs. Many of these bogs are covered from 20 to 25

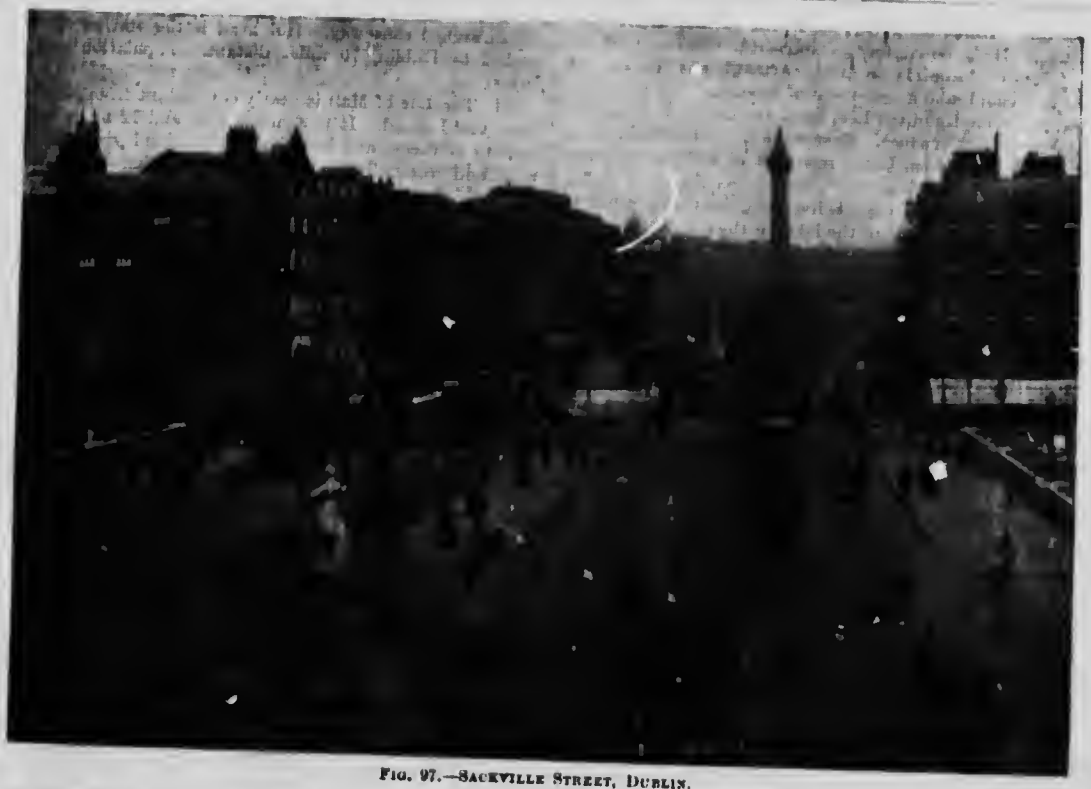


FIG. 97.—SACKVILLE STREET, DUBLIN.

feet in depth with peat, formed of decayed and compressed mosses and other vegetable matter, which, when cut and dried, is much used as fuel.

82. **The Shannon**—220 miles in length, forming several lakes along its course—is much the largest river. It is navigable to Lough Allen, over 200 miles.

83. **Lakes**, called *loughs*, are numerous. *Lough Neagh*, with an area of 150 square miles, is the largest lake in the British Islands. *The Lakes of Killarney*—three in number, in the neighborhood of the lofty height of *Carn-tual*—are celebrated for their picturesque beauty.

84. **The Giant's Causeway**, on the north coast, is a remarkable physical feature. It consists of many thousands of closely connected basaltic columns rising out of the sea, resembling at a distance human architecture.

85. The **climate** of Ireland is healthful, temperate, and humid. The prevalent winds are westerly. The moist and mild climate specially adapts the country to the production of grasses, and the remarkable verdure of the pastures and meadows has obtained for Ireland the name of the Emerald Isle. Among the grains, oats flourish best, but wheat is extensively grown. Potatoes are an important crop, and flax is largely cultivated, especially in the north. Sheep, swine, and cattle are extensively reared. The country is noted for dairy products.

86. The **population** has greatly diminished within the last fifty years. In 1841, the census gave over 8,000,000; in 1901, 4,456,546. The native Irish belong to the Celtic family. Descendants of English and Scotch are numerous, forming the majority in the Province of Ulster. The Irish are warm-hearted, witty, and excitable. Roman Catholics form the great majority of the population, except in Ulster, where Presbyterianism prevails.

The higher institutions of learning are—the *Queen's Colleges*, at Belfast, Cork, and Galway; *Trinity College* and the *Catholic University*, in Dublin; and *St. Patrick's College*, in Maynooth.

87. Ireland is divided into four provinces—*Ulster* in the north, *Leinster* in the east, *Munster* in the south, and *Connaught* in the west. These provinces are subdivided into 32 counties.

88. **Cities.—Dublin**, on both sides of the Liffey, near its mouth, the metropolis of Ireland and the residence of the Lord-Lieutenant, is one of the finest cities in Europe. It has an extensive commerce, and manufactures poplins, whisky, and porter. Phœnix Park includes large and finely ornamented grounds. Kingstown, seven miles from Dublin, is the steam-packet station to Liverpool and Holyhead.

89. **Belfast**, on Belfast Lough, is the second city in population and the first in manufactures, of which linen and cotton are the

most important. **Londonderry**, on the Foyle, has important linen manufactures. It is noted for its successful resistance to the besieging forces of James II. in 1689. **Armagh** was the ancient metropolis of Ireland, and a noted seat of learning.

90. **Cork**, at the mouth of the Lee, has a fine harbor, and exports agricultural and dairy produce. **Queenstown**, on Great Island, in Cork Harbor, 8 miles from Cork, is a port of call for steamers between Europe and America.

91. **Waterford**, on the Suir, exports live stock and farm produce to England. **Killarney**, near one of the lakes, is the resort of tourists.

92. **Limerick**, on the Shannon, 60 miles from its mouth, has a large trade, and is noted for the manufacture of lace. **Galway** is an important port in the west. **Cashel** contains the ruins of an ancient cathedral.

93. **Agriculture**, with dairy husbandry and the rearing of cattle, is the chief pursuit. Manufacturing is confined chiefly to the north, linen fabrics being the most important. The principal **export** trade is with Great Britain, embracing grain, dairy produce, cattle, bacon, linen, and Coal.

COAST ISLANDS.

94. On the coast of England are—*Holy Island*, *Farne Island*, *Coquet*, *Sheppey*, and *Thanet*, on the east; *Wight*, *Scilly*, and the *Channel Islands* on the south; *Lundy*, *Anglesey*, *Holyhead*, *Walney*, and the *Isle of Man*, on the west. On the coast of Scotland are—the *Orkneys*, *Shetlands*, and *Hebrides*.

95. **Wight**, 23 miles in length and 14 in breadth, is separated from the mainland by Spithead and the Solent. It is noted for the beauty of its scenery, and for the mildness and healthfulness of its climate. Its chief towns are *Newport*, *Ryde*, and *Cowes*. Near Newport is *Carisbrook Castle*, in which Charles I. was imprisoned. Near Cowes, by the sea, is *Osborne House*, a royal residence, in which Queen Victoria died.

96. **Holy Island**, about 4 miles in length, can be visited by carriages at low water. On the island are an ancient castle and the ruins of a famous abbey.

97. **Thanet** forms the north-eastern corner of the county of Kent, and is not now properly an island. On its shores are the famous watering-places, *Ramsgate* and *Margate*.

98. The **Scilly Isles** consist of about 150 islets and rocks. The largest comprises 1,528 acres. Five are inhabited. Population, 2,096. Barley, oats, and wheat are cultivated.

99. The **Channel Islands** have belonged to England since the time of the Norman Conquest. The chief islands of the group are *Jersey*, *Guernsey*, *Alderney*, and *Sark*. **Alderney** is 7 miles from France and 55 from England. **Jersey**, 10 miles long and 6 miles broad, comprises about two-thirds the whole area. The islands are noted for their beautiful scenery, and also for a breed of cattle known as *Alderneys*. The soil is fertile, yielding grain, vegetables, and such fruit as apples, pears, grapes, and peaches. Population, 95,841. *St. Helier's*, on Jersey, and *St. Peter's Port*, on Guernsey, are the chief towns.

100. **Anglesey** is separated from the mainland by Menai Strait, which, in the narrowest part, is about one-third of a mile broad. The strait is crossed by two bridges—a suspension bridge, and the Britannia Tubular Bridge for rail-cars. Anglesey is about 20 miles long and 17 in breadth. It contains interesting remains of the Druids, and ruins of ancient castles. The copper mines have yielded immense wealth. **Holyhead Island** is joined to Anglesey by an arched causeway. Holyhead is the station of the steam-packet to Dublin, 70 miles distant. Population of Anglesey, 50,590.

101. The **Isle of Man** is nearly equidistant from England, Scotland, and Ireland. It is 33 miles long and 12 miles broad. The scenery is varied and beautiful. The island yields lead, copper, zinc, and iron. The inhabitants, numbering 54,758, are chiefly engaged in mining, fishing, and agriculture. *Douglas* (25,000), *Castletown*, and *Peel* are the chief towns. The island has a legislature of its own.

102. The **Orkneys**, separated from Scotland by Pentland Firth, from 5 to 8 miles broad, consist of about 60 islands, 28 of which are inhabited. *Pomona*, or *Mainland*, and *Hoy*, are the largest. The islands are destitute of trees. Oats and vegetables are raised, cattle and sheep are reared, and the fisheries are important. *Kirkwall* and *Stromness*, on Pomona, are the chief places. "The Old Man of Hoy" is a high rock on the Island of Hoy. Total area, 610 square miles.

103. The **Shetlands**, 50 miles north of the Orkneys, number over 100 islands, of which 23 are inhabited, and others afford pasturage. *Mainland*, *Yell*, and *Unst* are the largest. Fishing, agriculture, and the domestic manufacture of woollens are the chief pursuits. Many sheep and ponies are reared. The islands are destitute of trees. *Lerwick*, on Mainland, is the only town.

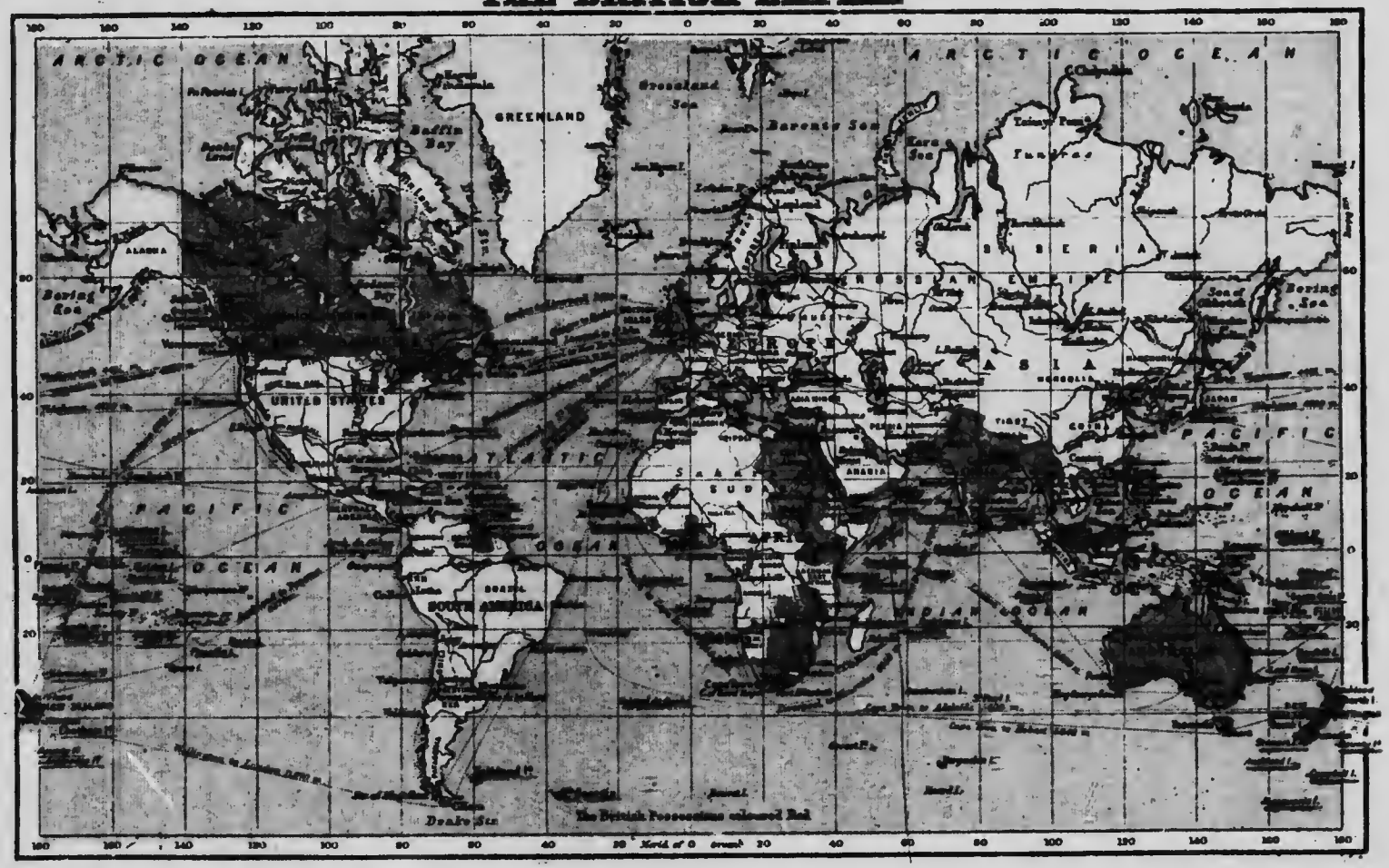
Fig. 98.—Fingal's Cave, Staffa.

104. The **Hebrides** are about 500 in number, of which over 100 are inhabited. The coast-line is exceedingly irregular. Some of the islands have high mountains, and are noted for their picturesque scenery. The climate is very mild and humid. *Staffa* is remarkable for its basaltic columns, and for Fingal's Cave. *Iona* contains the ruins of a monastery, a seat of learning and religion in the dark ages. *Eigg* is famous for the Cave of Frances, in which all the inhabitants of the island were smoked to death by a hostile clan. (*See Scott's Tales of a Grandfather.*)

THE UNITED KINGDOM OF GREAT BRITAIN AND IRELAND.

105. **Government.**—England, Wales, Scotland, and Ireland form one kingdom, called the **United Kingdom of Great Britain and Ireland**, having the same Sovereign and Parliament. The Sovereign may be either a King or a

THE BRITISH EMPIRE



THE BRITISH EMPIRE AND ITS DEPENDENCIES.

IN EUROPE—
The United Kingdom of Great Britain and Ireland.
The Isle of Man.
The Channel Islands.
Gibraltar.
The Maltese Islands.

IN ASIA AND THE INDIAN OCEAN—
Cyprus.
India—Ceylon.
Baluchistan.
Sikkim.
Straits Settlements.
Federated Malay States.
British North Borneo.
Brunei—Sarawak.
Labuan.
Hong Kong.
Aden—Perim.
Kuria Maria Islands.
Bahrein Islands.
Socotra.
Laccadive Islands.
Maldive Islands.
Andaman Islands.
Nicobar Islands.
Christmas Island.
Cocos or Keeling Islands.
Mauritius.
Rodrigues.
St. Brandon or Cargados Is.
Chagos Islands.
Seychelles Islands.
Amirante Islands.

IN AUSTRALASIA AND THE PACIFIC OCEAN—
The Commonwealth of Australia.
Queensland.
New South Wales.
Victoria.
South Australia.
Western Australia.
Tasmania.
British New Guinea.
Dominion of New Zealand.
Norfolk Island.
Kermadec Islands.
Chatham Islands.
Antipodes Islands.
Auckland Islands.
Campbell Islands.
Bounty Islands.
Fiji Islands.
Rotuma.
Tonga Islands.

IN AFRICA AND SOUTH ATLANTIC OCEAN—
The Union of South Africa.
Cape of Good Hope.
Natal.
Transvaal.
Orange Free State.
Basutoland.
Swaziland.
Bechuanaland Protectorate.
Rhodesia.
Nyassaland Protectorate.
Zanzibar Protectorate.
East African Protectorate.
Uganda Protectorate.
Anglo-Egyptian Sudan.
Egypt.
Somaliland Protectorate.
Nigeria.
Gold Coast.
Sierra Leone.
Gambia.
Ascension Island.
St. Helena Island.
Tristan da Cunha.
Falkland Islands.
South Georgia.

IN SOUTH AMERICA—
The Dominion of Canada,
Quebec.
Ontario.
Nova Scotia.
New Brunswick.
Prince Edward Island.
Manitoba.
British Columbia.
Saskatchewan.
Alberta.
Yukon.
North-West Territories.
Newfoundland—Labrador.

IN CENTRAL AND SOUTH AMERICA—
British Honduras.
British Guiana.

IN NORTH ATLANTIC—
Bermuda Islands.
Bahama Islands.
The West Indies.
Jamaica.
Cayman Islands.
Leeward Islands (Barbuda, Antigua, Redonda, Montserrat, St. Kitts, Dominica, Virgin Islands, Nevis, Anguilla, etc.).
Windward Islands (Grenada, St. Lucia, St. Vincent).
Barbados.
Tobago.
Trinidad.

Queen. The Government is a *limited hereditary monarchy*, or, as it is called, a "constitutional monarchy." The power of the Sovereign is limited, his coronation oath requiring him to govern according to the statutes of Parliament.

106. The **Parliament**, which alone has the power to make and repeal laws, is composed of the *Sovereign*, the *House of Lords*, and the *House of Commons*.

The **Sovereign** alone can legally convene, prorogue, or dissolve Parliament, and the royal assent is necessary before any Act passed by the Commons and Lords can become law.

The **House of Lords** includes, at present, about 586 members, consisting of the *Peers of the United Kingdom*, whose title and privileges are hereditary, 16 representative *Peers of Scotland*, 28 representative *Peers of Ireland*, 2 *English Archbishops*, and 24 *English Bishops*.

The Sovereign has power to create new Peers of the United Kingdom. The Scottish representative Peers are elected for each Parliament; the Irish Peers are elected for life.

The **House of Commons** is composed of 674 members, who are elected by the people—499 for England and Wales, 72 for Scotland, and 103 for Ireland. All Bills relating to taxes and the expenditure of the public money must originate with the House of Commons; other Bills may originate in either House.

107. The **Revenue** of Great Britain is about $520,000,000, and the **National Debt** about $3,000,000,000.

108. An insular position and an unrivalled *navy* render Great Britain invincible against invasion. The *land force* is much smaller than that of the "Great Powers" on the continent.

The **regular army**, not including the forces in India, is about 172,000. The army reserve comprises about 80,000; the militia, 140,000; the yeomanry, 12,000; the volunteer force, 264,000; and the Indian army, 74,000—in all, 742,000.

Great Britain ranks as the first naval power in the world. The **fleet** comprises about 370 warships, the majority propelled by steam. The available force of men and boys in the navy numbers over 100,000.

THE BRITISH EMPIRE.

109. The United Kingdom of Great Britain and Ireland forms the political centre and head of a great world power called the British Empire. This vast Empire, the largest the world has ever seen, is made up of many countries in Europe, America, Asia, Africa, and the islands of the various oceans, comprising an estimated area of 11,370,000 square miles, or over one-fifth of the entire land surface of the earth. Its estimated population is 383,900,000, or over one-fourth of the earth's inhabitants. In some portions of these territories, as Canada and Australia, the people are mainly of English, Scottish, or Irish origin, and speak the English language; in other portions they are of stock native to the country in which they live, and they speak foreign tongues.

These various countries are bound together by allegiance and loyalty to a common Sovereign. It is proposed to form new bonds of union by organizing for the Empire a High Court of Appeal, the members of which are to be chosen from the different parts of the Empire, and also to give representation to the principal countries of the Empire in the great Parliament which meets at London.

110. The various dependencies of the Empire are classified under different names, as empire, colony, and protectorate, according to the closeness of their relation to the Mother Country and to the degree of self-government accorded to them. The vast British territory in Southern Asia, known as the Empire of India, is governed by a Viceroy or Governor-General, aided by an appointed Council, under the general supervision of a member of the British Government, called the Secretary of State for India.

111. The colonies are classified into self-governing and Crown colonies. In the self-governing colonies the Crown reserves the right of appointing the governor, of veto on legislation, and of making treaties with foreign countries; but these colonies elect their own legislatures, have responsible government, and in all local affairs are practically independent. The colonies of this class are occupied for the most part by people of British origin or of European descent. They comprise the Dominion of Canada, Newfoundland, Cape Colony, Natal, Orange River Colony,* Transvaal, the Commonwealth of Australia, and New Zealand.

112. The Crown colonies are military stations or such dependencies as are occupied chiefly by people not sufficiently advanced for self-government. They are governed by officers appointed by the British Government. The most important of these are Bermuda, British Honduras, British Guiana, Falkland Isles, Gibraltar, Malta, Cyprus, Aden, Ceylon, Straits Settlements, Hong-Kong, Gambia, Sierra Leone, Gold Coast, Lagos, Ascension, St. Helena, Mauritius, Fiji, and various other islands of the Pacific Ocean.

113. In some of the Crown colonies the government is a sort of compromise between the two systems—the law-making body being partly elected by the people and partly appointed by the Crown. This is the form of government in Jamaica and other West India islands, Guiana, Malta, and Cyprus.

114. The Protectorates have native governments under British supervision. The most important are in Africa, Borneo, and New Guinea. Egypt, though nominally a dependency of Turkey, is practically under British control.

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* See South Africa, p. 156.

NORWAY.

115. The **coast** of Norway is remarkable for its deep, narrow bays, called *fiords*, bordered by high, rocky cliffs. In many places along the coast glaciers descend from the mountains to the water's edge. The coast waters are valuable fishing-grounds.

FIG. 99.—A NORWEGIAN FIORD.

116. Small **islands** on the coast are very numerous, of which the Lofoden Islands are the most noted. Near them is the *Maelström*, a famous whirlpool formed by opposing currents at certain states of the tide.

117. Norway is, for the most part, **a rugged mountainous country.**

The Scandinavian Mountains extend north and south through the whole country. They are broken by deep gorges, and they descend abruptly to the sea on the west.

118. The **climate** is humid and much milder than that of most countries in the same latitude. In the northern part of the country, at mid-winter, the sun does not appear above the horizon for several weeks; but the darkness of the long winter night is often relieved by the bright *aurora borealis*. Owing to the correspondingly long days in summer, the heat is great.

119. **Agriculture** is confined to a very small part of Norway. Only three per cent. of the whole country is under cultivation, twenty-two per cent. is in forest, and the remainder is rocky and barren highland.

The **products** of the soil are wheat, barley, oats, potatoes, and other vegetables. Cattle and sheep are numerous, and there are many reindeer. Timber is exported in large quantities to Great Britain. The other principal **exports** are fish, ice, and dairy products. The fisheries are very productive, cod, herring, and mackerel being the most valuable. The **imports** include iron, machinery, woollens, cottons, and tropical products. The trade is chiefly with Germany, Great Britain, Sweden, Russia, Denmark, and the United States.

The **inhabitants** are intelligent, industrious, and moral. In religion they are chiefly Lutheran. They are fond of sea life, and their trading-vessels are scattered widely over the ocean.

120. The **cities** are on the coast. **Christiania**, the capital, on a fiord, has considerable trade. **Bergen** is a fortified city. **Drontheim** exports fish, lumber, and copper. It has a famous old cathedral. **Hammerfest**, in the far north, is one of the ports from which whalers set out for the northern seas.

121. During the Saxon period of British history, Norway, Sweden, and Denmark were the home of bands of pirates, called Vikings, who were the terror of the other maritime countries of Europe. By the Treaty of Kalmar, 1397, the three countries were united under the Crown of Denmark. Sweden became independent under Gustavus Vasa in 1521. On the readjustment of European affairs in 1814, Norway and Sweden, while remaining as two distinct kingdoms, were united under a common sovereign. In 1905 this union was dissolved, and Norway chose a son of the King of Denmark for her king.

SWEDEN.

122. **Sweden** comprises the eastern side of the Scandinavian peninsula. On the south-west are the waters known as the Skager Rack, the Cattegat, and the Sound; on the east, the Baltic Sea and the Gulf of Finland. The **coast** is generally low and serrated with narrow bays. Small **islands** are numerous near the coast, of which Gothland and Oland are the largest.

123. Sweden includes the eastern slopes of the Scandinavian Mountains and the plains bordering the Baltic Sea. The country, though varied, is largely lowland. **The rivers** are small and generally rapid. The Tornea is the largest. They form many lakes along their course, which, connected by canals, are of great commercial value. The **largest lakes** are Wener, Wetter, Mälar, and Hielmar. Mälar is remarkable for its many small islands.

124. The **climate** is subject to extremes—hot in summer, cold in winter. Forests cover nearly half the country. About one-twelfth of the land area is under cultivation, yielding oats, barley, wheat, potatoes, sugar-beets, hemp, and flax.

125. The chief **minerals** are iron, copper, cobalt, coal, and lead. Iron ore is abundant, and of superior quality.

126. The leading **industries** are agriculture, lumbering, and mining. The principal **exports** are iron, timber, pulp, and butter. The **imports** are manufactures, coal, and tropical products. The trade is chiefly with Great Britain, Germany, and Denmark.

lat.
alt.
parallax and
ocean currents
maritime orientation
harmaya


BRITISH ISLANDS
IRELAND
ATLANTIC OCEAN
NORTH SEA
Skager Rack
DENMARK
English Channel
LONDON
PARIS
FRANCE
Bay of Biscay
SPAIN
Balearic Islands
Majorca
Minorca
Ivica
Sardinia
MEDITERRANEAN SEA
MOROCCO
ALGERIA
TUNIS
AFRICA
Longitude East 15 from Greenwich


Finland
Gulf of Finland
Petersburg
Moscow
RUSSIA
Minsk
Orel
Tula
Kaluga
Smolensk
Riga
Wilna
Grodno
Lemberg
Kherson
Ekaterinoslav
Odessa
Sea of Azov
Crimea
CIRCASSIA
Stavropol
Astrakhan
CASPIAN SEA
Amasia
Trebizond
BLACK SEA
TRANS CAUCASIA
Kars
Erzeroum
Batoum
Sinope
Constantinople
Marmora
Smyrna
TURKEY IN ASIA
Antioch
Cyprus
Candia or Crete
Samara
Simbirsk
Penza
Tambov
Saratov
Astrakhan
Kiev
Volhynia
Podolia
Bessarabia
Moldavia
Wallachia
Bulgaria
Servia
Bosnia
Hungary
Transylvania
Austria
Galicia
Poland
Prussia
Courland
Livonia
Esthonia
Gulf of Bothnia
Sweden
Norway

Flanders. —

Ostend — is a main in Netherlands.

Bruges

Grammar notes for others

Dunkerque is a city, in France, exports [illegible]

Riga — has a commercial [illegible]

of Russia, [illegible]

Bremen. — on the Weser is the first import in Germany

Odessa. — a [illegible]

Rheims. — in France noted for cathedral

Astrachan. — near the mouth of Volga commerce trade with Persia

Trieste. — on Adriatic is chief port

Shilled

Hull. — leather money.

Plymouth. — [illegible]

Calais. — [illegible]

Nice. — in France is a [illegible]

Utrecht. — [illegible]

127. Lutheranism is established by law, and is the religion of nearly all the people.

128. **Stockholm**, the capital and largest city, is built partly on small islands in Lake Mälar. It has many fine public buildings.

The other important cities are **Gottenburg**, a seaport and manufacturing town; **Malmö**, a trading-port; **Upsala**, the seat of a famous university; **Karlskrona**, the chief naval station; and **Kalmar**.

129. The **Government** is a limited monarchy. Parliament comprises two Houses, both elected, the Upper House for three years, the Lower for nine years.

130. **Lapland**, on the north-east of Sweden, and extending easterly to the White Sea, belongs partly to Sweden and partly to Russia. The Laplanders are a nomadic people, of very small stature, and belonging to the Mongolian race. Their wealth consists chiefly in herds of reindeer. The flesh and milk of these animals furnish the Laplanders with food, and their skins with clothing.

DENMARK.

131. Denmark is one of the oldest monarchies of Europe. Its history is closely connected with that of Norway and Sweden. In the eleventh century, Canute, a Danish king, ruled over England, Denmark, Norway, and Sweden. Denmark is now a small weak State.

132. Denmark consists of the Peninsula of Jutland, the northern extremity of which is called the *Skaw*, and of the adjoining archipelago, comprising in all an area of about two-thirds that of Nova Scotia.

133. The largest island is **Zealand**, which is nearly as large as Cape Breton, and is separated from Sweden by a narrow strait called the *Sound*. **Fünen**, about half as large, is separated from Zealand by the *Great Belt*, and from the peninsula by the *Little Belt*. Langeland, Laaland, Falster, and Möen are next in size.

134. Denmark is generally low and level. In some parts dikes are required to keep out the sea.

135. The **climate** is mild, and excessively humid. The soil is fertile, and agriculture, stock-raising, dairying, and fishing are the chief industries.

136. The **inhabitants** have long been noted as bold seamen. They are generally intelligent, elementary education being compulsory. The Lutheran religion is established by law, but all sects are tolerated.

137. **Towns.**—**Copenhagen**, the capital, situated partly in Zealand and partly on the small island of Amager, is the chief centre of commerce and of Danish literature. Its university is of high repute. *Christiansborg*, the royal palace, is very large, and contains a celebrated museum of northern antiquities.

138. **Odense**, on the island of Fünen, **Elsinore**, on Zealand, containing Kronberg Castle, **Aalborg**, and **Aarhuus**, are important seaports. **Viborg** is a small but ancient town in the interior.

139. The chief **exports** are animals, pork, butter, and eggs. The **imports** are coal, manufactured goods of various kinds, and tropical produce. The trade is chiefly with Great Britain and Germany. The value of butter exported annually to Great Britain is nearly $30,000,000.

140. The **government** is a hereditary limited monarchy. The *Reichstag* or Parliament comprises two Houses—the Lower House being elected by the people, the Upper House partly elective and partly appointed for life by the Crown.

141. The **Faroe Islands**, north of the Shetlands, belong to Denmark. There are seventeen inhabited islands. Population, 11,000. Fishing, tending sheep, and collecting eider-down, are the chief pursuits.

Denmark also owns *Greenland* and *Iceland*; and in the West Indies, *Santa Cruz*, *St. Thomas*, and *St. John*.

RUSSIA.

142. Russia occupies the north-eastern portion of Europe, comprising nearly two-thirds the whole area of the continent. The coast is comparatively limited, and is mainly confined to seas which are ice-bound during a large part of the year. The chief ports are on the Black Sea and the Baltic.

Fig. 101.—Winter Travelling in Russia.

143. The principal **islands** on the coast are, *Nova Zembla* and *Spitzbergen*, in the Arctic Ocean; and the *Aland Archipelago*, *Oesel*, and *Dago*, in the Baltic.

Nova Zembla consists of two uninhabited islands separated by a narrow strait. **Spitsbergen** consists of a group of uninhabited islands, often visited by those engaged in the whale and seal fisheries. The **Aland Archipelago**, comprising about sixty islands, is an important naval station for the Russian fleet.

144. European Russia is a vast plain, sloping from the more elevated central part towards the north, south, and west. The **rivers** are numerous and large. They are generally sluggish, and are navigable throughout the greater part of their course.

145. The **Volga**, the longest river in Europe, is a great highway for commerce. It is connected with the Black Sea, the Baltic, and the White Sea by canals and rivers flowing into these seas. The **Neva** is the outlet of the most important lake system of Europe, including *Lakes Ladoya*, *Onega*, and *Saima*. The **Dnieper**, the third river of Europe in point of size, flows through a rich agricultural country.

146. The **climate** varies from warm temperate in the south to severely cold within the Arctic Circle. The extremes are greater than on the west coast of Europe, summer being very hot and winter extremely cold.

147. A large part of Russia is unfit for agriculture. In the northern portion is a vast area called the **Tundra**, frozen during a large part of the year, and producing little else than shrubs and mosses. Farther south are large forests, yielding valuable timber, and abounding in bears, wolves, and other wild animals. In the south-west, between the Dnieper and the Ural Rivers, is a rich agricultural country, called the Black Earth Region, yielding wheat and other kinds of grain, hemp, flax, tobacco, sugar-beets, and grapes. Russia is, next to the United States, the greatest wheat-producing country in the world.

In the south of Russia are large treeless plains, called **Steppes**, which sustain immense numbers of cattle, sheep, and horses. Towards the Caspian Sea are extensive sandy deserts.

148. The Ural Mountains are rich in gold, silver, platinum, copper, and iron. The other **minerals** comprise coal, cobalt, mercury, petroleum, and salt. Russia yields more platinum than does any other country. The petroleum wells on the west coast of the Caspian Sea are the most productive in the world.

149. Russia comprises about two-sevenths of the whole population of Europe. The inhabitants are of varied origin. The lower classes are illiterate and very poor. The farmers live in villages, and rent the neighboring lands from the government or from wealthy nobles.

The established religion is the Greek Church, of which the Czar is the head. Other forms of religion are tolerated, though not regarded with much favor. The Jews have been so harshly treated that many of them have emigrated to other lands.

150. **Cities.—Petrograd**, the capital, a beautiful city occupying low marshy ground near the mouth of the Neva, is the fifth in size of the cities of Europe. Its extensive manufactures include cotton, leather, glass, and porcelain. A large part of the foreign trade of the country is carried on through Petrograd. Among its important buildings are the *Czar's Winter Palace* and *St. Isaac's Cathedral*. **Kronstadt**, the port of Petrograd, on an island 20 miles distant, is a strongly-fortified naval station.

151. **Riga**, a fortified town on the Gulf of Riga, one of the first commercial towns of Russia, has a large trade with Great Britain, receiving coal, salt, and manufactured goods in exchange for grain, hemp, and flax. **Helsingfors** is a strongly-fortified naval station, and the chief commercial city of Finland. **Revel** is an important commercial city. **Archangel** is the chief commercial town in the north of Russia. Its harbor is frozen eight months in the year.

152. **Moscow**, nearly as large as Petrograd, is the chief commercial and railway centre of Russia, and has important manufactures of woollens, cotton, silk, and leather. It has also a noted university. The coronation ceremonies take place in this city within the *Kremlin*, a triangular enclosure about half a mile in circuit. The Kremlin is fortified by a lofty wall and high towers. It contains several cathedrals, and a royal palace of little architectural beauty, but richly adorned within by paintings, sculptures, and other works of art. Among the noted features of the Kremlin are its many large bells, one of which, known as the Great Bell, is 67 feet in circumference.

FIG. 102.—THE KREMLIN, MOSCOW.

153. **Nijni-Novgorod** is noted for its great fair, held annually in August and September, and attended by 250,000 people from various countries of Europe and Asia. **Tula** manufactures firearms. **Kiev** is sometimes called the mother city of Russia. **Kazan** is a commercial and manufacturing centre.

154. **Warsaw**, on the Vistula, the second city of Russia in size, is the capital of Poland. It is an important commercial and manufacturing town. **Vilna** has a large trade in timber and grain. **Lodz** is noted for its cotton factories.

155. **Odessa**, on the Black Sea, is the chief seaport and commercial centre of Southern Russia. It exports grain, sugar, flax, wool, hides, and tallow. **Astrakhan**, on an island near the mouth of the Volga, carries on an extensive trade with the countries of Asia. **Taganrog** is a leading seaport.

156. The leading **industries** are agriculture, lumbering, mining, fishing, manufacturing, and commerce. Agricul-

ture gives employment to a very large proportion of the people. The manufactures are mostly coarse cotton, woollen, and leather goods. Manufacturing industries are rapidly increasing.

157. The **exports** comprise wheat and other grain, timber, flax, naphtha, cattle, and wool. The **imports** include manufactured goods, tropical produce, raw cotton, and tea. Trade is largely carried on by means of fairs, which are held annually in many of the large cities. The foreign trade is chiefly with Great Britain, Germany, the United States, Italy, France, and China.

158. Merchandise is transported from one part of the country to another largely by means of canals. The most important canal system is that which connects the Caspian and Baltic Seas by way of the Volga and the Neva Rivers. In recent years Russia has shown great enterprise in the building of railways. She has constructed a line across Siberia which connects Petrograd with the waters on the east of Asia.

159. The **government** is a limited hereditary monarchy, though not yet fully controlled by a representative Parliament. The Czar is advised by a Council of his own selection. The liberties of his subjects are greatly restricted. Political offences which in other countries would be of little account are punished with imprisonment or exile.

160. Russia does not rank high as a naval power, but her army is probably the largest in the world. The Russian army in time of peace is about 850,000 men, and in time of war may reach nearly ten times that number.

161. The **Russian Empire** is, next to the British Empire, the most extensive political division in the world. Besides the possessions in Europe, it includes nearly one-third of Asia. The total area is about 8,600,000 square miles, and the population 123,000,000.

162. It is to the extraordinary efforts of Peter the Great, who became Czar in 1682, that Russia owes her civilization and position as one of the Great Powers of Europe. The country was previously in a state of barbarism. Extension of territory has long been the settled policy of the Czars, and it has often been effected by the grossest injustice towards weaker States. Finland, between the Gulfs of Bothnia and Finland, was taken from Sweden. Poland, once a powerful kingdom in the centre of Europe, was wholly absorbed by Russia, Prussia, and Austria. Large portions of Independent Tartary and China have been annexed to the empire.

THE GERMAN EMPIRE.

163. The German Empire, situated in Central Europe, is a confederation of twenty-six States, under the leadership of Prussia. These States, consisting of kingdoms, grand duchies, duchies, principalities, and free towns, differ greatly in size and importance. They comprise a united area about equal to that of the Province of Ontario.

164. The **coast-line** is confined to the shores of the Baltic Sea on the north, and of the North Sea on the north-west. Dantzic, Stettin, Königsburg, Memel, Hamburg, Bremen, Kiel, and Altona are the most important ports. A ship canal, 61 miles in length, between the mouth of the Elbe and Kiel, connects the North Sea and the Baltic.

The **islands** on the coast are *Rügen*, in the Baltic, and *Heligoland*, near the mouth of the Elbe.

165. Northern Germany is low, embracing extensive sandy heaths, peat moors, and marshes. Dikes are necessary along some parts of the Baltic coast to protect the country from the sea. Southern Germany is more elevated, and has several ranges of low mountains.

166. **The Rhine** is the most important river in Germany. It rises in Mount St. Gothard over 7,000 feet above the sea, and in its upper course it has cut for itself a deep, narrow valley through the highlands, presenting scenery of rare beauty. Its banks are

FIG. 108.—THE RHINE AT BONN.

varied with busy cities, charming valleys, vine-clad hills, and rocky cliffs crowned with ancient towers and castles. In its lower course the river has formed an alluvial plain of great fertility. The Elbe is also noted for its fine scenery.

167. The **climate** is varied. In the west and south, except on the mountains, it is mild; in the north it is humid; in the north-east, cold. A large proportion of the land is suited to agriculture, the south-western portion being the most fertile. The principal crops are rye, wheat, flax, hemp, hops, tobacco, sugar-beet, and various vegetables and fruits belonging to temperate climates. The river valleys yield the finest grapes. The southern highlands are covered with forests, which are carefully protected. The rearing of cattle and sheep is a source of much wealth.

168. The **minerals** are varied and abundant. Germany ranks first among the countries of the world in the production of zinc, and stands next to Great Britain in coal and iron. The other minerals are silver, copper, lead, and salt. The shores of the Baltic have long been celebrated for amber, which is washed up by the waves.

169. The **population** is between sixty and seventy millions. The Germans are noted for intelligence and industry. In-

stitutions of learning, including universities, academies, normal schools, and common schools, are numerous, and of high rank. Attendance at school is compulsory.

About two-thirds of the inhabitants are Protestants and one-third Roman Catholics. All denominations have equal civil privileges. The kingdom of Prussia comprises two-thirds of the whole area and three-fifths of the population. Bavaria is about as large as New Brunswick, and has about one-ninth the population of the empire. Baden, from its beauty and fertility, has been called the

Fig. 104.—Cologne Cathedral.

Paradise of Germany. Saxony, with a population of 658 to the square mile, is one of the most densely peopled countries in the world.

170. **Cities.**—**Berlin,** on the Spree, the third city of Europe in point of size, is the capital of the German Empire, and the largest city. It has important manufactures, and is noted for its literary institutions, museums, and picture galleries. Its university is one of the most celebrated in the world. **Potsdam,** 16 miles from Berlin, contains many palaces, and is the summer residence of the Emperor.

171. **Breslau,** on the Oder, is a great manufacturing and commercial centre, trading largely in grain, wool, and timber. **Stettin,** an important commercial, manufacturing, and shipbuilding city; **Dantzic,** having, next to Odessa, the largest grain trade in Europe; **Königsberg,** having a large trade in timber, hemp, and flax; **Memel,** also dealing in grain and timber, are important ports.

Magdeburg, noted for its cathedral and palace, is a leading manufacturing and commercial city, and is the centre of a large sugar trade. **Halle** has extensive salt-works and a noted university.

172. **Cologne,** strongly fortified, is the largest and most commercial town on the Rhine, noted for its magnificent Gothic cathedral, begun in 1248 and completed in 1880. **Dusseldorf** is an important commercial and manufacturing town on the Rhine. **Barmen** and **Elberfeld** form a noted manufacturing centre, comprising ribbons, lace, thread, silk, cotton, and chemicals. **Coblentz,** a strongly-fortified city, and **Moselle** trade in wine and various manufactures. **Ehrenbreitstein,** on the Rhine, opposite Coblentz, is noted for its strong fortress. **Treves,** on the Moselle, is noted for its Roman antiquities. **Aix-la-Chapelle,** a commercial and railway centre, has a noted cathedral, and is famous for its hot sulphur springs.

173. **Hanover** is a manufacturing and commercial city. **Gottingen** is noted for its university. **Cassel** is noted for its picture gallery, and **Wiesbaden** for its hot springs. **Frankfort** (on the Main) is a great manufacturing and commercial city, and one of the most important banking cities of the world. **Kiel** is the chief German naval station on the Baltic. **Altona** is a manufacturing city, with large foreign commerce.

174. **Hamburg,** on the Elbe, the chief seaport of Germany, and one of the first commercial cities of Europe, and **Bremen,** on the Weser, the second seaport in Germany, extensively engaged in shipbuilding and tobacco manufacture, have a large trade with Northern Europe, Great Britain, and America. These cities, and **Lubeck,** a leading seaport, having a large trade in timber, tar, and grain, are free towns with republican governments.

175. **Dresden,** on the Elbe, the capital of Saxony, a large manufacturing city, is noted for its art collections. **Meissen,** 13 miles from Dresden, is celebrated for the manufacture of porcelain, and for its ancient cathedral. **Leipsic** is celebrated for its great fair and for its university, and it ranks first among the cities of the world in the publishing and selling of books. **Chemnitz** manufactures cottons, woollens, gloves, stockings, and machinery, and has a large trade with the United States. **Brunswick** manufactures sugar, tobacco, and woollens. **Gotha** is a large commercial city. **Weimar** was made famous by the residence in it of Goethe, Schiller, Herder, Wieland, and Liszt. Goethe's house is now a museum, containing many souvenirs of the great poet.

176. **Munich,** the capital of Bavaria, is a great manufacturing and commercial city, and is famous as a centre of education, music, and art. **Nuremburg** is a great manufacturing city, specially noted for the manufacture of toys and fancy goods. **Ratisbon,** on the Danube, manufactures pottery and lead pencils.

177. **Stuttgart,** noted as a book-publishing city, manufactures drugs, chemicals, dyes, and sugar. **Ulm,** a strongly-fortified city, has one of the largest cathedrals in Germany. **Karlsruhe,** the capital of Baden, is built in the form of a fan, its streets radiating from the ducal palace. **Baden-Baden** is famous for its hot medicinal springs. **Heidelberg** has a beautiful situation, and is the seat of a celebrated university. **Freiburg,** in the centre of a mining district, is noted for its university and cathedral.

178. **Strasburg,** the capital of Alsace-Lorraine, and **Metz** are strongly-fortified cities. The cathedrals of these cities are fine specimens of mediæval structure, that of Strasburg containing a wonderful astronomical clock.

FIG. 105.—BUDA-PESTH.

179. The chief **industries** are agriculture, manufacturing, mining, and commerce. Germany is one of the greatest manufacturing countries in the world. The manufactures comprise woollens, cottons, silks, linens, fancy goods, iron, steel, hardware, porcelain, and beet-root sugar. The **exports** comprise the various articles of manufacture. Germany supplies a large proportion of the sugar used in Europe, the value of that sent to England being about $45,000,000 annually. The **imports** are cotton, silk, wool, fish, tea, coffee, and various tropical products. Internal commerce is promoted by the many navigable rivers, which are connected by canals and by numerous railways. Germany has about 7,500 miles of navigable water-ways, including rivers and canals, and she has about 30,000 miles of railway.

180. The **government** of the empire is a hereditary monarchy, with a Parliament of two Houses, the *Bundesrath* and *Reichstag*. The King of Prussia holds the hereditary title of Emperor of Germany.

The Bundesrath is a federal council, the fifty-eight members of which are appointed annually by the governments of the various States. To declare war, if not merely defensive, the Emperor must have the consent of this body. The members of the Reichstag, numbering 397, are elected by universal suffrage of the people once in five years. Germany is the strongest military power in Europe, the army being very large, well drilled, and furnished with the most effective modern equipments. The army on the peace footing numbers about 500,000, and has a war strength of over 4,000,000.

181. The various German States were united in 1871, largely through the instrumentality of Bismarck, then Prime Minister of Prussia, into one great confederation called the German Empire. William, King of Prussia, was elected Emperor, with the provision that the succession shall be hereditary in his family, known as the Hohenzollern family.

182. **Foreign Possessions.**—In Africa, estimated area 950,000 square miles; population, 10,000,000. Pacific Isles, about 100,000 square miles; population, 400,000.

AUSTRIA-HUNGARY.

183. This empire comprises two principal divisions, Austria and Hungary, united under one sovereign. Its sea-coast, confined to the east side of the Adriatic, is separated from the productive parts of the empire by high mountains.

The great lowland plain of Hungary is nearly surrounded by mountain ranges. Bohemia and Moravia also are shut in by mountains.

184. The **Danube**, which is the principal river, rises in the Alps not far from the sources of the Rhine. It enters and leaves the plains of Hungary through narrow gaps which it has cut through the mountains.

185. The **climate**, except on the mountains, is mild, though the extremes are greater than in Western Europe in the same latitude.

186. The **soil** on the plains is exceedingly fertile, yielding grain, flax, hemp, and olives. The mulberry tree, furnishing food for the silkworm, and the grape, yielding the celebrated Hungarian wines, are extensively cultivated in the south. The country also has rich pasture lands, sustaining large numbers of cattle, horses, and sheep.

187. The **minerals** are important, comprising iron, coal, lead, quicksilver, silver, zinc, and salt.

188. The **inhabitants** belong to several different races, of which the principal are the German in the west, the Magyar

or Hungarian in the east, and the Slavonian in the north and north-east. Roman Catholics, who occupy the western part of the country chiefly, form about half the population. In the east are many adherents of the Greek Church. Jews are very numerous in some of the cities.

189. **Cities.**—**Vienna**, the capital, situated near the Danube, on the route between London, Paris, Berlin, and Constantinople, and also on the route between Petrograd and Rome, is the great seat of manufacture and commerce, and has fine literary institutions. It is the seat of an old university of high distinction.

190. **Prague**, the capital of Bohemia, is a large manufacturing and commercial city. **Teplitz** and **Karlsbad**, in Bohemia, are among the most celebrated watering-places in Europe. **Brünn**, in Moravia, is an important manufacturing city. Twelve miles east is Austerlitz, the scene of a great battle in 1805.

191. **Trieste**, on the Adriatic, is the chief port and centre of foreign trade. **Linz**, on the Danube, and **Salzburg** are manufacturing and trading cities. **Idria** is noted for its quicksilver mines. **Lemberg**, in Galicia, has an important trade. **Cracow**, the ancient capital of Poland, has a fine cathedral, where many of the kings of Poland were crowned and buried.

192. **Buda-Pesth**, on the Danube, the second city of the Austrian Empire, and the capital of Hungary, has a large trade in grain, wool, and hides. **Presburg**, on the Danube, is an important seat of trade. **Tokay** and **Erlau** are famous for their excellent wines, **Schemnitz** and **Kremnitz** for gold and silver mines. **Debreczin** is noted for its horse-market, **Szegedin** for manufactures and trade.

193. The chief **pursuits** are agriculture, mining, manufacturing, and commerce. Manufacturing is most important in the German provinces of the north-west. Bohemia is noted for the manufacture of glass. Large quantities of wine are made in Hungary, but the people of this part of the empire live chiefly by agriculture and mining. The **exports** comprise cattle, horses, hides, grain, timber, sugar, and wine; the **imports**, cotton, coal, coffee, manufactured goods, and tropical products. The trade is with Germany and Great Britain. Commerce is carried on chiefly by railway and by the Danube. The foreign trade of the northern districts is largely through German ports.

194. Austria and Hungary are two distinct kingdoms, each having its own constitution as a limited monarchy and its own special parliament—the *Reichsrath* in Austria and the *Reichstag* in Hungary—but united under one sovereign or emperor. Legislation in matters common to the two kingdoms, comprising foreign, military, and naval affairs, commerce, coinage, and defence, is effected by delegates from the Reichsrath and the Reichstag, meeting alternately in Vienna and Buda-Pesth.

In point of military strength, Austria-Hungary probably ranks as fifth among the Great Powers of Europe. The army on a peace footing numbers about 350,000; on a war footing, about 2,500,000. The naval force is small, and mainly for coast defence.

195. **Liechtenstein** is an independent principality under Austrian influence, lying between Austria and Switzerland. It is a monntainous country. Capital, *Vaduz*.

HOLLAND, or THE NETHERLANDS

196. Holland, or the Netherlands, is situated on the west of Germany, along the North Sea. The *Zuyder Zee* is a shallow bay, extending about 80 miles inland. It was formerly a lake, and became connected with the North Sea through inundations in the thirteenth century. At the mouth of the bay are *Texel*, *Vlieland*, and other small islands.

197. The names *Holland* and *Netherlands*, signifying lowlands, are expressive of the character of the country, which, composed chiefly of alluvium deposited by the Rhine, is remarkably low and level. The only hills are sand-banks on some parts of the coast.

FIG. 106.—A DIKE IN HOLLAND.

The country is protected from inundation along the low coasts and rivers by dikes, in some cases 60 feet high. These dikes are closely watched, and a break is promptly repaired. Canals, often bordered with rows of trees, and serving the double purpose of navigation and drainage, intersect the country in all directions. Crowds of skaters cover the canals in winter. The lands enclosed within the dikes, called *polders*, are drained by pumps worked by steam and windmills. Many small lakes have been drained in a similar manner. It has been estimated that over one-third of the lands of the country would lie under water if they were not protected by dikes.

198. The **rivers** *Scheldt*, *Meuse*, and *Rhine* enter the sea by various channels through the low coast country. By a violent storm in the early part of the fifteenth century, the sea was driven up the estuary of the Meuse, destroying many villages.

199. The **climate** is very humid, and the bright days in the year are few. The soil is very fertile, and is carefully cultivated, yielding all the common cereals and vegetables, and also flax, hemp, and tobacco. The pastures are excellent, and horses and cattle are reared in great numbers. There are no forests. The fisheries are exten-

sive and valuable. Market-gardening and flower-gardening are favorite pursuits.

200. **The inhabitants**, called Dutch, are noted for intelligence, industry, enterprise, and cleanliness. About two-thirds are Protestants, and one-third Roman Catholics.

201. **Cities.—The Hague**, a beautiful city between two arms of the Rhine, near the North Sea, is the usual residence of the king, and the seat of the government. **Delft** has a cheese and butter market, and manufactures fine pott[illegible]

202. **Amsterdam**, the commercial capital, is on an inlet of the Zuyder Zee, called the Y. It occupies marshy ground, and the houses are built on piles driven deep into the earth. Canals traverse the city in all directions. It is a great market for sugar, coffee, spices, rice, and other colonial products, and especially famous for the cutting and polishing of diamonds.

203. **Rotterdam** is a great seaport and commercial city, dealing largely in colonial produce. It is connected with New York by a regular steamship line.

204. **Schiedam** is noted for the manufacture of gin. **Utrecht**, a historic city, is the seat of a university, and manufactures cigars and chemicals. **Leyden** has a fine university and interesting museums. **Haarlem** is noted for its flower gardens.

205. The chief **industries** are agriculture, manufacturing, fishing, and commerce. The manufactures include linen and cotton goods, sugar, starch, pottery, butter, and cheese. Shipbuilding is an important industry. The **exports** comprise dairy produce, live stock, flax, hemp, cotton goods, gin, and refined sugar. The imports are lumber, coal, iron, grain, tea, spices, and other tropical products.

206. The **government** is a limited monarchy. The legislature, called the States-General, consists of two Chambers.

In the seventeenth century Holland was the first commercial country in Europe, and had colonial possessions in all parts of the world. Much of its former colonial territory is now owned by Great Britain. It is still a prosperous country, but its relative importance has greatly declined.

207. The **foreign possessions** of the Netherlands are extensive, including the island of *Java*—which is the most important colonial possession—*Celebes*, portions of *Borneo*, *Sumatra*, and *Papua*, the *Moluccas*, *Dutch Guiana*, *Curaçao*, and other small islands in the West Indies. The population of the dependencies is over 32,000,000.

208. The small grand duchy of **Luxemburg**, on the south-east of Belgium, was declared independent by treaty of the Great Powers in 1867. The capital of Luxemburg, formerly one of the strongest fortresses in Europe, was dismantled under the terms of this treaty, and its fortified places have been converted into boulevards and parks.

BELGIUM.

209. Belgium is situated along the North Sea, between France and Holland. The larger portion of it is a low, level, and fertile agricultural country, similar to Holland in its physical features and products. The coast, which is about 40 miles in length, is fringed with sand-hills. The south-eastern portion of the country is more elevated and rugged, and the soil is poor; but the highlands have extensive forests, and are rich in mines of coal and iron. There are also valuable mines of zinc, lead, and silver.

210. Belgium is more densely peopled than any other country in Europe, except Saxony, having an average of [illegible] to the square mile. In the northern portion of the country the people are mostly of Germanic origin, and speak Flemish, a language resembling the Dutch. In the southern half they are French, and speak the French language. The Belgians are intelligent and industrious, and are famed for skill in painting, music, and architecture. Nearly all are Roman Catholics, but the ministers of all denominations are paid in part from the National Treasury.

211. **Brussels**, the capital, on the Senne, is one of the handsomest cities in Europe. It has extensive and varied manufactures, comprising lace, carpets, linens, ribbons, and embroideries. It is a noted art centre. The united population of Brussels and several smaller towns in the neighborhood is over half a million. Nine miles south of the city is the battle-field of Waterloo.

212. **Antwerp**, a strong fortress on the Scheldt, 60 miles from the North Sea, is the chief commercial city of Belgium. It is connected with New York by regular steamship lines. Its Gothic cathedral contains celebrated paintings by Rubens. **Ghent** is the chief seat of cotton, linen, and leather manufacturing in Belgium, and has a large trade in grain and flax. **Bruges** is noted for its lace. **Ostend**, on the North Sea, is the chief centre of the fisheries, and has [illegible]

Fig. 107.—A Milk Cart, Belgium.

213. **Liège**, in the coal and iron region, is noted for the manufacture of firearms, engines, and hardware. **Charleroi**, in the mining district, has also extensive iron manufactures. **Namur**, noted

for the manufacture of cutlery; **Tournay**, for the manufacture of carpets and stockings; **Mechlin**, for the manufacture of lace; **Verviers**, for the manufacture of cloth, are important cities.

214. Agriculture is a leading **pursuit**. The soil has been made so productive by careful cultivation, that Belgium has been called the "Garden of Europe." Mining is the leading pursuit in the south, iron and coal being the most important products. Belgium is one of the greatest manufacturing countries in the world, producing carpets, lace, cottons, woollens, linens, firearms, engines, cutlery, glassware, and beet-root sugar. The **exports** are manufactured goods, including yarns, textiles, chemicals, machinery, and dairy produce; also live stock, coal, and other mineral products. The **imports** are grain, cotton, tea, and tropical produce. The rivers and canals of Belgium afford unrivalled advantages for inland trade. The foreign trade is chiefly with Great Britain, Germany, France, the Netherlands, and the United States.

215. Belgium is a constitutional hereditary monarchy. The legislative power is vested in the King, Senate, and House of Representatives.

FRANCE.

216. France, which is about twice as large as the British Isles, is a land of great resources, and it is well situated for taking a leading part in the world's commerce. Its coast-line along the English Channel, the Bay of Biscay, and the Mediterranean Sea has an entire length of about 1,500 miles. It has many good harbors, of which *Havre de Grace*, *Cherbourg*, *Dunkirk*, *Calais*, *Boulogne*, *Dieppe*, *St. Malo*, *Brest*, *Nantes*, *Bordeaux*, *Bayonne*, *Montpellier*, *Marseilles*, and *Toulon* are the most important.

FIG. 108.—CHURCH OF NOTRE DAME, PARIS.

217. The island of **Corsica**, noted as the birthplace of Napoleon I., is rather larger than Cape Breton. The interior is mountainous.

218. The **surface** of France is generally level or undulating. The greater part of the country has a westerly slope. The highest mountains, the *Pyrenees*, the *Alps*, and the *Jura*, are on the borders.

219. The principal **rivers** are the *Seine*, *Loire*, *Garonne*, and the *Rhone*.

The **climate** is temperate, and in the south it is exceedingly mild and delightful. The soil is generally fertile. The northern portion yields large crops of grain, flax, hemp, sugar-beets, and other vegetables. The central and southern portions are specially suited to the growth of grapes. In the south the mulberry is extensively cultivated for rearing silkworms; other products are olives, oranges, lemons, and various fruits of warm countries. More wheat is raised in France than in any other country of Europe, except Russia.

220. France is not rich in **minerals**. It has some coal and iron, but the product is not equal to the consumption.

221. The **inhabitants** are mainly Celtic, with some admixture of the Teutonic race. The French people are fond of show and pleasure. They are generally intelligent and thrifty. In the pursuit of science and general literature the learned men of France take high rank. The population increases more slowly than in most other countries of Western Europe. Of the 38,000,000 inhabitants, 30,000,000 are Roman Catholics, 700,000 are Protestants, and 72,000 are Jews.

222. **Cities.—Paris**, the capital, occupying both banks of the Seine, 110 miles from its mouth, ranks first in splendor among the cities of the world, and next to London and New York in population. It is noted as the great centre of fashion and art, of French manufactures, and also for its magnificent public buildings, libraries, art galleries, gardens, and places of amusement. The church of *Notre Dame* and the *Pantheon* are fine works of art. The *Louvre*, once a royal palace, is now used as a museum. In the environs of Paris are *Versailles*, noted for its splendid palace; *Sèvres*, for its porcelain; and *Fontainebleau*, for its palace, gardens, and forest.

223. **Cherbourg**, **Brest**, **L'Orient**, **Rochefort**, and **Toulon** are the chief naval stations.

224. **Havre de Grace**, at the mouth of the Seine, is the greatest commercial port of the north, and has a large trade with America. **Marseilles** is the chief port on the Mediterranean, and has a large trade with Africa, Italy, the Levant, and the Indies. The other important ports are **Dunkirk**, strongly fortified; **Calais**, on the packet and railway route between London and Paris; **Boulogne**;

Dieppe, a noted watering-place; **St. Malo**; **La Rochelle**, strongly fortified; and **Nice**, a favorite health resort.

225. **Lyons** is a great railway, commercial, and manufacturing centre. In the manufacture of silks it stands first among the cities of the world. The following are manufacturing cities:—**Lille**, strongly fortified; **Valenciennes**; **Cambrai**; **Amiens**; **Rouen**, with a fine cathedral; **Toulouse**; **Nimes**, noted for antiquities; **Besançon**, noted for the manufacture of watches; **Nancy**; **Rheims** noted for its cathedral; **Troyes**; **Tours**; **Limoges**; **St. Etienne**, the centre of an important coal-field; **Nantes**; **Grenoble**; and **Avignon**.

Bordeaux, on the Garonne, has a fine harbor, and trades largely in wines, brandy, grain, and timber. **Montpellier** exports wines and brandy. **Ajaccio** and **Bastia** are the chief places in Corsica.

226. The leading **industries** are agriculture, manufacturing, and commerce. France as an agricultural country surpasses Great Britain, and ranks next to it in manufacturing and commerce. In the making of silks and velvets it stands first among the countries of the world, and yields about one-fourth of the world's product of wine. Among its other leading manufactures are beet-root sugar, carpets, woollens, linen, lace, cottons, pottery, chemicals, olive oil, jewellery, and fancy articles.

227. The **exports** of France comprise woollen, silk, and cotton textiles, wine, brandy, raw silk, gloves, jewellery, olive oil, and fruit. The **imports** are cotton, coal, petroleum, tea, coffee, and tropical produce.

228. The country is intersected by railways in all directions, and the navigable rivers are connected by canals.

229. France is a **republic**. The legislative power is vested in the Chamber of Deputies, elected for four years by universal suffrage, and the Senate, elected indirectly for nine years by an electoral body. The President is chosen for the term of seven years by the Senate and Chamber of Deputies united in a National Assembly. The army comprises about 500,000 men, and the available force in time of war is about 2,500,000. The naval force ranks next to that of Great Britain.

230. **Andorra** is a small republic in the Pyrenees, under the joint suzerainty of France and the Spanish bishop of Urgel. **Monaco**, having an area of 8 square miles, is an independent principality in the south-east of France.

231. **Colonies and Dependencies.**—The colonial possessions and dependencies of France, and the territories within her sphere of influence scattered over Asia, Africa, America, and Polynesia, have a total estimated area of nearly 4,000,000 square miles, and a population of about 52,000,000. The principal are:—

In Asia—Cochin-China and French India.

In Africa—Algeria, Tunis, Senegal, French Sudan and Niger, Gaboon and Guinea Coast, French Congo, the islands of Reunion and Madagascar.

In America—French Guiana, Guadeloupe, Martinique, St. Pierre, and Miquelon.

In Oceania—New Caledonia, Marquesas, Tahiti, and other small islands.

SWITZERLAND.

232. Switzerland is a small country, about three-fourths the size of Nova Scotia, having Germany on the north, Austria on the east, Italy on the south, and France on the west. It is greatly diversified by mountains, valleys, glaciers, lakes, and rivers. The southern half of the country is in the lofty Alpine region. *Mont Blanc* is on the borders of Switzerland, France, and Italy. Other important peaks are *Rosa*, the *Matterhorn*, *St. Gothard*, *Jungfrau*, *Finsteraarhorn*, and *Shreckhorn*. The mountains are in some places cleft by deep gorges several thousand feet in depth. The longest railroad tunnel in the world, 12¼ miles in length, pierces the Simplon between Switzerland and Italy. The tunnel is 2,312 feet above sea-level.

Fig. 109.—The Matterhorn from Staffel Alp.

233. The higher mountains are covered with perpetual snow, which sometimes descends in immense avalanches into the valleys. Whole villages have been buried many feet in earth and rocks by landslips. In summer, the glaciers, creeping down the valleys, contrast strangely with adjacent orchards and grain fields. The Rhine, Rhone, and other rivers have their origin in these glaciers.

The magnificent scenery of Switzerland is very attractive to tourists. Climbing the lofty mountains is very difficult and dangerous, and only the most daring travellers are able to reach the summits of the higher peaks. Several mountain railways, worked by cables or with cog-wheel adjustments, have been constructed for the convenience of tourists. The soil capable of tillage, which forms but a small proportion of the country, is carefully cultivated, yielding grain, vegetables, and, in the warmer valleys, grapes and other fruit. The highlands to the snow limit are devoted to pasturage, sustaining large numbers of cattle, sheep, and goats.

234. The Swiss are brave, industrious, and intelligent. The German language and customs prevail in the north, Italian in the south, and French in the west. About three-fifths of the inhabitants are Protestants, and two-fifths Roman Catholics.

FIG. 110.—GENEVA.

235. **Towns.**—The inhabitants live generally in villages and small towns. **Berne**, the capital, has a beautiful situation on the Aar.

236. **Lausanne**, charmingly located near Lake Geneva, is an educational centre. **Geneva**, at the efflux of the Rhone from Lake Geneva, is noted for the manufacture of watches and jewellery, and is an important trade centre. Many illustrious men have resided in this city. **Basel**, on the Rhine, manufactures silk ribbon and other goods, and is the chief commercial city in the country. **Zurich**, surrounded by many suburbs, comprising in all a population of about 120,000, is the great manufacturing and literary centre of the country. The village of **Zermatt**, near the Matterhorn and Dent Blanc in the Alps, is a favorite resort of tourists.

237. The leading **industries** are agriculture, grazing, and manufacturing. The manufactures comprise leather, cotton, and silk goods, embroideries, watches, clocks, carved wood, and dairy products. Most of the manufactured goods are hand-made.

238. The chief **exports** are manufactured products, comprising large quantities of cheese and condensed milk. The **imports** include grain and other food-stuffs, silk, and minerals.

239. Switzerland is a federal **republic**, comprising twenty-two states, known as cantons. The constitution forbids the maintenance of a standing army. Every citizen of proper age is liable to military service, the children being thoroughly drilled at the public schools.

SPAIN.

240. Spain occupies the principal part of the south-western peninsula of Europe. Its physical features are greatly diversified. A narrow strip of lowland borders the sea. The interior is a rugged table-land from 2,000 to 3,000 feet high, crossed from east to west by several mountain ranges.

241. The **climate** on the Mediterranean coast and in the valleys is very hot. The table-lands are subject to drought and scorching heat in summer, and severe cold in winter. The south-eastern part of the country is hot, and so dry that successful agriculture is dependent on irrigation.

242. **Agriculture** is confined chiefly to the humid coast country, and to such river valleys of the interior as are capable of irrigation. The **products** are wheat, barley, maize, flax, vegetables of different kinds, the grape, orange, lemon, olive, fig, and mulberry. Under irrigation the arid districts in the south-east are very fruitful. Among their products is the date-palm. The forest trees include the cork-oak and chestnut. The highlands afford pasturage for many sheep, goats, mules, and cattle. The coast waters yield rich harvests of sardines, tunny, and other fish.

243. Spain is rich in **minerals**, producing more copper, lead, and quicksilver than any other country in Europe. Other important minerals are iron, coal, zinc, and silver.

244. A large proportion of the **inhabitants** are illiterate, being unable to read or write. The Roman Catholic religion is established by law, but other religions are tolerated. The bull-fight is a favorite amusement.

245. **Cities.**—**Madrid**, the capital and largest city, is situated on a branch of the Tagus, in the dry and barren plateau of the interior. It has one of the finest picture galleries in the world. Twenty-seven miles north-west of

FIG. 111.—ESCURIAL.

Madrid is the *Escurial*, a famous building containing a monastery, palace, church, and mausoleum of the Spanish sovereigns.

246. **Barcelona** is a commercial city on the Mediterranean. **Valencia** is noted for the manufacture of silks, tiles, cigars, and

paper, and exports wine, oranges, and other fruit. **Murcia** is noted for its silk manufactures.

247. **Cartagena**, in the neighborhood of lead and copper mines, has a fine harbor. **Malaga** exports wine, raisins, and other fruit. **Granada**, famous for the *Alhambra*, a palace of the Moorish kings; **Seville**, noted for the manufacture of tobacco; **Cordova**, having

FIG. 112.—GIBRALTAR.

important manufactures of leather and silverware, were noted Moorish capitals.

248. **Cadiz**, a seaport, is a commercial city noted for the export of sherry wine. **Corunna**, the scene of the battle of Corunna, exports sardines. **Ferrol** is noted for its naval arsenal. **Bilbao** is an important port. **San Sebastian**, a fortified town, is a bathing resort. **Saragossa** is a large city on the Ebro. **Valladolid** is noted for its university: **Segovia**, for its Roman aqueducts. **Toledo** has long been famous for its sword-blades. **Palma**, on the island of Majorca, is a thriving commercial city.

249. The chief **industries** of Spain are agriculture, grazing, and mining. The leading manufactures are wine and raisins, which, with olive oil, oranges and other fruit, canned fish, cork, leather, wool, quicksilver, and lead, are the chief exports. Wheat, cotton, and various tropical products are imported. The trade is chiefly with France, Great Britain, and the United States.

250. The government is a constitutional monarchy. Parliament comprises two Houses—the Senate and the Congress.

251. **The Balearic Isles**, a group of five islands—*Majorca*, *Minorca*, *Iviza*, *Formentera*, and *Cabrera*—in the Mediterranean, having a united area of 1,860 square miles, form a province of Spain. The products are wine, olives, and other fruit.

252. The **foreign possessions** of Spain are *Ceuta*, a fortified city, and *Tetuan*, on the north coast of Morocco; *Canary Isles*, the islands of *Fernando Po* and *Annabon*, and extensive territories in the west of Africa, along the Sahara coast.

253. **Historic Note.**—Under the patronage of the Spanish sovereigns, Ferdinand and Isabella, America was discovered by Columbus. During the succeeding three hundred years Spain was one of the richest and most powerful States of Europe, and had vast colonial possessions, holding beneath her sway Mexico, Central America, two-thirds of South America, and the Philippines and other islands in the Pacific Ocean. Driven to rebellion by misgovernment and tyranny, most of the colonies of Spain have asserted their independence, or have been taken from her by other powers. The most recent spoliation of this ancient kingdom was the wresting from her of the Philippine Islands, Cuba, and Porto Rico by the United States in 1898.

254. **Gibraltar**, situated at the extremity of a rocky promontory on the south of Spain, has belonged to Great Britain since 1704. Its fortress, considered the strongest in the world, is 1,500 feet above the sea. The chief importance of the town arises from its commanding position at the entrance to the Mediterranean.

PORTUGAL.

255. Portugal is a small country, about one fourth larger than the Province of New Brunswick, lying along the Atlantic Ocean on the west of Spain. The interior, especially in the north, is elevated. The **coast** country is generally low and sandy. There are few harbors except at the mouths of the rivers. The **climate** is mild and healthful, though less genial in the northern highlands. The rainfall on the coast is very great during the winter months. The country has often been visited by violent earthquakes. About one-fourth of the whole area is under cultivation, about one-fourth in pasture, and nearly one-half is comprised in unproductive and waste lands. Wine and olive oil are leading products. The other **products** include wheat and other grain, potatoes, onions, tomatoes, oranges, lemons, and figs. Cork is a valuable product of some parts of the country. Sheep and goats are numerous. The **minerals** include iron, copper, antimony, manganese, and salt.

256. The **inhabitants** are temperate, polite, and hospitable, fond of dancing and bull-fights. The law makes the education of children compulsory, but it is so badly enforced that a very large proportion of the inhabitants are illiterate. Roman Catholicism is the State religion, and nearly all the inhabitants adhere to this faith. All other forms of worship are tolerated.

257. **Cities.—Lisbon**, the capital, has a beautiful situation on the estuary of the Tagus. It has a large trade, especially with Great Britain and Brazil. Among its objects of interest is a great aqueduct, by which the city is supplied with water. The city has often been visited by earthquakes. In 1755, 50,000 persons lost their lives from this cause.

258. **Oporto**, near the mouth of the Douro, exports large quantities of wine. It is the chief seat of manufactures, including cotton, silk, and other goods. **Coimbra** is the seat of the only university. **Setubal**, an important fishing centre, exports salt.

259. The principal **exports** are wine, cork, animals, copper, olive oil, and sardines. The **imports** are wheat, cotton, coal, iron, and various kinds of manufactured goods. The trade is chiefly with Great Britain, France, Brazil, the United States, and Germany.

FIG. 113.—ROME AND THE TIBER.

260. The **government** was until 1910 a constitutional monarchy. In that year, after a brief revolution, a republican government was established.

261. **Foreign Possessions.**—The foreign possessions are —the *Azores*, on the west of Europe; *Madeira Isles*, *Cape Verde Isles*, *St. Thomas*, and *Prince's Island*, on the west coast of Africa; the districts of *Congo*, *Angola*, and *Benguella*, in the west of Africa, and *Mozambique*, in East Africa; *Goa*, and other small stations, in India; *Macao*, in China; *Timor*, and other small places, in Malaysia. Total area, about 740,000 square miles; population, about 9,000,000.

262. The **Azores**, 800 miles west of the mainland, comprise a number of small islands, having a united area equal to one-third of Cape Breton, and a population of 270,000. The islands are volcanic and elevated. They are very fertile, yielding wine, sugar, tobacco, and oranges. *Angra* is the capital, and *Ponta Delgada* the largest city.

ITALY.

263. The Kingdom of Italy has been organized since 1859, by the combination of various small States. Although comparatively weak, it takes rank among the Great Powers of Europe. Italy is separated from France, Switzerland, and Austria by the Alps. A large part of the kingdom is comprised within the boot-shaped peninsula between the Adriatic and the Mediterranean. It includes also the islands of Sicily and Sardinia.

264. The **surface** of Italy is diversified with mountain, plain, and valley. In the north, between the Alps and the Apennines, is the extensive and level plain of Piedmont, Lombardy, and Venetia, watered by the Adige and Po, and of unsurpassed fertility. Along the west coast are the Maremma, Campagna, and Pontine Marshes, covered with rank vegetation, and exhaling pestilential malaria.

265. The **Po**, the most important river of Italy, has formed extensive alluvial lands near its mouth. The town of Adria, which was a seaport at the beginning of the Christian era, is now 15 miles inland. The bed of the river has also been so much raised in places that high dikes have become necessary to keep the water in the channel. At the foot of the Alps are the beautiful lakes *Maggiore*, *Como*, and *Garda*.

266. The **climate** is delightful and salubrious, except the coast marshes, which are subject to malaria, and are uninhabitable in the hot season. Italy is noted for its clear, blue sky. The south is subject to earthquakes, and to a hot wind called the sirocco, which blows from Africa. The agricultural **products** include wheat, Indian corn, and, in the valley of the Po, rice. The vine and mulberry are extensively cultivated; and Italy is one of the greatest wine and silk producing countries in the world. Other important products of the south are olives, figs, lemons, oranges, and citrons. Cattle-rearing and dairying are leading industries, especially in the valley of the Po.

267. The **mineral** products are marble of the best quality; sulphur, obtained chiefly from Sicily; and iron, from the island of Elba. The coast waters yield sardines, anchovies, and other fish, and also fine coral.

268. The **inhabitants**, with the exception of the Waldenses in the valley of Piedmont, are nearly all Roman

Catholics. Italy has produced many distinguished artists, among whom may be named Michael Angelo, Raphael, and Leonardo da Vinci, whose works are classed among the richest treasures of the country.

269. **Cities.**—**Rome**, the capital of Italy, once the mistress of the world, is situated on the Tiber, 15 miles from its mouth. Among its noted buildings are *St. Peter's Cathedral*, the largest and most magnificent church in the world; and the Pope's Palace, called the *Vatican*, which is noted for its library and collections of paintings and statuary. The *Quirinal* is the residence of the King of Italy. Rome is noted for fine specimens of architecture and wonderful remains of past ages. In many places are piles of ruins half concealed by twining ivy and groves of cypress. The *Coliseum*, beyond the limits of the modern city, is a vast amphitheatre, now in ruins, once capable of accommodating 80,000 spectators. The *Catacombs* are subterranean galleries beneath the city, noted as places of refuge for the early Christians in times of persecution. *Civita Vecchia* is a seaport, 40 miles from Rome.

Fig. 114.—The Coliseum.

270. **Florence**, on the Arno, 50 miles inland, is noted for its palaces, churches of the Middle Ages, art galleries, and as the birthplace of the poet Dante. **Pisa**, a health resort, . a remarkable leaning tower and many fine buildings.

271. **Leghorn**, an important seaport and one of the greatest commercial cities of Italy, carries on a large trade with the ports on the Black Sea. **Turin**, a commercial and manufacturing city, is noted for its churches, museums, and fine squares. **Genoa** is the leading seaport in Italy, and has a large trade with Central Europe through the Alpine tunnels. **Alessandria** is strongly fortified, and has extensive manufactures.

272. **Milan**, with varied manufactures and trade, has fine art galleries and churches. **Mantua**, a strong fortress, was the home of the poet Virgil.

273. **Venice**, formerly one of the greatest trade centres in the world, is built on many small islands in a bay of the Adriatic. Canals serve the place of streets. The city is noted for its manufactures and trade, and for its works of art. **Padua**, **Verona**, **Vicenza**, **Bologna**, and **Ravenna**, noted for its churches and the tomb of the poet Dante, are important cities.

274. **Naples**, the largest city in Italy, has a beautiful situation on the Bay of Naples. A few miles distant are the partially excavated ruins of *Herculaneum* and *Pompeii*, which were buried by an eruption of Vesuvius (A.D. 79).

275. The leading **industries** are agriculture and grazing, about half the people being engaged in these pursuits. Manufacturing is extensively carried on, chiefly by hand, comprising reeling of raw silk from the cocoons, braided straw work, and the making of artificial flowers, gloves, and silks. The chief **exports** are raw silk, wine, olive oil, sulphur, marble, sardines, anchovies, and fruit. The **imports** include grain, cotton, coal, and machinery.

276. The **government** is a constitutional monarchy. Parliament comprises two Chambers—the Senate and the Chamber of Deputies. The army numbers about 235,000, but can be greatly increased in time of war.

277. **Sicily**, separated from the mainland by the Strait of Messina, is the largest island in the Mediterranean, having an area about half the size of Nova Scotia. *Mount Etna*, in the east of the island, is one of the most remarkable volcanoes in the world. Sicily is very fertile, yielding wheat, grapes, olives, and other fruit. **Palermo**, the capital, is a great commercial city, from which the products of the island are exported. It was the scene of the massacre known as the Sicilian Vespers, in 1282. **Messina** has a fine harbor and an extensive commerce. Near the shore is the famed whirlpool of *Charybdis*, and nearly opposite, on the Italian side, are the rocks of *Scylla*. **Catania**, at the foot of Etna, has suffered greatly from earthquakes. **Marsala** exports wines.

278. The **Lipari Islands** are a volcanic group on the north of Sicily, one of which, *Stromboli*, contains a constantly active volcano.

279. **Sardinia** is somewhat smaller than Sicily. The interior is mountainous, the coast is low and marshy. The climate is insalubrious. The products are similar to those of Sicily. **Cagliari** is the capital of the island. **Sassari** is an important town. **Caprera**, a small island on the north east coast of Sardinia, was the

home of the Italian patriot Garibaldi. **Elba**, a small island in the Mediterranean, having an area of 90 square miles, was assigned to Napoleon in 1814 by the Allied Powers.

280. **Foreign Dependencies.**—Eritrea and Italian Somaliland, in North-East Africa, and Tripoli in the north. Total area, about 600,000 square miles.

281. **San Marino** is an independent republic, situated near the Apennines, having an area of 23 square miles and a population of 8,000.

GREECE.

282. Greece consists of a peninsula on the mainland of Europe, and many small islands. The continental portion is almost divided into two parts, by the Gulf of Lepanto on the west, and the Gulf of Ægina on the east. The southern section, called the Morea, is connected with the northern by the Isthmus of Corinth. The coast, which is very irregular and mountainous, has many excellent harbors.

Fig. 115.—Athens.

283. Greece is a mountainous country. Mount Parnassus, over 8,000 feet high, was the fabled home of Apollo, the Muses, and the Nymphs. Insular Greece comprises *Eubœa* or *Negropont*, the *Cyclades*, and part of the *Sporades*, on the east of the mainland; the *Ionian Islands*, on the west; and *Crete* or *Candia* to the south.

284. **Eubœa** is about 100 miles in length, and from 4 to 30 miles in breadth. The **Cyclades** include about twenty principal islands. The **Ionian Islands** comprise seven principal islands. **Crete**, ceded by Turkey in 1913, has an area of 3,400 square miles.

285. The **climate** of Greece is mild and healthful. On the lowlands the summers are hot and dry, and the air is remarkably clear; the winters are warm and rainy. The principal **products** are grain, the vine, olive, fig, mulberry, currant, date, and orange. Agriculture is in a very backward state, and the implements used are of the very rudest kind.

286. The **inhabitants** are temperate, active, and shrewd. Nearly all belong to the Greek Church. The inhabitants of the islands are fond of a seafaring life. A large portion of the carrying trade of the Black Sea and the eastern Mediterranean is under the Greek flag. Ancient Greece was renowned as the seat of freedom, art, and civilization. It produced many renowned warriors, poets, philosophers, and artists.

287. **Cities.—Athens**, situated 5 miles from its port, *Piræus*, is the capital and largest city. In the vicinity are many interesting antiquities, as the *Acropolis* and *Parthenon*, the *Areopagus*, and the remains of the Temple of *Jupiter Olympus*.

288. **Saloniki** or **Salonica**, next in population to Athens, and **Cavalla**, are in the territory acquired from Turkey in 1913. **Corinth**, at the Isthmus of Corinth, was a celebrated city of ancient Greece. **Patras** exports currants.

289. The leading **pursuits** are agriculture and grazing. The chief **exports** are currants, comprising nearly half the whole value; olives and olive oil, fruit, silk, sponges, and lead and zinc ores.

290. The **government** is a constitutional monarchy. The legislative power is vested in a single Chamber elected by universal suffrage.

TURKEY.

291. Turkey, or the Ottoman Empire, comprises Turkey Proper in Europe, extensive territory in Asia, and several tributary States in Africa. Turkey in Europe was greatly reduced in extent in 1878 by the Berlin Congress, composed of the Great Powers of Europe, and again after the Balkan War in 1913. Rumania, Servia, Bulgaria, and Montenegro have become independent States; Bosnia and Herzegovina have been joined to Austria.

292. The **coast** comprises a portion of the Black Sea, Sea of Marmora, and the Ægean Sea.

293. The **Bosphorus** is a strait, 17 miles long and 1 mile broad, between the Black Sea and the Sea of Marmora. The **Dardanelles**, or Hellespont, 40 miles in length and from 1 to 4 miles broad, connects the Sea of Marmora with the Ægean Sea.

294. The small corner of the Balkan Peninsula which has been left to Turkey is hilly rather than mountainous. The **climate**, except at high elevations, is mild and delightful. The **products** are wheat, corn, rye, millet, rice, coffee, and opium; also the vine, olive, tobacco, cotton, oranges, aud other fruit. The cultivation of the soil is greatly neglected, and the implements of husbandry are very rude. In many parts of the country the chief wealth consists in cattle, sheep, and goats.

295. The **population** comprises various races. The Turks, who are the ruling though not the most numerous race, originally migrated from Central Asia, first entering Europe in 1361. There are many Greeks, Slavs, Armenians, Jews, and Gypsies. Mohammedanism is the established religion. Education is greatly neglected, consisting among

FIG. 116.—CONSTANTINOPLE.

the Mohammedans of little else than the ability to read the Korau. Polygamy is allowed to those who have means to keep their wives. The women occupy apartments which no stranger is permitted to enter, and on going out they veil their faces, so as to conceal all but their eyes. The men often wear loose, flowing robes, and the costumes differ greatly from those of Western Europe.

296. **Cities.—Constantinople**, the capital, in the Middle Ages the richest and most splendid city in the world, is situated on a beautiful harbor of the Bosphorus, called the *Golden Horn*, and is connected with other parts of Europe by railway. It is noted for its mosques, the domes and minarets of which present a fine appearance from the water. The Seraglio is an old imperial palace, the chief entrance to which is called the *Sublime Porte*, a term which is often applied to the Turkish Government. The mosque, *St. Sofia*, was once a Christian church.

297. **Adrianople**, the second largest town in Turkey in Europe, is on the Maritza; **Gallipoli**, on the Dardanelles, and **Rodosto**, on the Sea of Marmora, are important places. **Enos** and **Dedeagatch** are small towns on the Ægean coast.

298. **Agriculture** and **grazing** are the chief resources of the country. The manufactures are few, comprising carpets, silks, shawls, leather, and perfumery, mostly made by hand. The **exports** comprise fruit, silk, wool, wine, coffee, aud opium. The **imports** comprise cottons, woollens, and various manufactured articles. A large part of the trade is with Great Britain. The lack of roads and means of conveyance, and oppressive taxes, are serious obstacles to the prosperity of the country.

299. The **government** is a monarchy limited by a Parliament. The sovereign is styled the Sultan, and his chief minister the Grand Vizier. The Sultan is the head of the Mohammedan religion, and is regarded as the successor of the great prophet. Important privileges, withheld under the former despotic government of the Sultan, are now accorded to various Christian bodies and those of other creeds.

The various provinces of Turkey are ruled by governors called *pachas*.

300. The **Ottoman Empire**, including possessions in Europe, Asia, and Africa, comprises an area of over 700,000 square miles, and a population of 21,000,000.

BULGARIA.

301. Bulgaria was formerly under Turkish rule. In 1878, by the Treaty of Berlin, Bulgaria and Eastern Roumelia were erected into self-goveruing States tributary to Turkey. In 1886 they were united under one government. The area of Bulgaria was greatly increased by the war of 1912.

Bulgaria lies along the Black Sea, on the south of the Danube, and exteuds southwards to the Ægean Sea. The Balkan Mountains cross it from east to west. Near the Black Sea are extensive plains. Agriculture is the chief industry. The **products** comprise wheat, which is largely exported, other cereals, grapes, tobacco, silk, and honey. The culture of roses is a special feature in a valley on the south of the Balkans, near the Shipka Pass. They yield the costly perfume called *attar of roses*.

302. The **inhabitants** are of various races. They belong principally to the Greek Church, but there are also many Mohammedans.

303. **Sofia**, the capital, is a progressive city. **Philippopolis**, in Rumelia, is a commercial and manufacturing city. **Varna**, a fortified seaport, has a large trade in grain. **Rustchuk**, **Shumla**, and **Sliven** are important towns.

304. The **trade** is chiefly with Great Britain, Austria, Germany, and France.

305. The **government** is designated a Principality. The Prince or head officer is elected by the people. This election requires to be confirmed by the Sultan and the Great Powers of Europe. The legislature consists of a single Chamber called the National Assembly.

RUMANIA.

306. Rumania, in the south-east of Europe, comprises Moldavia, bordering on Russia; Wallachia, along the north of the Danube; and Dobrudja, on the Black Sea. The Carpathian Mountains form a great barrier-wall along the western frontier, from which there is a south-easterly slope to the treeless plains or steppes which form a large part of the country. Near the Danube are extensive swampy districts. The **soil** is generally fertile, and agriculture is the chief industry. The **products** include wheat, maize, flax, hemp, tobacco, grapes, and other fruits. Much of the wealth of the country consists in cattle, horses, sheep, goats, and swine. Honey and wax are also valuable products. The forests of Moldavia are extensive.

FIG. 117.—GROUP OF RUMANIAN PEASANTS.

307. The **inhabitants** are of various races, and include many Jews and Gypsies. Nearly all belong to the Greek Church.

308. **Bucharest**, the capital, is a strongly-fortified city, and has a large trade with Austria.

309. **Jassy**, beautifully situated on a mountain slope near the river Pruth, carries on considerable trade in agricultural produce. **Galatz**, on the Danube, is a commercial city, exporting grain, wool, and other products.

310. The leading **exports** are wheat, barley, and Indian corn. The **imports** are textiles and other manufactured goods. The trade is largely with Great Britain, Austria, Germany, Belgium, and France.

311. The **government** is a limited monarchy. The legislature comprises two Houses—a Senate and a Chamber of Deputies.

SERVIA.

312. Servia is a small country, about one and a half times the size of Nova Scotia, to the south of the Danube. The **surface** is generally hilly and mountainous. Near the rivers Saav and Danube are swampy plains. The forests are extensive, abounding in oak and chestnut. The **soil** in the valleys is fertile, and well suited to tillage and grazing. **Agriculture** is the chief pursuit. The **products** comprise wheat and other cereals, apples, pears, plums, and grapes. Large numbers of cattle, sheep, and pigs are reared. The mineral resources of the country are important, but are undeveloped. Lack of good roads is an obstacle to the prosperity of the country.

313. The **inhabitants**, chiefly of the Slavonic race, are a vigorous and enterprising people, strongly attached to their country. The Greek Church is the principal religion.

314. **Belgrade**, the capital, is an important strategic point, and has a large trade with Austria.

315. The **government** is a limited monarchy, with a Parliament elected by the people.

MONTENEGRO.

316. Montenegro, a country nearly twice the area of the island of Cape Breton, was in 1905 made an independent Constitutional Monarchy. It is situated on the east of the Adriatic Sea, from which it is separated, except at the extreme south, by a narrow strip of Austrian territory. The **surface** is mountainous, and a large part of the country is covered with forests. Agriculture, which is carried on in the most primitive manner, is the chief occupation. The chief **products** of the lowlands are grain of different kinds, tobacco, grapes, and olives. Cattle, sheep, goats, and swine are numerous.

317. The **exports**, sent chiefly to Austria, consist of dairy produce and animals.

318. The **inhabitants** are rude and uneducated, but they are noted for their hardihood and bravery.

319. **Cettinje**, a small, rudely built town, is the capital. **Podgoritza** is the largest town. **Antivari** is a small place on the Adriatic.

320. The king is nominally aided in the government by a Council of eight members, but practically his will is law.

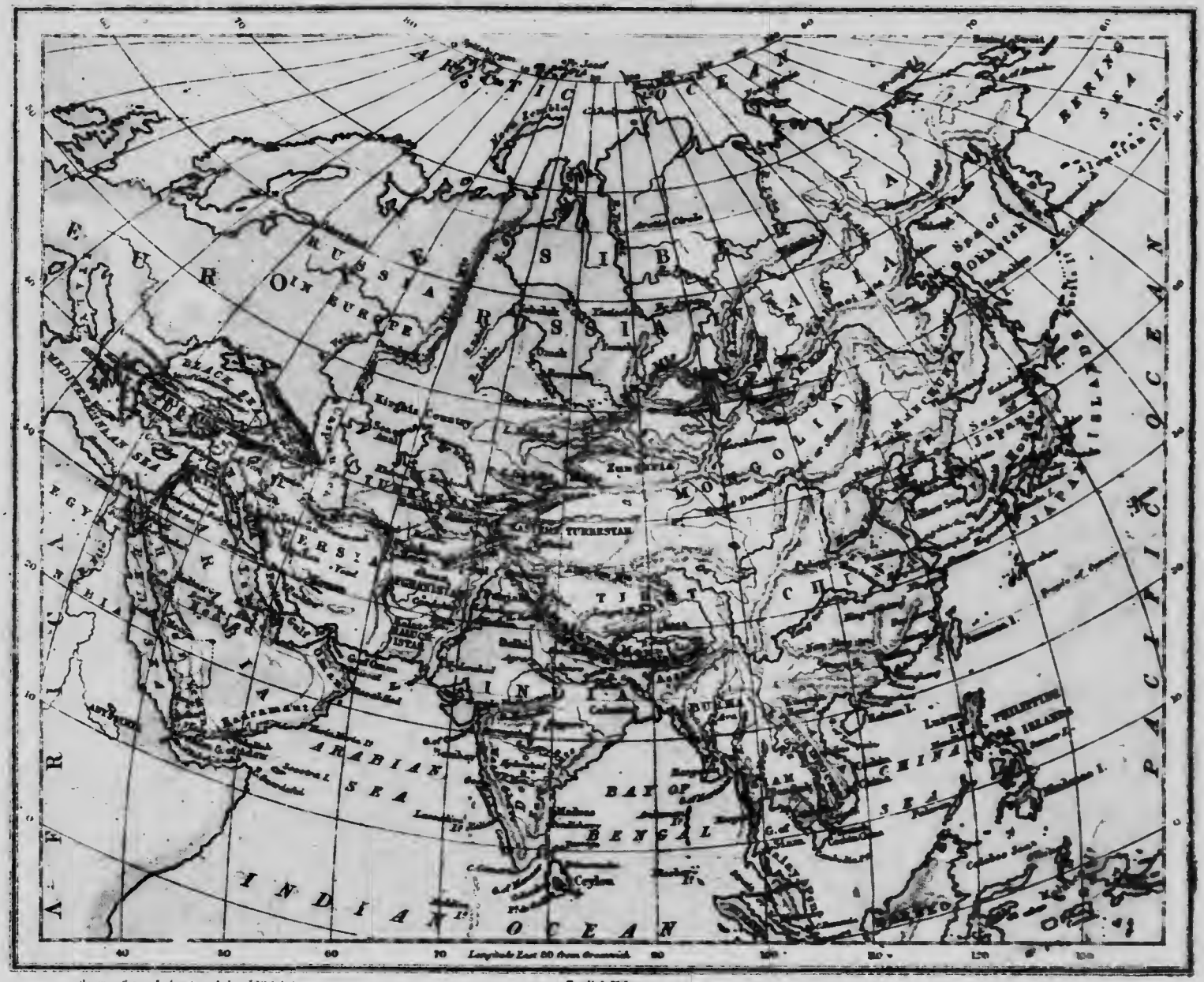
CRETE.

321. The island of Crete, or Candia, in the south of the Ægean Sea, was, in ancient times, a noted maritime power. For over two hundred years it was oppressed by Turkish rule; but through the interference of the Great Powers of Europe in 1898, it secured self-government under the suzerainty of Turkey, and in 1913 was annexed to Greece.

322. The island contains lofty mountains, Mount Ida being over 8,000 feet high. The warm and well-watered lowland plains yield grain, oil, wine, and fruit. The mountain pastures sustain large herds of cattle.

323. The **inhabitants** are chiefly of Greek origin, and belong to the Greek Church, the Mohammedan population having mostly left the island. Agriculture and cattle-breeding are the chief pursuits.

ASIA


ARCTIC OCEAN
EUROPEAN RUSSIA
SIBERIA
RUSSIA
BERING SEA
Sea of OKHOTSK
JAPAN
Japan
MONGOLIA
Yarkand
TURKESTAN
TIBET
CHINA
Yellow Sea
PACIFIC OCEAN
PERSIA
Persian Gulf
ARABIA
ARABIAN SEA
INDIA
BAY OF BENGAL
Ceylon
INDIAN OCEAN
Longitude East 80 from Greenwich

ASIA.

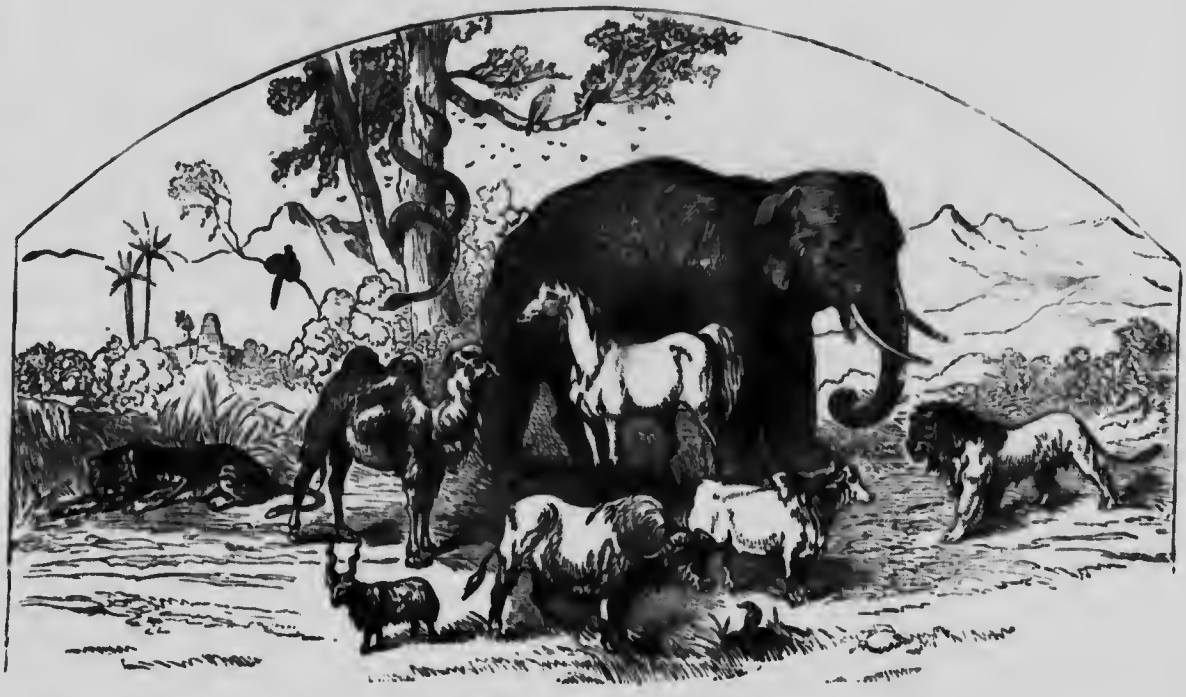


Fig. 118.—Animals of Asia.

1. Asia, the largest of the great divisions of the Earth, comprises one-twelfth of the entire surface of the globe, one-third of the land, and over one-half of the world's inhabitants. The western part of the continent has been the scene of the most interesting events that ever occurred on our Earth. Here, in the land of Palestine, the greater part of the Bible was written, and most of the events which it records occurred. Near the rivers Euphrates and Tigris flourished in succession the ancient empires of Assyria, Babylon, and Medo-Persia.

2. **Position.**—Asia is wholly in the Northern Hemisphere. It approaches within 100 miles of the Equator, and extends 800 miles beyond the Arctic Circle. The Arctic Ocean lies on the north, the Pacific on the east, and the Indian Ocean on the south. Europe and Asia really form one continent, and as such they are sometimes spoken of as one, under the name *Eurasia*. Africa, on the southwest, is separated from Asia, except at the Isthmus of Suez, by the Red Sea.

3. Asia has three great peninsulas, *Arabia*, the *Deccan*, and *Indo-China* or Further India, on the south; two smaller ones, *Kamchatka* and *Korea*, on the east; and *Asia Minor*, on the west.

4. The chief **islands** on the coast are—*New Siberia*, on the north; *Kurile Islands*, *Saghalien*, *Japan Islands*, *Loochoo Islands*, *Formosa*, and *Hainan*, on the east; *Nicobar*, *Andaman*, *Maldive*, *Laccadive Islands*, and *Ceylon*, on the south; and *Cyprus*, *Rhodes*, *Mytilene*, and other small islands, on the west.

5. **New Siberia** consists of a group of uninhabited islands in the Arctic Ocean, remarkable for fossil bones and teeth of large extinct animals.

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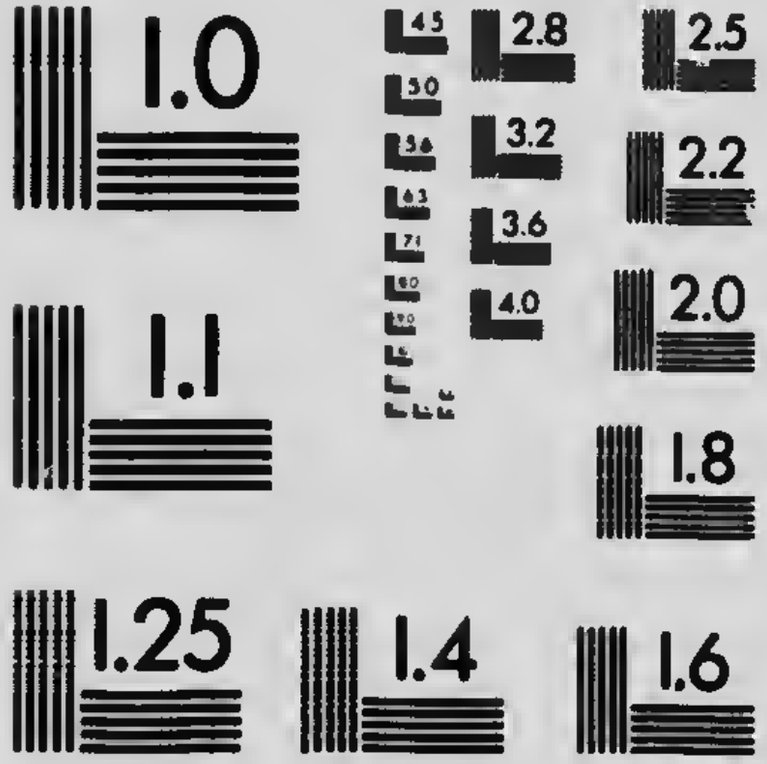

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Fig. 119.—Relief Map of Asia.

6. **Saghalien**, somewhat larger than Nova Scotia, belongs partly to Russia and partly to Japan, and is used as a place of exile.

7. **Formosa**, the **Kurile Islands**, and the **Loochoo Isles** belong to Japan.

8. The **Andaman** and **Nicobar Islands**, in the Bay of Bengal, are groups of small islands belonging to Great Britain.

9. The **Maldive Islands** are a group of atolls in the Indian Ocean. The products are grain, bread-fruit, figs, and other tropical fruits. The inhabitants, numbering about 30,000, are Mohammedans, ruled by a native prince, who pays an annual tribute to the British Government at Ceylon.

10. The **Laccadives** are a group of coral islands in the Indian Ocean, yielding cocoa-nuts, rice, sweet potatoes, and betel nuts. They form a dependency of Great Britain, and pay tribute to the Government of British India.

11. **Cyprus**, in the Levant, or eastern end of the Mediterranean, about the size of the island of Cape Breton, consists of a fertile plain between mountain ranges. The products comprise grain, cotton, wine, silk, carobs, grapes, and other fruit. Population, about 209,000. *Nicosia* is the capital, and *Larnaca* the chief port. The island was held by Great Britain through convention with the Sultan of Turkey, made in 1878, according to which Great Britain paid an annual tribute to Turkey. In 1914 it was annexed by Britain. It is of great importance as a naval station.

Rhodes and **Mytilene**, or **Lesbos**, are small fertile islands in the Ægean Sea.

12. **Physical Features.**—Asia presents great diversity of surface, varying from one-fourth of a mile below the sea-level, near the mouth of the Jordan, to five and a half miles above the sea, at the summit of Mount Everest, in the Himalayas. It thus furnishes the greatest depression and elevation known on the Earth's surface. It is a land of extensive lowland plains, of vast plateaus, and of lofty mountains. The lowlands lie along the north, east, and south, those on the north being much the most extensive. The highlands extend through the middle of the continent north-east and south-west from Bering Sea to the Mediterranean and Red Seas. The mountains form no continuous chain through the continent, as in America, but occur in broken ranges, with intervening dry table-lands of varying height. In the middle of the continent is a vast basin so shut in by mountain ranges on all sides that its rivers find no pathway to the sea, but return to the atmosphere by evaporation from the salt lakes and marshes into which they flow.

13. The **Northern Lowlands**, comprising the greater part of Siberia and West Turkestan, and having an area nearly twice as large as Europe, occupy the whole breadth of the continent, and are separated from the great lowland plain of Europe by the Ural Mountains. They have their greatest breadth between the meridians of 50° and 70° east. They vary in height, but the greater portion has an elevation of less than 500 feet above the sea-level. There

is little variation of the flat surface, except by the low bluffs on the borders of the river-flood plains.

14. This is not a region of excessive rainfall; but the rivers have their origin so far from the sea, and drain so wide a territory, that some of them are very large. Three great rivers, the *Obi*, the *Yenisei*, and the *Lena*, nearly 3,000 miles long, take rank among the great rivers of the world. The tributaries of these rivers are so near each other that with short portages they form a natural highway through the country. These rivers have sluggish currents, and on the melting of the snow and ice in spring, which occurs first in their upper course, they overflow their banks along their lower course, inundating large tracts of country.

15. **Lake Baikal**, in the basin of the Yenisei, is the largest fresh-water lake in Asia.

16. The lowlands along the coast of the Arctic Ocean are treeless, marshy plains, called *tundras*. They yield chiefly lichens and mosses, which, during the short summer, give sustenance to large herds of reindeer. South of the tundras is a wide forest belt of cone-bearing trees—fir, larch, and pine. Still farther south are open fertile plains suited to agriculture.

17. In the south-west of these lowlands is an extensive region known as the Plain of Turan, or West Turkestan, much of which is below the level of the ocean. This is a desert region, except where it is watered by irrigation. Its drainage is into salt lakes having no outlet, the principal of which are the Caspian Sea and the Sea of Aral.

18. The **Caspian Sea** receives the Ural River, which forms part of the boundary between Europe and Asia, and the Volga, in Europe. It is about three times as large as Lake Superior, and is about 85 feet below the level of the Black Sea.

19. The **Sea of Aral**, about 160 feet above the level of the sea, receives the waters of the Sir Daria and the Amu Daria.

20. The **Eastern Lowlands** are quite narrow in the north, but broaden towards the south, comprising a large part of China. The great rivers on this slope are the *Amur*, the *Hwang-ho* or *Yellow River*, the *Yang-tse-Kiang*, and the *Si-Kiang*. Much of this plain is formed by earth brought down from the interior by the Yang-tse and Yellow Rivers, and the building up of the delta plain is still going on by the deposit of new material at their mouths.

21. The **Amur**, nearly 3,000 miles long, with its chief tributary the *Sungari*, is navigable for hundreds of miles during the summer months.

22. The **Yellow River**, one of the world's great rivers, is called "China's Sorrow," from its frequent destructive inundations; and yet it has done much towards making the country. In its upper course this river flows through a region having a deep yellow soil, brought in vast quantities as dust by the wind from the dry basin of the interior. This river and its tributaries have ploughed out deep valleys through the yellow soil, and carried forward large portions of the detritus to the sea, thus yearly adding to the delta plain. Dikes have been built along the river to keep it within its channel during the season of floods; but often the waters break through these embankments, causing great destruction of life and property. The yellow sediment, however, which they deposit gives great fertility to the soil. In many places the Yellow River flows with rapid current, and it is also obstructed by sand-bars, so that it cannot be used by ocean steamers. Many Chinese people have made for themselves dwellings by digging caves in the high yellow cliffs which border its upper valleys.

23. The **Yang-tse-Kiang**, which rises in Northern Tibet, is the longest river in China and the most important for trade. It flows through a very fertile country, is navigable for ocean steamers for over 1,000 miles, and has many large cities on its banks. The **Si-Kiang** also provides an important water-way far into the interior.

24. The **highlands** of Asia may be considered as forming two sections, an eastern and a western, joined by a narrow highland neck near the meridian of 70° east.

The **Eastern Section**, which includes the highest plateaus and mountains in the world, has at its western end the Pamir plateau, called the "Roof of the World," a rugged highland between two and three miles above the sea-level. This plateau was formerly the trade route between India and China, and it has an interest at the present time as the border land between the British, Russian, and Chinese territories of Central Asia. From it as a centre radiate the great mountain ranges of Eastern Asia.

The highlands broaden rapidly towards the Pacific Ocean. Along their north-western side, and bordering the northern lowlands, are the broken mountain ranges *Tian Shan*, *Altai*, *Yablonai*, and *Stanovoi*. Through the middle of the highlands are the *Kwanlun Mountains*, noted for their elevated passes; and on the southern borders are the *Himalayas*, in several parallel ranges, noted as the

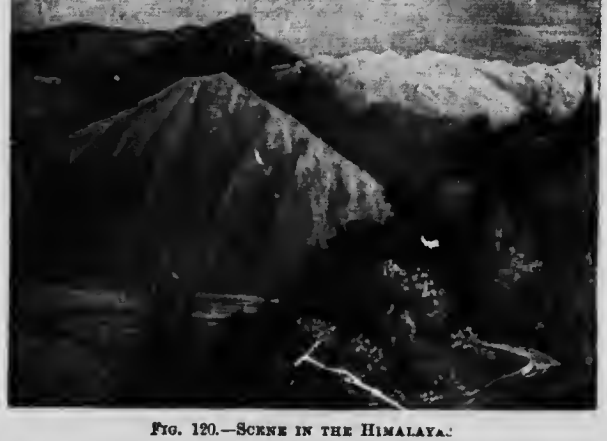


FIG. 120.—SCENE IN THE HIMALAYAS.

highest mountains in the world, *Mount Everest*, the highest known point, rising 29,000 feet above the sea-level. The southern slopes of the Himalayas, receiving abundance of rain during the summer monsoons, are covered with dense forests.

25. The plateau of Tibet, between the Kwanlun and the Himalayas, is an extensive and elevated table-land three miles above the sea, and sloping towards the east and

FIG. 121.—DESERT OF GOBI.

south. It is a dry region, but it is furrowed by deep valleys formed by the Indus and Brahmaputra Rivers, which have their origin on the inner slopes of the Himalayas, and make their way through them by deep gorges. The Yang-tse and other great rivers flowing easterly rise on the mountain slopes of Tibet.

26. On the north of Tibet, and separated from it by the Kwanlun, and from the lowlands of the Pacific coast by the *Khinghan Mountains*, is the great plateau of *Mongolia* and *East Turkestan*. This whole region, forming the great central basin of Asia, is so shut in by mountains that it receives but little rain, and its streams, which have their sources in the mountains, gradually waste away in the dry sand, or flow into salt lakes which have no outlet. The river *Tarim* rises in the Pamir, and after a course of over 1,000 miles flows into Lake *Lob Nor*. On the eastern side of this plateau lies the *Desert of Gobi*. Over a large part of this central basin, including portions of the Desert of Gobi, there is grass for the sustenance of camels, horses, and goats; but agriculture is confined to districts near the mountains, where irrigation is practicable.

27. The **Western Section** of the Asiatic Highlands, which extends from the Pamir plateau to the Mediterranean and Red Seas, comprises the plateaus of *Iran*, *Armenia*, *Asia Minor*, and *Arabia*. Along the northern border of these highlands are the *Hindu Kush*, the *Elburz*, and the *Caucasus Mountains*, which may be regarded as a continuation of the Himalayas.

28. The **Hindu Kush** are over four miles high. The **Elburz** are less elevated, but the highest peak, *Demavend*, an extinct volcano, rises to the height of three and a half miles.

29. The **Caucasus Mountains**, between the Caspian and Black Seas, have glaciers as grand as those of the Alps. (*See Europe*, 9.)

30. The plateaus of this western section are of moderate elevation. Iran is a dry region, including an extensive salt desert and many salt lakes. It is bordered on the south-east by the *Zagron Mountains*, and on the south-west by the *Suliman Range*.

On the plateau of Armenia stands *Mount Ararat*, rising about 17,000 feet above the sea-level, the traditionary resting-place of Noah's ark. In these highlands rise the twin rivers *Euphrates* and *Tigris*.

The plateau of Asia Minor is bordered on the south by the *Taurus Mountains*, which rise to the height of two and a half miles, and on the north by the less elevated *Anti-Taurus Range*. Along the coast is a narrow fertile belt. This plateau is a region of little rainfall, and has many small lakes which have no outlet. Its most important river is the *Kizil Irmak*, the ancient *Halys*, which flows into the Black Sea. The *Meander* is noted for its windings.

31. The **Mountains of Lebanon**, on the east of the Mediterranean Sea, have an extreme height of about two miles, and they are broken by deep gorges and glens. In ancient times they were famous for their majestic cedars, a few of which are still remaining.

32. South of the mountains of Lebanon, and bordered on both sides by highlands, is the remarkable low valley of

the Jordan and its two lakes, the *Sea of Galilee* and the *Dead Sea*, so intimately connected with Bible story. The *Sea of Galilee*, known also as the Sea of Tiberias and the Lake of Gennesareth, about 14 miles long, is 755 feet below the level of the sea. The *Dead Sea*, which has no outlet, is 46 miles in length, and its surface is 1,312 feet below the level of the Mediterranean. Its waters are so intensely salt that no fish can live in them, and its shores are wild and desolate. Near the south-west shore of the Dead Sea the highlands contain large deposits of rock salt.

33. The peninsula of Arabia, situated within the dry region which extends through Asia and Africa, is principally a desert plateau with no rivers, but dotted here and there with fertile oases which are watered by small streams. Between the Gulf of Suez and the Gulf of Akabah are the rocky peaks of *Horeb* and *Sinai*. Some parts of Arabia have rainy seasons, during which the water-courses are filled with rushing torrents; but during the rest of the year they are dry rocky channels, known as *wadies*. The low sandy coast lands are very hot, and when sufficiently watered are fertile, yielding cotton, coffee, tobacco, and tropical fruits. The most valuable trees are the date-palm and various gum-trees. Districts but scantily watered yield succulent grasses, which nourish many horses, camels, sheep, and goats.

34. The central or Indian peninsula consists of a plateau called the *Deccan*, separated from the central highlands by the low plains of the Indus, Ganges, and Brahmaputra. It has a general easterly slope. Along its western side are the *Western Ghat Mountains*, which slope abruptly to the western plain of the Malabar coast. A low range on the east is called the *Eastern Ghats*, between which and the sea are the broad lowlands of the Coromandel coast.

35. Among the rivers of the Deccan are the *Narbada*, one of the most sacred rivers of India, the *Godavari*, *Kistna*, and *Kaveri*. The waters of the Kaveri are much used for irrigation. The low plains and deltas of the rivers flowing easterly are wonderfully fertile.

36. **Volcanoes.**—While there are many active volcanoes on the mountainous islands off the east and south-east of the Asiatic coast, few are found on the mainland. They are most numerous in the peninsula of Kamcha[illegible] They occur also on the north-east of the Pamir plateau, a[illegible]me other regions.

37. The **Lowlands of Southern Asia** consist chiefly of the flood plains of the great rivers on the south of the highlands. These rivers, in their rapid currents along the steep mountain sides, bring down vast quantities of earthy matter, with which they build up the flood plains along their lower course. Through the broad deltas thus formed flow the various streams by which the rivers enter the ocean.

38. The principal **rivers** of the eastern peninsula, or Further India, are the *Irawadi*, the *Salwin*, the *Menam*, and the *Mekong* or *Cambodia*. These rivers are of great importance as highways through the country; and many of the inhabitants, in their floating houses, live entirely upon them. This peninsula is generally well watered, and has an exceedingly luxuriant vegetation. Its forests yield teak, ebony, rosewood, sandal-wood, bamboo, rattan, palms, india-rubber, and various gums. The agricultural products comprise rice, cotton, sugar, silk, and all kinds of spice and tropical fruit. Among the wild animals are the elephant, tiger, leopard, rhinoceros, crocodile, and various kinds of monkeys.

39. The other principal rivers of the southern slope ar the *Brahmaputra*, the *Ganges*, the *Indus*, and the *Euphrates*.

40. The **Brahmaputra** rises within 50 miles of the source of the Indus, and, after a long easterly course, curves southwards, westwards, and south again, forming, with the Ganges, a great delta at the head of the Bay of Bengal.

41. The **Ganges** has its source north of the main ridge of the Himalayas. It receives many large tributaries, of which the *Jumna*, from the west, and the *Son*, from the east, are the most important. The low swamps and islands in the delta of the Ganges and Brahmaputra are called *Sunderbunds*. The Ganges is nearly 1,600 miles in length, and is navigable for large steamers through two-thirds of its course. This river is held sacred by the Hindus, and pilgrims come long distances to bathe in its waters.

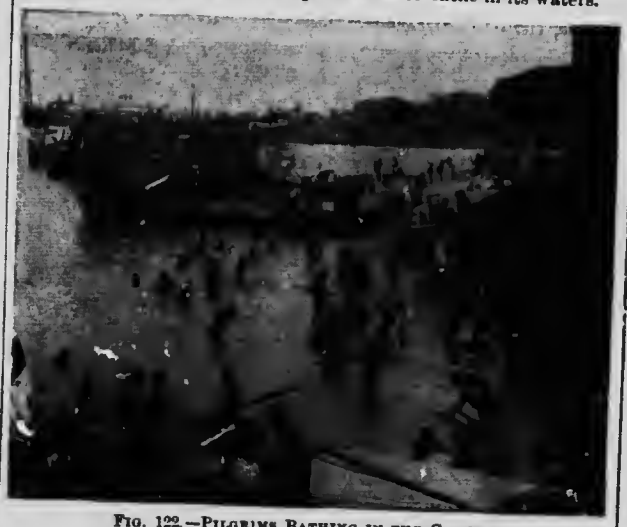


FIG. 122.—PILGRIMS BATHING IN THE GANGES.

42. The **Indus**, with its tributaries, the *Sutlej*, the *Kashmir*, the *Jehlum*, the *Chenab*, and the *Ravi*, flows through a plain called the Punjab—that is, the *Five Stream Land*. It also receives the *Kabul*, flowing from the Khyber Pass. In its lower course the Indus flows through a dry and desert region, and navigation is made difficult by sandy shoals.

43. The lowlands at the head of the Persian Gulf, comprising the historic land of Babylonia, are watered by the twin rivers the *Euphrates* and the *Tigris*. After a long course through highland and plain, in which the Euphrates pursues a very devious path, these two rivers unite in the *Shat-el-Arab*. In early times they flowed separately into the Persian Gulf, which extended further inland than at present. In early summer, through the melting of the snows on the mountains of Armenia, these rivers overflow their banks, often causing much destruction of property, but leaving behind a rich deposit. The plains along their course are intersected by canals for irrigation.

44. **Climate and Vegetation.** — Extending through a wide range of latitude, and varying in elevation over five and a half miles, as might be expected, Asia has great diversity of temperature. The northern lowlands vary from the frozen moss-covered tundras near the Arctic Ocean to the forest lands in the middle and the grain-producing plains towards the south. The eastern lowland plains are fairly watered, and vary in temperature and products with the latitude—cool temperate in the north, warm temperate or tropical in the south. The dry central plateaus, cold in winter, with hot summer days and cool nights, yield little but grasses. Agriculture is practicable only in the districts watered by irrigation near the mountains.

45. Southern Asia, within the monsoon region, has great rainfall in summer and little in winter. Violent storms occur at the change of the monsoons. This is a very fertile region, yielding rice, wheat, sugar-cane, cotton, and all the spices and fruits of the Torrid Zone. The forests are dense, containing ornamental and dye woods, teak, caoutchouc, the banyan, bamboo, and many species of palm.

FIG. 123.—THE BANYAN TREE.

46. The banyan is a remarkable tree. Its wide-spreading branches send out roots, which wave in the air until they have grown long enough to reach the ground, when they fix themselves in the soil and become pillars of support. A single tree thus spreads over a large area, presenting the appearance of a grove.

The bamboo is a large, hollow reed, growing from 50 to 80 feet high. Its stalk is used as a building material, and its leaves are made into ropes, sails, and many other things.

47. South-western Asia is dry and hot. There are extensive deserts, and also many fruitful districts, yielding grain, olives, figs, coffee, spices, and other tropical products.

48. **Animals.**—Asia surpasses the other great divisions of the Earth in the variety and size of its wild animals. It is also the native abode of the most useful animals. Most of the domestic animals of the civilized world have been derived from Asia, as the horse, ass, ox, goat, sheep, pig, cat, peacock, and barn-fowl.

Fur-bearing animals, like those in the north of Canada, abound in the north of Asia.

Cattle, horses, asses, and goats roam over the highland plains. The yak, a species of wild ox, and the Cashmere goat, are found on the table-lands of Tibet.

The largest and most formidable wild animals inhabit the forests south of the Himalayas, including the elephant, rhinoceros, lion, tiger, hyena, orang-outang, crocodile, and large and venomous serpents.

Among the animals of the south-west are the camel, wild ass, antelope, and, among the birds, the ostrich, peacock, and bustard.

49. **Minerals.**—Asia has great mineral wealth, including coal, iron, gold, tin, and precious stones.

50. **Inhabitants.**—Asia has more than half of the world's population, the estimate being over 800,000,000. China and the two eastern peninsulas comprise a large proportion of the whole. It is estimated that three-fourths of the inhabitants belong to the Mongolian or Yellow Race, including the Chinese, Japanese, and others in the south-east. The people of Western Asia, comprising the Hindus, Persians, Armenians, Arabs, and Jews, belong to the white race.

51. All the great religions of the world—Judaism, Christianity, Mohammedanism, Brahminism, and Buddhism—originated in Asia. While there are many Christians and Jews in Asia Minor, Mohammedanism prevails in those countries west of the Indus. There are also many Mohammedans in India. Brahminism prevails in India; Buddhism, which has its chief seat in Tibet, has many votaries in India, and prevails in China, Korea, and Japan.

52. The Asiatics have not been progressive. Though the people of India and China in ancient times had an advanced civilization, as related to the rest of the world, they have made little progress in modern times. Their agriculture is carried on in a crude fashion, according to the manner of their forefathers; and their textiles and other manufactures, though often showing great skill and beauty, are chiefly handwork.

53. **Cities.**—Asia contains many large cities, situated chiefly in India, China, and Japan.

In Western and Central Asia the houses usually have no windows towards the street, but are built around an open centre or court, from which they are lighted. At short intervals along the narrow, crooked streets are doors in the blank walls, leading to the courtyards. In the east the houses are low huts of mud or bamboo.

54. **Damascus**, in Syria, is thought to be the oldest city in the world. South-western Asia contains many ruins of ancient cities, as—**Petra**, in the north-west of Arabia, containing buildings cut out of solid rock; **Palmyra**, east of Damascus, with marble columns, aqueducts, and sepulchres; and **Baalbec**, north-west of Damascus, noted for remains of ancient temples. The ruins of ancient **Nineveh**, on the Tigris, for many centuries covered with *débris* and dirt, have in recent times been excavated by Layard and other explorers, resulting in the discovery of the remains of palaces, numerous tablets, sculptures, inscriptions, and other objects of interest. Many of these antiquities have been removed to the British Museum.

FIG. 124.—SIBERIAN SLEDGE.

The remains of **Babylon**, on the Euphrates, near the present town of Hillah, consist of masses of brickwork and mounds. Its materials have been largely plundered for the building of other cities.

55. **Divisions and Government.**—A large part of Asia is under the rule of Russia, Turkey, Great Britain, and France. The principal native States are Persia, Afghanistan, Siam, China, Korea, and Japan.

Among the native States despotic governments prevail. The chief exception to this is Japan, which, in recent years, has adopted representative government, with a Parliament and Ministry.

In the countries of Central Asia there is no efficient central government. The inhabitants are divided into tribes, each yielding obedience to its chief. The roving herdsmen are generally lawless plunderers, freely appropriating any property possessed by those weaker than themselves.

ASIATIC RUSSIA.

56. **Russia** first obtained possessions in Asia in the sixteenth century. She has continued to extend her bounds through the north of the continent until they have reached the Pacific Ocean and the borders of Persia and Afghanistan, including Siberia and the greater part of West Turkestan. By recent encroachments on China she has secured the possession of the important ports of Port Arthur and Ta-lien-Wan, and has gained partial control over the Province of Manchuria. Trans-Caucasia, on the south of the Caucasus Mountains, also belongs to Russia.

57. **Siberia** is a vast country comprising about five million square miles, a large part of which is included in the tundras and forest plains. Western Siberia is generally level; Eastern Siberia is more broken and elevated.

The north-eastern section of the country is said to be the coldest region on the globe, the extreme of winter cold being 85° Fahrenheit. The short summers are very hot. The tundras, where the vegetation consists of low shrubs, berry-bearing bushes, lichens, and mosses, are inhabited by a few nomadic people, who live by hunting and fishing, and move about in winter on sledges drawn by dogs or reindeer. The forests of pine, fir, and birch, through the middle of the country, abound in bears, wolves, beavers, and other animals valuable for their fur. In the south-west are steppes, in many parts barren and encrusted with salt, elsewhere yielding herbage for the flocks and herds of nomadic tribes. In Southern Siberia, especially in the valley of the Yenesei and of the Amur, are large tracts of country suited to agriculture, yielding wheat, barley, and rye.

The Ural Mountains contain rich mines of gold and copper. Gold, copper, silver, and lead are also abundant in other parts of Siberia.

58. The **inhabitants** of Siberia, in number nearly equal to the population of the Dominion of Canada, live principally in the southern part of the country, along the route of the Trans-Siberian railway. The Russian Government has long used the country as a place of banishment for criminals

and all sorts of political offenders. Thousands of Russian peasants every year emigrate to the agricultural districts of Siberia.

59. **Tiumen**, on the Tura, with manufactures of leather and carpets, and an extensive trade; **Omsk**, the capital of West Siberia, at the junction of the Om with the Irtish; **Tomsk**, on the Tom; and **Tobolsk**, on the Irtish, are important cities in Western Siberia.

60. **Irkutsk**, at the junction of the Irkut with the Angara, the capital of East Siberia, has an extensive tea trade with China, and is the greatest commercial city of Siberia. **Kiakhta**, near the Chinese frontier, is the emporium of the caravan trade between Russia and China. **Vladivostok**, on the Golden Horn (Sea of Japan), is a military and naval station, and one of the eastern termini of the great Siberian railway. Its harbor is generally frozen for several months in winter.

61. The chief **exports** of Siberia are furs and cattle products. The **imports** comprise various manufactured goods, chiefly from Russia. The river systems of Siberia provide a natural highway for trade.

62. The great Trans-Siberian railway, constructed 1891-1905, extends from Samara on the Volga, passing through the most populous district of Siberia, including the towns of Omsk, Tomsk, and Irkutsk, and the Amur valley, and across Manchuria (China), to Vladivostok on the Pacific. It has been extended southerly through Manchuria to Port Arthur, which has an open harbor throughout the year. The distance from Moscow to Vladivostok is 5,292 miles, and the journey takes fifteen days.

63. **Turkestan**, including the vassal states Bokhara and Khiva, is situated between the Caspian Sea on the west, and the Chinese Empire on the east; and between Siberia on the north, and Persia and Afghanistan on the south. The steppes around the Caspian and Aral Seas, which in some places are below the level of the ocean, too dry for agriculture, except where the rivers afford means of irrigation, yield scanty herbage for the sustenance of cattle, horses, and sheep of nomadic tribes. On the more elevated plains of the south-east, the chief abode of fixed population, are well-watered districts of great fertility. The **products** are rice, maize, cotton, silk, flax, tobacco, grapes, and other fruit. The rivers and lakes abound in fish.

64. The nomads of the dry plains comprise various patriarchal tribes of Kirghiz and Turkomans. The inhabitants of the cities and agricultural districts are chiefly Uzbegs, Persians, and Russians. Mohammedanism is the prevailing religion.

65. The houses of the towns are generally built of sun-dried bricks, their windows opening only on enclosed courts. The streets are narrow, and are flanked on each side by windowless walls, broken here and there by doors leading to the courtyards.

66. **Tashkend**, the capital of the general government of Turkestan, is a large city, and an important centre of trade and silk manufactures. **Khokand**, situated in a beautiful valley, and surrounded by orchards, and **Samarkand**, noted as the capital of the great empire ruled by Timor, or Tamerlane (1370-1405), whose tomb it contains, are places of considerable trade.

FIG. 125.—TURKOMAN TENT.

A railway extends from the Caspian Sea to the borders of Persia, and thence through the state of Bokhara to Samarkand.

67. **Bokhara**, a vassal state of Russia, on the north of Afghanistan, yields grain, cotton, tobacco, and fruit. The town of *Bokhara*, the capital, is a large city containing many mosques, and is noted as a seat of Mohammedan learning; but it no longer possesses the literary distinction for which it was once so famous.

68. **Khiva**, in the valley of the Oxus, on the north-west of Bokhara, about the size of Nova Scotia, is also a dependent state of Russia. *Khiva*, the capital of the state, situated in a fertile district watered by irrigation, is a small town consisting chiefly of mud-huts.

69. **Trans-Caucasia** is a mountainous country south of the Caucasus Mountains, and between the Black and Caspian Seas. The **soil** is fertile, yielding grain, grapes, peaches, figs, apricots, and other fruit. The mountain slopes are covered with forests of oak, and various other trees. The petroleum fields near the Caspian Sea are among the richest in the world.

70. **Tiflis**, the capital, on the Kur, has a large trade, and manufactures cottons, silks, leather goods, swords, and guns.

Kars is a very strongly fortified town, 6,000 feet above the sea-level, noted for a heroic defence against Russia in 1855, commanded by General Williams, a native of Nova Scotia. **Baku**, a port on the Caspian Sea, in the neighborhood of the petroleum wells, exports large quantities of petroleum and grain. **Batum**, on the Black Sea, exports timber and hides. It is connected by railway with Baku.

ASIATIC TURKEY.

71. Turkey in Asia forms a part of the Turkish Empire, of which Constantinople in Europe is the capital. This territory lies south of the Black Sea, and east of the Mediterranean and Red Seas, including *Asia Minor*, *Armenia*, *Syria*, *Mesopotamia*, and *Western Arabia*.

72. **Asia Minor**, or **Anatolia**, consists of the peninsula between the Black Sea and the Mediterranean. This part of Asia was the scene of several important states in ancient times. Troy, the overthrow of which by the Greeks is described by Homer, was in the north-west. Among the noted countries were Lydia, Pontus, Bithynia, and Cilicia. "The Seven Churches of Asia" were also in Asia Minor. The country is subject to violent earthquakes.

73. The coast districts, especially on the south, have a mild climate, are fairly well watered, and are very fertile, yielding oranges, grapes, figs, olives, cotton, tobacco, opium, and the mulberry. The highlands of the interior are subject to extremes of heat and cold, and owing to the dryness of the climate agriculture is practicable only through irrigation. Grazing is here the chief industry, and the Angora goat, which yields a fine hair, is one of the most valuable animals. Of the inhabitants, the Turks are the most numerous. The trade is principally in the hands of Greeks, Jews, and Armenians, who are found chiefly in the coast districts and on the islands.

74. **Smyrna**, the largest and most commercial city of Asia Minor, has a fine harbor, and exports cotton, figs, raisins, carpets, and opium. The city is regarded as the birthplace of Homer. **Aidin**, in the valley of the Meander, connected by rail with Smyrna, trades in figs and cotton. **Scutari**, immediately opposite Constantinople, is noted for its numerous mosques and famous cemetery. **Brusa**, in a fertile valley near the Sea of Marmora, deals in wines and fruits, and manufactures carpets. **Sinope**, an important port on the Black Sea, has an excellent harbor. **Trebizond**, the terminus of the caravan route between Persia and the Black Sea, and of steamships with Europe, ranks next to Smyrna in commerce. **Angora**, famed for its goats, has considerable trade. **Tarsus** is noted as the birthplace of the Apostle Paul. **Budrun** occupies the site of ancient Halicarnassus, the birthplace of Herodotus, and is noted for the mausoleum or tomb of Mausolus.

75. The **exports** of Asia Minor comprise the various products of the country, as figs, raisins, opium, gums, sponges, wool, goat's hair, and skins.

76. **Armenia**, belonging partly to Russia, partly to Turkey, and partly to Persia, is an elevated country having a dry climate, subject to extremes of heat and cold. The sheltered valleys under irrigation yield barley, oats, tobacco, and cotton. The majority of the **inhabitants** are Kurds, a nomadic, pastoral people, who occupy the mountainous districts. The inhabitants of the agricultural districts, known as Armenians, profess the Christian religion. Of late years they have been subjected to bitter persecution, and many of them have been massacred by the Mohammedans.

77. **Erzerum**, 6,000 feet above the sea-level, is a strongly fortified commercial city, on the Upper Euphrates, and on the caravan route between Trebizond and Persia. **Van**, on Lake Van, is a fortified city in the centre of a fertile plain. **Diarbekir**, on the Tigris, manufactures morocco, and has considerable trade. Merchandise and passengers are carried from Diarbekir to Bagdad on rafts of inflated sheep-skins.

78. **Syria**, situated between the Mediterranean Sea and the river Euphrates, comprises a narrow plain of varying width next the sea, a highland region, including the ranges of Lebanon and Anti-Lebanon in the interior, and a vast plain on the east, known as the Syrian Desert. Between the ranges of Lebanon and Anti-Lebanon is a beautiful valley, anciently called *Cœle Syria*, or *Hollow Syria*.

FIG. 126.—DAMASCUS.

There are many fertile tracts of country, but through lack of culture much soil that was once fruitful is now nearly barren. Excepting the cold heights of Lebanon, the climate is generally warm temperate. Want of rain is the chief defect. The **products** are grain, olives, grapes, figs,

Fig. 127.—Jerusalem.

and other fruit. The **inhabitants** are chiefly Turks, Arabs, and Greeks. The wandering Arabs of the desert are called Bedouins. They live by their flocks and by plunder. The *Maronites* and *Druses* are two hostile peoples inhabiting the mountains of Lebanon. The former are a Christian sect, who derive their name and tenets from Maron, who lived in the fifth century. The Druses are Mohammedans.

79. **Damascus**, about 50 miles from the Mediterranean, and surrounded by a well-watered and fertile plain, is the largest city of Syria, and manufactures leather and arms. It is the terminus of a caravan route to the east, and a railway to Beirut.

80. **Beirut**, occupying a beautiful situation at the foot of Mount Lebanon, is the chief port of Syria. It has regular steamboat communication with Marseilles and Liverpool, and exports silk, olive oil, and other products of the country. **Aleppo** is an important trade centre between eastern and western countries. The city was laid in ruins by an earthquake in 1822, and 20,000 inhabitants lost their lives. **Alexandretta** is the port of Aleppo. **Tripoli** is a place of considerable trade, and manufactures silk. **Tyre** and **Sidon**, the chief cities of ancient Phœnicia, are represented by the small towns of *Soor* and *Saida*. **Hemath** and **Homs**, on the Orontes, are very old towns.

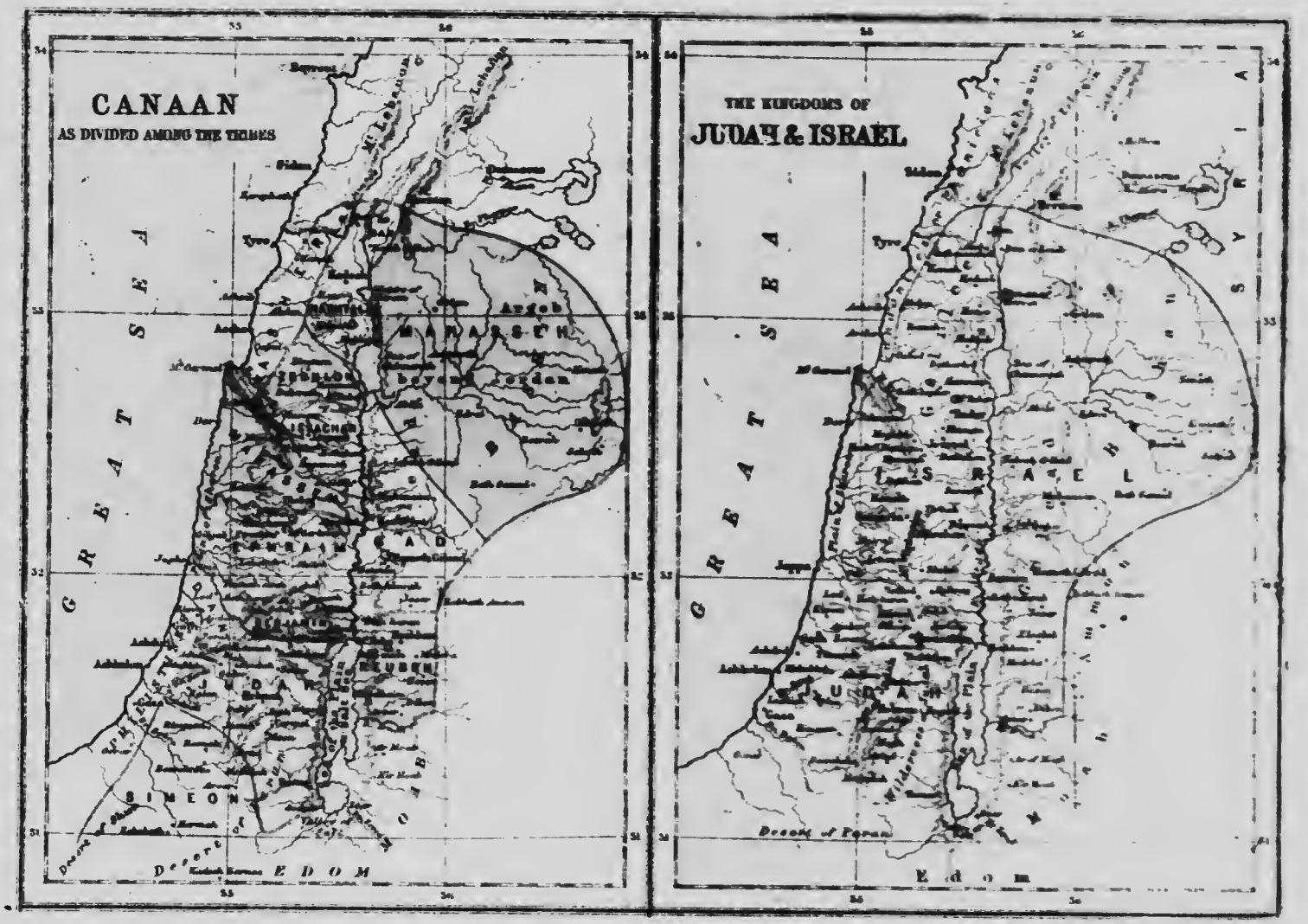
81. **Palestine**, properly included in Syria, lies on the east of the Mediterranean Sea, and south of the mountains of Lebanon, having an extreme length of 200 miles, and a breadth of 100 miles. It is generally a rugged table-land, varied with irregular mountains and low plains. The highlands are divided into two districts by the low valley of the Jordan. Lowlands from 10 to 15 miles wide skirt the coast. At the northern extremity of this coast plain stands *Mount Carmel*, overlooking the Mediterranean Sea. The plain of *Esdraelon*, the battle-field of Palestine, extends across the country from the foot of Carmel to the valley of the Jordan, separating the highlands of Samaria from those of Galilee. The rocks are chiefly limestone, and the country abounds in caves, to which frequent reference is made in the Scriptures. *Mount Hermon*, rising to the height of 9,380 feet, stands in the extreme north. The other noted mountains are *Safed*, *Tabor*, *Gerizim*, and the *Mount of Olives*. The mountains of Moab are on the east of the Jordan.

82. The **Jordan**, rising in Mount Hermon, and about 200 miles in length, is the principal river.

83. The soil of Palestine was once very fertile. The hillsides, carefully terraced, were clothed with vineyards and olive groves, and the valleys with grain. The terraces are now broken down, and the rains of centuries have washed away the soil, leaving nothing but the gray rocks. Some of the valleys and plains are yet very fruitful, yielding grain, olives, grapes, figs, and other fruit.

84. The **inhabitants** include many races. Nearly all are Mohammedans. The Jewish population is estimated at 85,000. The settled inhabitants live in towns and villages. Lawless shepherds, called Bedouins, wander over the country, plundering the defenceless who fall in their way.

85. **Jerusalem**, situated on the edge of a rocky plateau, 2,580 feet above the sea-level, and 30 miles from the Mediterranean, is regarded as a sacred city by Jews, Christians, and Mohammedans. It has deep ravines on all sides except the north-west. The streets are rough and narrow. The Christian quarter occupies the north-west of the city, the Mohammedan the north-east, the Jewish the south-east, and the Armenian the south-west. The most important building in the city is the *Haram esh Sherif*, on the supposed site of the temple. Jerusalem is connected with Jaffa, on the coast, by railway.


CANAAN
AS DIVIDED AMONG THE TRIBES
GREAT SEA
MANASSEH
EPHRAIM
BENJAMIN
JUDAH
REUBEN
GAD
SIMEON
EDOM
THE KINGDOMS OF
JUDAH & ISRAEL
GREAT SEA
ISRAEL
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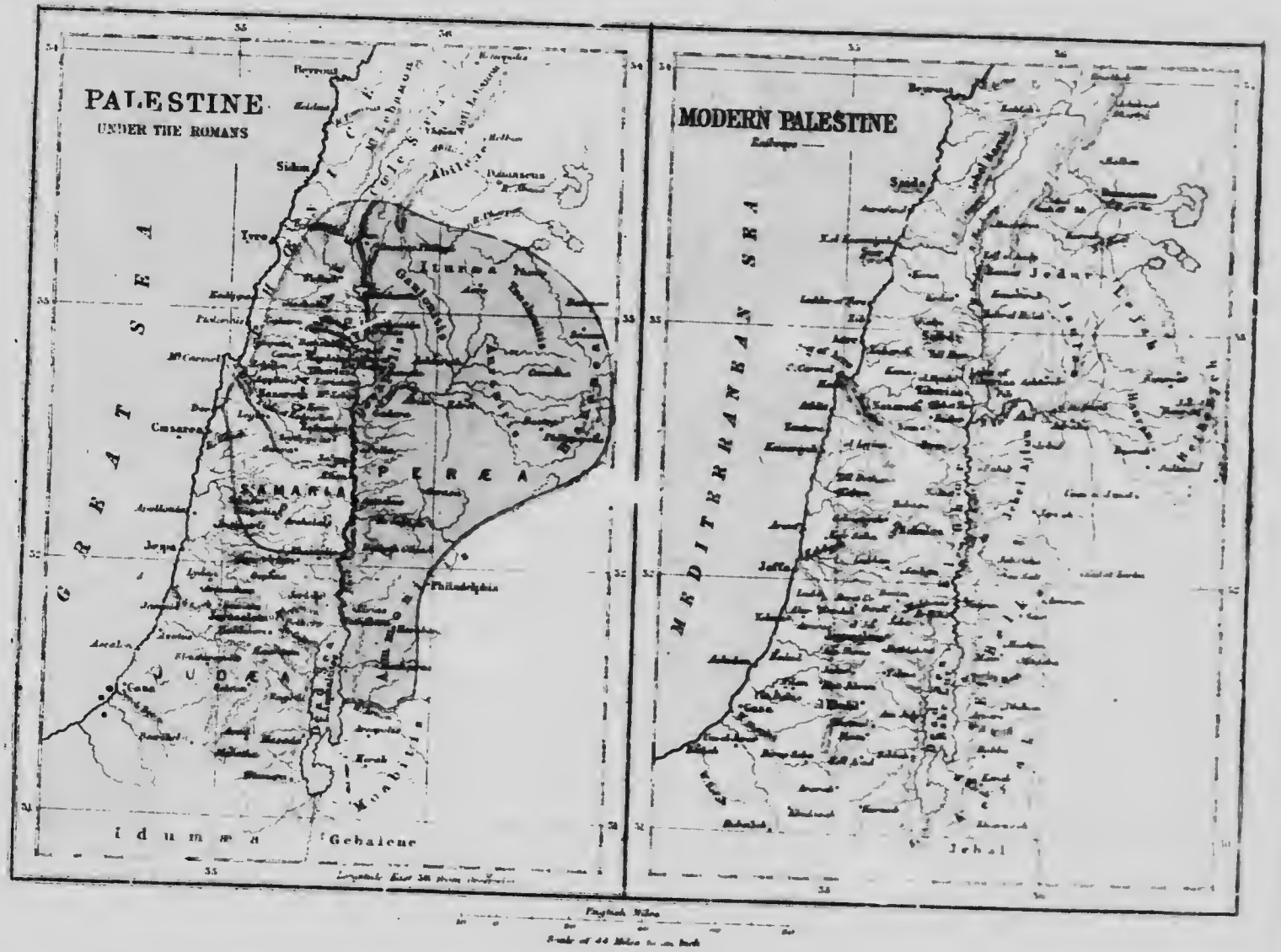
EDOM


PALESTINE
UNDER THE ROMANS
GREAT SEA
SAMARIA
PERÆA
JUDÆA
Idumæa
Gebalene
Philadelphia
Ituræa
MODERN PALESTINE
MEDITERRANEAN SEA
Jebal

86. **El-Azariyeh** is a small Mohammedan village on the eastern slope of the Mount of Olives, and is supposed to occupy the site of ancient Bethany. **Beit-Lahm**, six miles south of Jerusalem, is on the site of the ancient Bethlehem. It contains a large monastery, built over a grotto, known as the Cave of the Nativity. **Hebron**, 16 miles south of Jerusalem, is noted for the cave of Machpelah, where Abraham was buried. The Mohammedans have built a large mosque over the cave, which none but Mohammedans are allowed to enter.

87. **Jaffa**, the ancient Joppa, has a small and insecure harbor. **Gaza**, an important trading-place, is in the south-west. **Nablus**, on the site of ancient Shechem, is in a fertile valley, between Mounts Ebal and Gerizim.

88. On the east of the Jordan are many ancient towns and ruins. Some of them have a few inhabitants; others, deserted by man, are the home of wild beasts.

89. **Mesopotamia**, the country between the rivers, comprises the plains between the Euphrates and the Tigris. It has a dry, hot climate, and is occupied chiefly by wandering shepherds. The soil is very rich, and when irrigated yields large crops of grain and fruit. The settled **inhabitants** live in villages surrounded by fruit trees, near the rivers, more especially the Tigris.

90. **Bagdad**, on the Tigris, the capital of Mesopotamia, has considerable trade, and manufactures leather, silk, cotton, and woollen goods. **Mosul**, on the Tigris, opposite the site of ancient Nineveh, is famous for the manufacture of the delicate fabric known as muslin. **Basra**, on the Shat-el-Arab, is a trading port.

91. **Arabia** comprises several political divisions, with no very precise limits. A large part of the country is a rainless desert. The coast region, and districts where irrigation is practicable, are fertile, yielding coffee, cotton, tobacco, millet, spices, and tropical fruit. The most valuable tree is the date-palm. The Arabs are an unprogressive people, their customs and modes of life at the present time being little changed from those that prevailed centuries ago. They are divided into tribes, and have a kind of patriarchal government, the head of the tribe being styled *emir* or *sheik*. The Bedouins comprise about one-fifth of the total population.

The principal divisions of Arabia are *Hedjaz*, *Yemen*, *Oman*, and *Nedjed*.

92. **Hedjaz**, lying along the coast of the Red Sea, belongs to Turkey.

93. **Mecca**, the capital, 70 miles from the sea, is noted as the birthplace of Mohammed, and the most sacred city of his followers. All Mohammedans are required to visit the city once in their lives. Generally combining trade with religion, they carry merchandise to sell on their route. The great mosque in the city contains a structure known as the *Kaaba*, in which the chief object of interest is the sacred black stone believed by Mohammedans to have fallen from heaven. **Jeddah**, on the Red Sea, is the port of Mecca, and the landing-place of many pilgrims. **Medina**, also a holy city, contains the tombs of Mohammed, his daughter Fatima, and of the caliphs Abubeker and Omar.

94. **Yemen**, sometimes called Happy Arabia, in the south-west, also belongs to Turkey. It produces the finest coffee in the world, and also yields myrrh and gums.

95. **Sana**, in a beautiful inland valley, has a large trade in coffee. **Hodeida** and **Mocha**, ports on the Red Sea, export coffee, dates, and gums.

96. **Aden**, belonging to Great Britain, comprises a peninsula in the south-west of Arabia and the island of Perim, including an area of about eighty square miles.

The city of **Aden** is a strongly fortified town, standing in a hollow enclosed by rocky cliffs. It is an important coaling station, and a port of call for steamships between Europe and the East.

97. **Oman**, in the south-east, is a sultanate under the protection of Great Britain. **Muscat**, the capital of Oman, is an important port on the Gulf of Oman.

98. **Nedjed** is an extensive country in the interior, ruled by the Wahabees. It is noted for its fine horses and camels. **Riad** is the capital.

PERSIA.

99. Persia, situated between the Caspian Sea and the Persian Gulf, is for the most part a level table-land surrounded by mountain ranges. About one-fourth of the country, comprising all the central and eastern portion, is an irreclaimable salt desert. The district near the Persian Gulf is hot, arid, and unhealthy. The high table-lands are hot in summer, and very cold in winter. The streams are few and small, and are either absorbed by the desert, or flow into salt lakes—the Karun, flowing into the Persian Gulf, being the only navigable river.

Fig. 128.—Bedouins.

100. The country along the southern shores of the Caspian Sea, the mountain slopes, and the irrigated valleys are exceedingly fertile, yielding wheat, millet, and other

grain, tobacco, cotton, sugar-cane, the vine, silk, opium, oranges, and other fruit. Roses are extensively cultivated for the attar of roses.

101. Horses, camels, sheep, and goats are reared in large numbers. The wool is of superior quality.

102. The **inhabitants** comprise various races. Those living a settled life are mostly of the ancient Persian or Iranian stock. The Kurds and other nomadic tribes occupy the north-west. Nearly all are Mohammedans.

103. **Cities.—Teheran,** the capital, is a large city in the interior. During the intense heat of summer the city is abandoned by the court and the wealthy inhabitants.

104. **Ispahan,** situated on a fertile plain, manufactures gold brocades, velvets, and firearms. **Tabriz,** surrounded by orchards and gardens, the second city of Persia and chief commercial centre, is on the caravan route between Persia and Trebizond, on the Black Sea. **Meshed,** a commercial town in the north-east, is a holy city of a Mohammedan sect. **Reshd,** near the Caspian, is noted for its silk trade.

Bushire, on the Persian Gulf, exports opium, silk, cotton, and carpets. **Shiraz,** a trading town in the south, is noted for its rose gardens, nightingales, and vineyards. **Balfrush** is a trading town near the Caspian Sea. **Yazd** manufactures silk and cotton, and is the centre of trade with India. **Persepolis,** near Shiraz, was one of the capitals of ancient Persia. Its ruined palaces indicate the magnificence of the ancient city.

Fig. 129.—Bazaar in Shiraz.

105. The principal manufactures are silks, carpets, shawls, cottons, gold and silver brocade, attar of roses, cutlery, and leather. The **trade** of the northern part of the country is chiefly with Russia, that of the southern with Great Britain and India.

106. The **government** is a despotism. The Shah, or chief ruler, has absolute power over the lives and property of his subjects.

Persia was among the earliest civilized countries, but it retains little of its former rank among the nations of the world. Its affairs are now largely controlled by Russia and Great Britain, the former having its sphere in the north, the latter in the south-east, with a neutral portion between.

AFGHANISTAN.

107. Afghanistan is a high table-land, traversed by lofty mountain ridges and deep valleys. Extensive sandy deserts occupy the south and west.

108. The **Hindu Kush Mountains** cross the centre of the country, and the **Suliman** form a barrier wall between Afghanistan and India. These mountains are cleft by deep ravines or passes. The **Bamian Pass,** in the Hindu Kush, is remarkable for its colossal figures and cave-houses sculptured from the rocks. The **Khyber Pass,** about thirty miles in length, often very narrow, and enclosed with high cliffs, leads to India. It was the scene of a fearful massacre of British troops in 1842.

109. The heat of summer in the valleys and lowlands is intense; the winters in the highlands are very severe. The streams are fed chiefly by the melting of snow on the mountain heights. Agriculture is dependent on irrigation, and only a small part of this inhospitable country is capable of cultivation. The **products** are grain, the vine, and fruit of various kinds. The date-palm grows in the deserts. The chief beasts of burden are camels and dromedaries. The sheep have fat tails weighing ten or twelve pounds.

110. The Afghans are of Aryan stock, strongly built, and warlike in disposition. Their religion is Mohammedanism.

111. **Kabul,** the capital and largest city, surrounded by orchards, is 6,400 feet above the level of the sea, and is overlooked by lofty heights of the Hindu Kush. It is a commercial and strategic centre near the Khyber Pass.

112. **Herat,** in the centre of a fertile district, is a strategic point and trade centre. **Kandahar,** a fortified city near the Bolan Pass, said to have been founded by Alexander the Great, is surrounded by gardens and orchards watered by canals which intersect the city. An important trade route between Persia and Russian Turkestan and India passes through Herat and Kandahar.

113. **Ghazni** was the capital of a great empire in the eleventh century. **Jelalabad** is noted for its defence by the British in 1842.

114. The chief **trade** is with India, China, Persia, Turkestan, and Russia, conducted by caravans. **The**

exports are asafœtida, tobacco, fruits, carpets, shawls, and horses. Various manufactured goods are imported.

115. The chief ruler of Afghanistan, styled the Ameer, exercises despotic power. He is under the influence of the British Government, from which he receives an annual subsidy. The various native tribes are under chiefs, who are more or less independent of the central authority.

116. The position of Afghanistan, between the territories of Russia and Great Britain, makes these powers jealous of each other's influence over the Ameer.

BALUCHISTAN.

117. Baluchistan, occupying the eastern portion of the Iranian plateau, is, especially towards the north, a mountainous and rugged country, broken by deep valleys. The coast country, called *Mekran*, is an arid, hot desert. The river-valleys are fertile.

118. The *Bolan Pass*, a narrow defile about 60 miles in length, is traversed by a railway connecting Quetta with Sind in India.

119. The **products** are grain and fruit, similar to those of Afghanistan. The **inhabitants** are Mohammedans, and comprise various nomadic tribes.

Fig. 130.—The Khyber Pass.

Kelat, the chief town, is on an elevation over a mile above the sea-level. **Quetta** occupies a strategic point at the end of the Bolan Pass.

120. The **exports** are wool, dried fruits, tobacco, and dates. The principal **imports** are British and Indian manufactures.

121. The north-east of the country is subject to the Khan of Kelat. In other parts the various tribes own no authority but that of their respective chiefs. The whole country is a dependent state of British India.

BRITISH INDIA.

122. This vast country extends from the Himalayas to the Indian Ocean, comprising the central peninsula of Southern Asia, and also Burma on the east. It has long been celebrated for the richness of its vegetable products, its large wild animals, its beautiful manufactures, and the wealth of its native princes.

123. The power of Great Britain in India originated with the British East India Company, organized with exclusive privileges in the year 1600. In 1639 the Company acquired its first territory, consisting of about five miles of coast where Madras now stands. Other possessions were soon acquired; large warehouses called factories were erected; and the prosperous trade was extended.

124. A large part of the country was at that time included in the Mogul Empire, which had been established in 1525. The chief ruler was known as the Great Mogul. His empire was divided into provinces ruled by deputies called Nabobs, and the provinces were divided into districts governed by officers called Rajahs.

125. In 1756 Calcutta was captured and plundered by the Nabob Suraja Dowlah. Many of the English were taken prisoners, and thrust into a close room called the *Black Hole*, where most of them perished in a single night from breathing the impure air. Calcutta was retaken in 1757 by the distinguished Clive. In the same year Clive checked the power of France in India by the battle of Plassey.

126. British power now advanced rapidly. In 1833 the Company's monopoly was withdrawn, and the country was thrown open to general commerce. The Indian Mutiny, a rebellion of the native troops called *Sepoys*, which began in 1857, presents many tales of savage butchery and outrage. On the restoration of peace, the government of India was transferred from the Company to the British Crown. In 1877 Queen Victoria assumed the title of *Empress of India*.

127. The **coast-line** is about 4,000 miles in length. The east coast is sometimes called the *Carnatic;* the south-eastern coast is called the *Coromandel Coast;* the south-western the *Malabar Coast.* The coast-line of the peninsula has few indentations, and the harbors are for the most part restricted to the river estuaries.

128. The **physical features** are varied. On the north are the gigantic and unrivalled Himalayas, peak rising above peak far beyond the line of perpetual snow. South of this highland region are the vast plains of the Ganges, Brahmaputra, and Indus.

129. The **soil** is generally very fertile, especially the river valleys. The alluvial plains of the Ganges are exceedingly rich and well cultivated, sustaining a dense population. South of the Punjab is the Indian Desert, 400 miles long and 100 miles in breadth.

130. The **climate** is tropical, excepting in the highlands, where there is every variety of temperature according to the elevation. The year includes three seasons—the rainy season, from June to October, during the prevalence of the south-west monsoon; a dry season, during the time of the north-east monsoon, from October to March; and an intensely hot season, from March to June. Through occasional failure of the south-west monsoon in certain parts of the country, the season passes without rain, resulting in failure of crops and famine. A large district in the north-west suffers most from lack of rain.

131. **Vegetation** varies from the tropical profusion of the moist lowlands to the barren deserts of the north-west or the alpine flowers of the higher mountain slopes.

The **agricultural products** include rice, cotton, jute, silk, sugar-cane, opium, indigo, maize, wheat, millet, coffee, tea, and various kinds of fruit.

Among the trees are teak, sandal-wood, ebony, bamboo, mango, banyan, and many species of palms. At the height of 11,000 feet the trees are dwarfed, and the region of perpetual snow is found at the height of 15,000 feet. The low region, called the *Sunderbunds*, near the mouth of the Ganges, is covered with almost impenetrable thickets.

Rice is the chief article of food in India. Tea is extensively cultivated in Assam. The cinchona, introduced from South America, yields a valuable product. India ranks next to the United States as a cotton-producing country. Opium is one of the most important products. Other leading products are wheat, millet, and oil-seeds, as sesame, linseed, and castor oil.

Fig. 131.—Rural Life in India.

132. Wild **animals** are numerous, including the elephant, rhinoceros, buffalo, tiger, panther, leopard, and many others. Tiger hunting in the jungles or thickets of the Sunderbunds is a dangerous and exciting sport. The elephant is often tamed and used as a beast of burden.

133. The **minerals** are iron, coal, tin, copper, gold, rubies, amethysts, and other precious stones. Mineral oil is obtained in Burma.

134. The **inhabitants** number over 290,000,000, or about seven times the population of the British Isles. The European portion of the population, chiefly of British origin, numbers about 150,000. Nearly three-fourths of the inhabitants are Hindus. There are many Mohammedans, especially in Bengal and the Punjab. Buddhism has many votaries in Burma, Assam, Bhotan, and Ceylon.

The religion of the Hindus is a superstitious and cruel pagan system. They worship imaginary gods, as *Brahma* and *Vishnu*; also the Ganges and various animals. The British Government

has prohibited many of their horrible practices. Formerly it was customary when a man died to burn his widow on a funeral pile; and women threw their children into the Ganges, believing that they would thus please their god.

An important feature of Hinduism is the division of the people into four castes—the Brahmins or priests, holding the highest rank, the soldiers, the merchants, and the common laborers. The castes are not allowed to intermarry or even eat together, and no one can rise above the station in which he was born.

135. **Divisions.**—The British Empire in India is made up of two classes of States:—

(1.) *Those that are under the direct control of the British Government*, embracing nearly three-fourths of the whole territory.

(2.) *Native States*, governed by native chiefs, who acknowledge allegiance and pay tribute to the British Government.

136. For administrative purposes **British India** is divided into the following *Provinces:—Madras, Bombay, Bengal, United Provinces of Agra and Oudh, the Punjab, Burma, Bihar and Orissa, Central Provinces and Berar, Assam, North-West Frontier Province, Baluchistan, Ajmer-Merwara, Coorg, Andaman and Nicobar Islands*, and *Delhi*.

FIG. 132.—A STREET IN CALCUTTA.

137. **Bengal** lies along the lower course of the Ganges. The **United Provinces** occupy the Upper Ganges basin. The **Punjab** embraces the upper waters of the Indus. The **Province of Bombay** is situated along the Lower Indus and the Arabian Sea. It has excellent harbors. The **Central Provinces** are on the south west of Bengal. The **Province of Madras** is situated along the Bay of Bengal, and in the south of the peninsula. With a coast-line of over 1,700 miles, it does not possess a good natural harbor. **Assam** embraces the country along the middle course of the Brahmaputra. It is the most noted tea-growing district in India. **Burma** extends easterly from Assam and the Bay of Bengal to the borders of China. The **North-West Frontier Province** lies between the Punjab and Afghanistan. The **Province of Behar, Chota Nagpur**, and **Orissa** lies to the west and south-west of Bengal.

138. The former kingdom of Burma was annexed to the British possessions in 1886, and now forms a part of British India. The Irawadi is a great commercial highway of the country. Its delta is a rich rice-growing district. *Bhamo*, at the head of navigation, 700 miles from the sea, has rich mines of ruby and jade. The other leading products are teak, rubber, and petroleum.

139. **Cities.**—British India has seventy-five large cities with a population of more than 50,000, many of which cannot be here enumerated. The eight largest are *Calcutta, Bombay, Madras, Lucknow, Benares, Patna, Delhi*, and *Hyderabad*.

140. **Calcutta**, formerly the capital of British India, is the chief port and commercial city. The European quarter has magnificent public buildings and fine dwellings. Among the objects of interest are the *Botanical Gardens, Government House, Hindu temples, pagodas*, and *mosques*, the *Sanskrit College*, and other institutions of learning.

141. **Murshidabad**, on a branch of the Ganges, has a large trade. **Serampore**, 13 miles north of Calcutta, is a noted mission station. **Patna**, on the Ganges, in an opium-growing district, has an extensive trade.

142. **Allahabad**, the capital of the North-West Provinces, at the junction of the Ganges and the Jumna, is an important railway centre. It has an annual fair, and is thronged with Hindu pilgrims, who come here to bathe in the waters of the sacred river.

143. **Benares**, on the Ganges, is a large trading and manufacturing city. It has many mosques and pagodas, and is accounted by the Hindus the most holy place in the world. The city is visited by crowds of pilgrims, many of whom come to die within its precincts.

144. **Agra**, on the Jumna, a railway and commercial centre in the North-West Provinces, exports raw silk, sugar, and indigo. It was for over one hundred years the capital of the Mogul Empire, and has many noted structures, including palaces, mosques, and tombs, the most remarkable being the white marble mausoleum known as the *Taj Mehal*, erected for his favorite wife by the great Mogul Emperor, Shah Jehan, who lived in the first half of the seventeenth century.

145. **Cawnpore**, a military station on the Ganges, is noted for the massacre of the English in 1857 by Nana Sahib. **Lucknow** manufactures gold and silver brocade and muslin. It is noted for its defence under General Havelock against the Sepoys in 1857, and its final relief by Sir Colin Campbell.

146. **Lahore**, the capital of the Punjab, is an educational and trade centre. It contains many notable buildings and objects of interest. **Multan** is an important commercial city. **Amritsar** is a wealthy and prosperous city, with extensive trade, and manufactures of cottons, silks, and shawls. It is the sacred city of the Sikhs, and is visited by many pilgrims. **Peshawar** is a fortified town near the entrance to the Khyber Pass.

147. **Delhi** was made the capital of British India by George the Fifth at the Durbar in 1911. Among its noted structures is the palace of the Great Mogul. **Meerut**, a military station on a tributary of the Ganges, is the place where the mutiny began. **Hardwar**, a small town on the Ganges, is a noted place of pilgrimage, and the seat of an annual fair visited by many thousand pilgrims and traders. **Darjiling**, in Bengal, and **Simla**, in the Punjab, are favorite resorts of Europeans during the hot season.

148. **Nagpore**, the capital of the Central Provinces, is situated in a swampy, unhealthy district. It has important manufactures of silks, cottons, and other goods.

149. **Bombay**, the capital of the Province of Bombay, is situated on an island of the same name. It has a superior harbor, is the chief port in the west, and carries on an immense trade with Great Britain by way of the Suez Canal. It is a great manufacturing city, especially of cotton goods. *The Island of Elephanta*, in Bombay Harbor, is celebrated for its cave-temples cut out of solid rock.

FIG. 133.—STREET SCENE IN DELHI.

150. **Surat** is a large city near the west coast. **Ahmedabad**, a large manufacturing city, has splendid and richly-ornamented temples and mosques. **Poonah**, a military station, manufactures cotton and silk goods. **Kurrachee**, in the District of Sind, is an important seaport, with a large foreign trade.

151. **Madras**, on a surf-beaten shore, without a harbor, is the capital of the Province of Madras. Long piers have been built out into deep waters, where steamers are able to land passengers and freight. It has a large trade, exporting cotton, coffee, and rice.

152. **Tanjore**, in the southern part of the peninsula, has important silk and cotton manufactures. It is noted for its great pagoda or heathen temple. **Trichinopoli** is a large manufacturing and military city on the river Kaveri. **Arcot** was once the capital of a State called the Carnatic. **Calicut**, on the Malabar coast, once noted for its calicoes and commerce, was the first port visited by Vasco de Gama.

153. **Rangoon** is an important port in Burma. It exports rice, teak, cotton, ivory, and shellac, and is noted for its pagodas and temples. **Mandalay**, a former capital of Burma, is in the centre of rice-fields. **Maulmain**, on the Salwin, exports timber and rice.

154. The leading **industry** of India is agriculture, which is carefully fostered by the Government. The manufactures comprise cotton, woollen, silk, jute, and other goods. The Hindus excel in the manufacture of shawls, carpets, silks, and muslins.

155. The chief **exports** are cotton, wheat, rice, oil-seeds, opium, indigo, jute, tea, coffee, wool, pepper, ivory, silk, and shawls. Various manufactured goods are imported. Cotton and woollen goods, hardware, and machinery form a large proportion of the imports. More than half the foreign trade is with Great Britain. Total value of exports, about $175,000,000. Imports, about $200,000,000.

156. Railways intersect the country, connecting nearly all the large cities. Over 21,000 miles are now in operation.

157. The **Supreme Government** of India is vested in the Viceroy or Governor-General, assisted by a Council of six members.

In addition to the ordinary members of Council, the Commander-in-Chief is member extraordinary. The laws are made by a Legislative Council, consisting of the Executive Council and twelve additional members. The government of British India is under the general oversight of a member of the British Cabinet, who is styled Secretary of State for India.

Each province has a lieutenant-governor and a council to manage its local affairs. The provinces of Madras and Bombay have less connection with the central government at Calcutta than the other provinces.

The army comprises about 74,000 European troops and 145,000 natives.

NATIVE STATES OF INDIA.

158. The Native States of India—that is, the States ruled by native princes—include over one-fourth of the whole country. They number about eight hundred; but many of them are very small, only about two hundred being of much importance. They are usually classed as *Dependent States*, governed by princes more or less subject to British control, and *Independent States*.

DEPENDENT STATES.

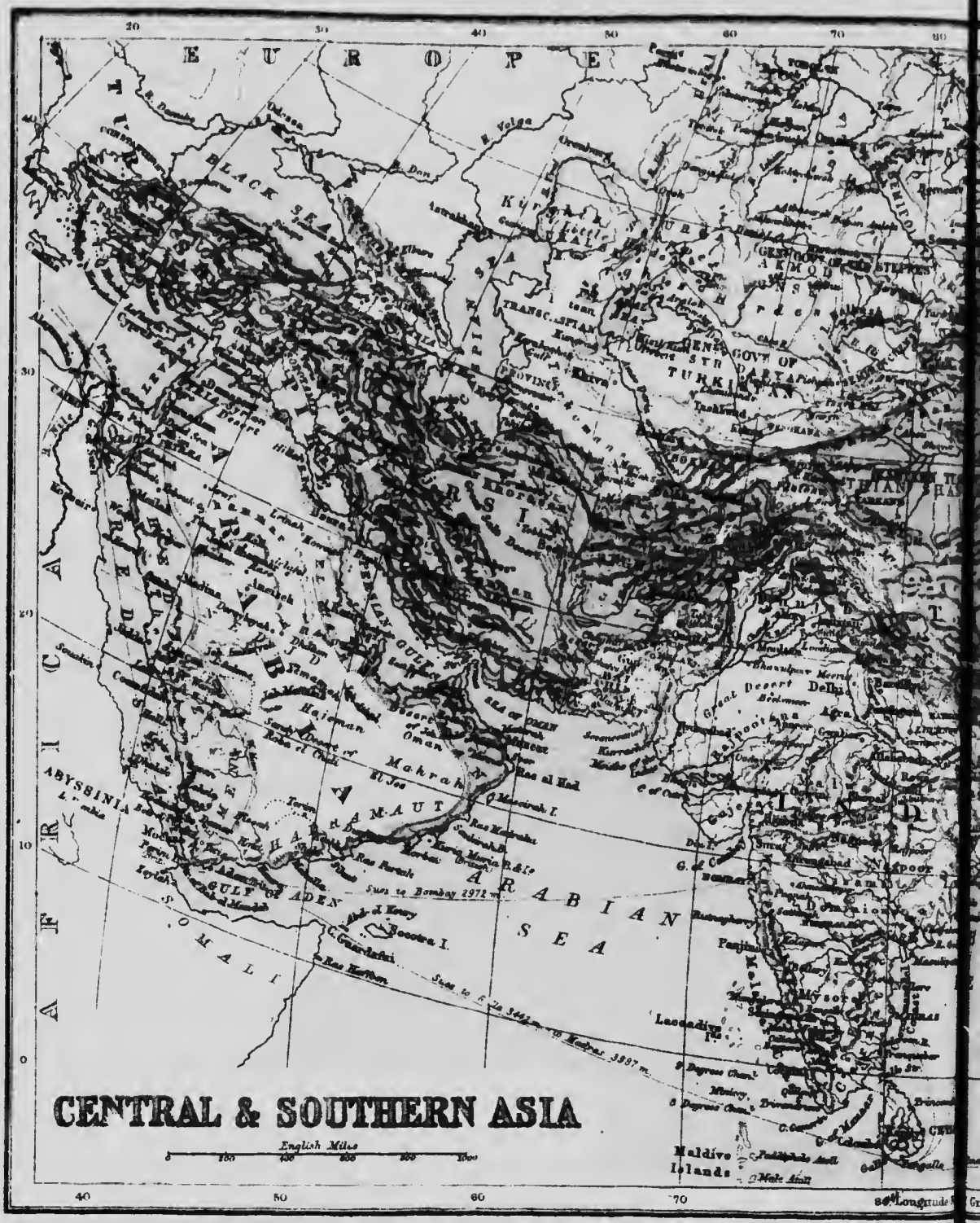
159. **Kashmir** comprises an elevated valley in the Himalayas and the surrounding mountain slopes. The high mountain walls surrounding the country have but few passes, and the valley of the Jhelum is the only practicable road into the country during the winter. The fields are watered by irrigation. Rice is an important product. The **inhabitants** number about 2,500,000. They are skilled in the manufacture of shawls, leather, and attar of roses. **Srinagar**, the capital, has a beautiful situation on the Jhelum.

160. **Hyderabad**, or the *Nizam's Dominions*, occupying the central portion of the Deccan, is one of the leading Native States of India. It has a deep black soil adapted to the growth of cotton, but portions of the State lie within the famine district. It was formerly famed for diamonds. The ruling people are Mohammedans. **Hyderabad**, a commercial centre near the Indus, is a very large city. **Golconda**, once famous for its diamonds, is in the neighborhood. **Aurangabad**, the favorite residence of Aurungzebe, the last Mogul Emperor, contains many mosques. **Ellora** is remarkable for its temples cut out of the solid rock.

161. **Baroda** is about half the size of the peninsula of Nova Scotia. Its capital, **Baroda**, is a large commercial city, and is noted for its fine palaces.

162. **Indore**, or the *Holkar's Dominions*, is a small State north of the Vindhya Mountains. **Gwalior** is about the size of New Brunswick, and has a population equal to more than half that of the Dominion of Canada. Its capital, **Gwalior**, is a strong fortress.

163. **Rajputana** is a large territory in the west, including several


EUROPE
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AFRICA
BLACK SEA
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ARABIAN SEA
PERSIAN GULF
GULF OF ADEN
RED SEA
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Arabia
Hadramaut
Oman
Mahrah
Somali
Abyssinia
Afghanistan
Turkestan
Baluchistan
India
Deccan
Delhi
Agra
Bombay
Madras
Calcutta
Maldive Islands
Laccadive Is.
Socotra I.
Ormuz
Muscat
Aden
Suez
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Indus R.
Ganges R.
Volga R.
Nile R.
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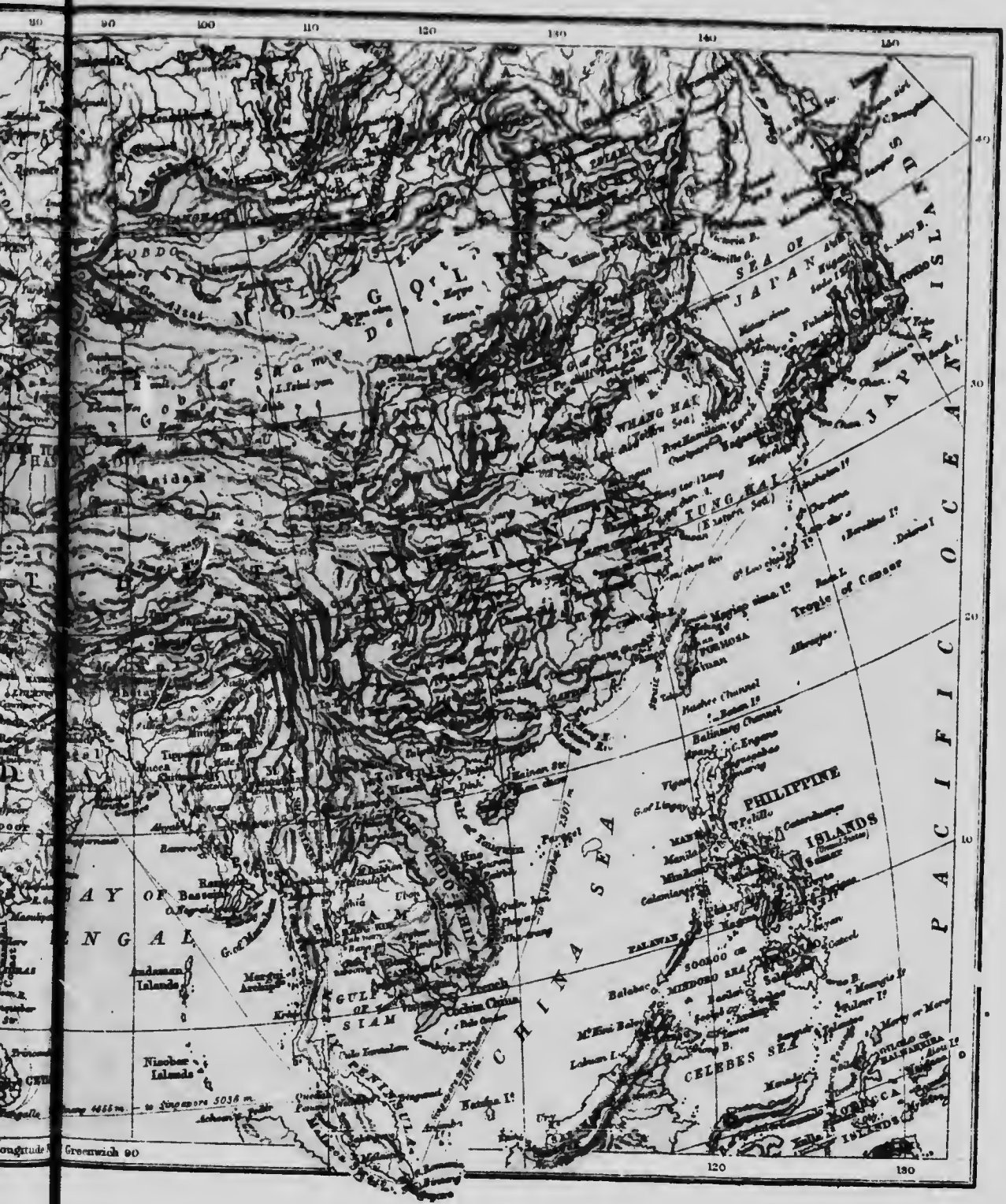
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SEA OF JAPAN
JAPAN ISLANDS
PACIFIC OCEAN
CHINA SEA
PHILIPPINE ISLANDS
Tropic of Cancer
FORMOSA
Taiwan
Bashee Channel
Balintang Channel
Luzon I.
Manila
Mindoro
PALAWAN
Balabac
MINDORO SEA
Sulu Archipelago
CELEBES SEA
Mangsi I.
Sangihe Is.
Talaut Is.
Miangas or Mariki I.
Andaman Islands
Nicobar Islands
GULF OF SIAM
PENINSULA
Greenwich 90
120
130

Native States. Much of the country is desert, the chief industry being the care of sheep, goats, camels, and cattle.

164. **Cochin** and **Travancore** are fertile States along the south-western coast of the peninsula.

165. **Mysore** is in a mountainous district. Its capital, **Mysore**, is noted for its botanical gardens and carpet manufacture. **Cutch** is a peninsula on the north of the Gulf of Cutch. The forests of Mysore are among the few haunts of the wild elephant in India.

INDEPENDENT STATES.

166. **Nepal**, situated on the southern slope of the Himalayas, has an area nearly equal to that of England and Wales, and a population estimated to be between two and five millions. The Ghurkas are the ruling race. It is a grazing and agricultural country. **Katmandu** is the capital.

167. **Bhutan**, on the southern slope of the Himalayas, is a rugged, mountainous country. The chief products are Indian corn, millet, and rice. The religion is Buddhism.

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168. The **French Possessions** in India comprise about 200 square miles, with a total population of 287,000. The principal places are *Chandernagor*, on the Hugli, comprising an area of 3½ square miles; *Yanaon*, at the mouth of the Godavery; *Pondicherry*, *Karikal*, and *Mahé*, on the Malabar coast.

169. The **Portuguese Possessions** have an area of about 1,760 square miles. The principal places are *Goa*, *Daman*, and the *Island of Diu*, on the west coast. Rice, which is the chief food, is a staple product, and the making of salt is an important industry. Total population, 570,000.

CEYLON.

170. Ceylon, a Crown Colony of Great Britain, is a rich island on the south-east of Hindustan, from which it is separated by the Gulf of Manaar and Palk Strait. It has an area nearly equal to that of New Brunswick. The northern part of the island is an undulating plain of great fertility. The southern part is mountainous, with magnificent scenery. The island is well watered, and the heat is less intense than on the mainland of India. The vegetation is very luxuriant. Satin wood and many other kinds of timber trees abound in the forests. There are several species of palm. **The agricultural products** include rice, tea, coffee, cocoa-nuts, tobacco, and all kinds of spices and tropical fruit. Ceylon ranks third among the tea-producing countries of the world, 125,000,000 pounds being exported annually. Ceylon has long been celebrated for its rich gems, including sapphires, rubies, garnets, and amethysts. The pearl fishery in the Gulf of Manaar has also yielded great wealth.

171. The wild **animals** include the elephant, deer, humped ox, and wild boar. There are many kinds of birds, some of which are noted for their beautiful plumage, others for the richness of their song. Crocodiles are numerous.

172. The **inhabitants** are of various races. Some of the natives of the interior are very degraded. The total population is about 3,000,000.

FIG. 134.—TEA PLANTATION, CEYLON.

173. **Colombo**, the capital, is a port of call for steamers between Europe and the East. **Trincomalee** has a fine harbor, and is an important British naval station. **Kandy**, in the interior, having several temples and royal tombs, was the ancient capital.

STRAITS SETTLEMENTS.

174. The Straits Settlements, comprising Malacca, on the west coast of the Malay Peninsula, and the islands of Singapore and Penang, form a Crown Colony of Great Britain. Several of the adjoining Native States are under British protection. The climate is hot and humid. The chief products are gambier, pepper, rice, tapioca, sugar, coffee. The tin mines are the richest in the world. The total population of the Crown Colony is about 500,000, nearly half of which is Chinese.

175. The **exports** are tin, spices, gambier, gums, tapioca, rattan, copra, and various other products. The **imports** comprise cottons, hardware, and various manufactured goods.

176. **Malacca** is a low, swampy district, having an area of 659 square miles. Its chief town and port is **Malacca.**

177. **Singapore,** in the Strait of Malacca, about three-fourths of a mile from the mainland, has an area of 206 square miles. The town of **Singapore,** the capital of the Straits Settlements, and the most important commercial town in Indo-China, has an excellent harbor, and is strongly fortified. It is a port of call for steamers passing through the Strait, and its docks are crowded with shipping from all maritime countries.

178. **Penang,** on the west coast of the Malay Peninsula, is a beautiful fertile island. Its government includes the small island of Dinding and the Province of Wellesley on the mainland, the whole having an area of 107 square miles. **Georgetown** is the principal place.

FIG. 135.—VILLAGE PAGODA AND RICE-FIELD, SIAM.

SIAM.

179. This country is situated on the north of the Gulf of Siam, and includes the northern portion of the Malay Peninsula. Its territory east of the Mekong, comprising about one-third of the whole of Siam, was in 1893 ceded to France, leaving to Siam about 200,000 square miles.

180. The year consists of a wet season and a dry season. During the former the Menam overflows its banks and leaves a rich deposit. The country is very fertile, but badly cultivated. The principal products are rice (the chief food of the natives), spices, betel, cotton, tobacco, coffee, and various fruits. Upper Siam is a dense forest, and the cutting of teak is an important industry. The **minerals** are gold, tin, and precious stones. The population of Siam is estimated at 5,000,000. The most populous region is the Menam valley. The prevailing religion is Buddhism. During recent years considerable progress has been made in civilization in the capital and its neighborhood. This movement has been promoted by the education of a few young men of the country in England, Germany, and France.

181. **Bangkok,** the capital, on the Menam, is intersected by canals. About half the inhabitants are Chinese, who carry on most of the trade. On account of inundations from the river, the houses stand on piles. Many of the inhabitants live upon the river, in floating houses made of bamboo and palm leaves. The palace of the king is a very large structure, richly adorned with gold, silver, and precious stones. There are many pagodas, some of which are richly ornamented in color and carving. The chief **exports** are rice, teak-wood, tin, sugar, hides, cotton, silk, ivory, and pepper. **Chi-engmai,** or **Zimmé,** in the north, is the centre of the tea trade.

182. In the **government** of the country the king is advised by a Cabinet, consisting of the heads of various departments. The king is also assisted in the making of laws by a Legislative Council appointed by himself.

FRENCH INDO-CHINA.

183. The French Possessions comprise the greater portion of the eastern peninsula east of the Mekong River, including *Cochin-China*, *Cambodia*, *Anam*, and *Tonquin*. It is a well-watered, fertile country. Rice is the staple product, forming the chief food of most of the people. Other leading **products** are spices, betel-nuts, tobacco, indigo, silk, and sugar-cane. The forests yield timber, india-rubber, various gums, dyes, and drugs. The territory is rich in minerals, including iron, copper, silver, and tin. The total area is about 180,000 square miles, and the population 18,000,000.

184. **Cochin-China,** a French colony, comprising the delta of the Mekong, is a great rice-growing country, more than three-fourths

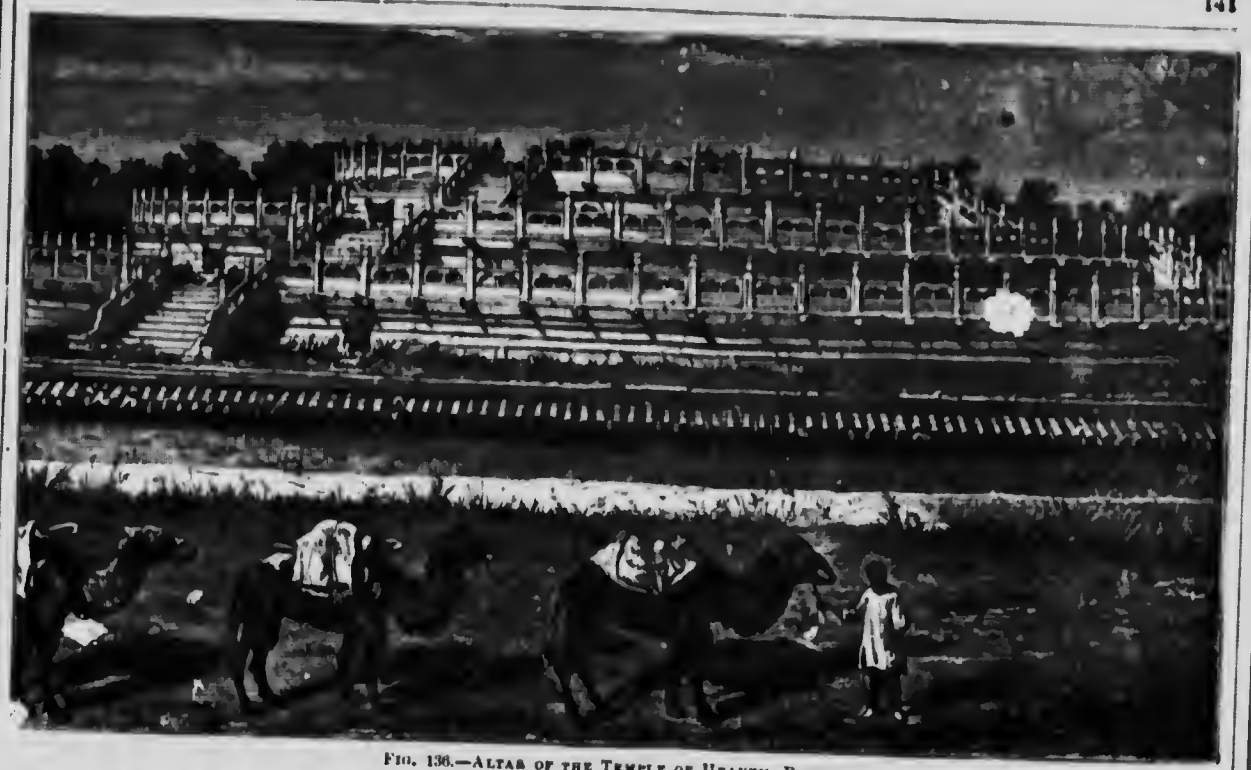


FIG. 136.—ALTAR OF THE TEMPLE OF HEAVEN, PEKIN.

of the cultivated land being devoted to that crop. **Saigon**, the capital, and also the seat of government of French Indo-China, is a great trade centre, and has steamship communication with France.

185. **Cambodia**, a French Protectorate, consisting mainly of alluvial land formed by the floods of the Mekong, is also a great rice-producing State. Having no port accessible to sea-going vessels, its trade is carried on through Saigon, in Cochin-China. **Pnompenh** is the capital.

186. **Angkor** and other places in its neighborhood have many ruins, the remains of a former civilization.

187. **Anam**, a French Protectorate, about the size of New Brunswick, is a very fertile region, yielding rich field and forest products. Nearly half a million of the inhabitants are Roman Catholics, the remainder being Buddhists and Confucianists. **Hué**, the capital, is a fortified town on the coast.

188. **Tonquin** comprises a broad alluvial plain along the coast, and highlands in the interior. It is the most densely populated part of French Indo-China. Among its inhabitants are about 400,000 Roman Catholics. **Hanoi**, the capital, is strongly fortified.

CHINA.

189. China is the most important Native State on the continent of Asia. The empire embraces nearly one-fourth of Asia, and includes more than one-fourth of the inhabitants of the world—an area and population thus exceeding those of all Europe. It has a history extending back many centuries before the Christian era, and it can boast of an earlier civilization than any other existing nation. The Chinese were first in the manufacture of gunpowder, paper, and silk. They have, however, caught little of the spirit of progress characteristic of modern times, and yet a recent awakening is manifest, promising great changes in ancestral customs.

190. The chief divisions are *China Proper*, *Tibet*, *East* or *Chinese Turkestan*, *Mongolia*, and *Manchuria*.

CHINA PROPER.

191. China Proper comprises about one-third of the whole area of the empire, and about twenty-three-twenty-fourths of the total population. It is mainly within the warm temperate region of the eastern slope of Asia. A characteristic feature of the country is the copiousness of summer rains, causing great floods. Some of the large rivers rise from 40 to 50 feet above their ordinary level.

The northern section consists of a vast fertile plain, with a somewhat extreme climate. The leading products are wheat, maize, millet, rice, and tea.

The southern section is more elevated and hilly, with a tropical climate yielding rice, tea, silk, cotton, sugar-cane,

tobacco, opium, and tropical fruits; also the cocoa-nut and other kinds of palm, bamboo, and lacquer tree.

192. Tea is cultivated throughout a large part of the country on the hill slopes. The shrub grows from 20 to 30 feet high, but under cultivation it is only about one-fourth of that height. The leaves are picked several times during the year, the youngest and earliest leaves having the best flavor.

193. The **soil** is very fertile, and is nearly all under cultivation, so that domestic animals requiring pasturage are not numerous. Farm labor is performed by buffaloes and oxen, and the implements used are of the most primitive kind. Irrigation is extensively practised. Rice and fish are much used for food, and fish-culture has long been practised.

194. China has great **mineral resources**, but they are yet undeveloped. Coal is widely distributed. The largest known coal field in the world, it is said, is found in the Province of Shansi. Iron and copper are also plentiful.

195. The **inhabitants** belong to the Mongolian or Yellow Race. The Chinese women have small feet, resulting from compression in youth. The Chinese are an industrious and parsimonious people, and thus as laborers they are able to underbid others of like occupation. This, with other causes, has given rise to prejudice against them in the United States and Canada, and led to the passing of laws restricting their immigration into the country.

196. The State religion, under the rule of the Emperors, was Confucianism, of which the Emperor was high priest, and could alone perform the highest religious rites. The majority of the people are Buddhists, and pagodas, or idol temples, are numerous throughout the country. A leading feature in the religion of the country is the worship of ancestors, causing an unwillingness to deviate from established customs. Until within the last half century the Chinese were disinclined to hold intercourse with ther nations, and they still regard foreigners with contempt. There are many Mohammedans within the empire. Many Christian missions are established in the country, both Roman Catholic and Protestant. A large proportion of the population can neither read nor write. Candidates for the public service are subjected to rigid examinations in the subjects which constitute Chinese learning. The position of mandarin is open to every citizen who can pass the severe examination. There are various schools in connection with the Christian missions.

The Chinese language is ancient, and difficult to foreigners. The written language is without alphabet, and has a distinct character for every word.

197. China has many large **cities**, of which there are said to be forty or fifty that have over 100,000 inhabitants.

198. **Pekin**, the capital, 100 miles from the sea, is surrounded by a high, thick wall, and is divided into two parts—the Northern, or Tatar city, and the Southern, or Chinese city—separated by a wall. The northern division contains the imperial palace, the residences of the nobles, temples, government offices, and pleasure-grounds. The southern division is occupied by traders and business men. **Tien-tsin**, a large city on the Peiho River, is the port of Pekin, and one of the ports open to foreign trade. The other chief ports for foreign commerce are **Shanghai**, which takes the lead in the export of silk; **Canton**, having a large export trade in tea, silk, and sugar; **Ningpo**, an educational and religious centre; **Foochow**, a noted mission station; **Swatow**, also an important mission station; **Hankow**, and **Amoy**.

199. **Hangchow-fu**, on the river Tsien Tang, is noted for its manufactures of silks. The city is surrounded by a stone wall 30 feet high, and from 20 to 30 feet broad. The tidal wave, known as the "Hangchow Bore," at certain seasons is from 15 to 20 feet high. **Nanking**, a large city on the Yang-tse-Kiang, was long noted for its porcelain tower, which was destroyed by the Taeping insurgents in 1853. **Yunnan** is noted for its manufactures and trade. **Hankow**, **Wuchang**, and **Hanyang** are large neighboring cities, having an immense trade, and a combined population of 1,200,000, situated at the junction of the river Han with the Yang-tse. **Chung-king**, on the Yang-tse, 1,500 miles from its mouth, has a large foreign trade, especially with Great Britain, importing cotton goods, and exporting silk, drugs, and other products. **Singan Fu**, a former capital of China, surrounded by high walls, is a large city and a great centre of the silk trade.

200. Agriculture is the leading industry. The Chinese excel in the manufacture of porcelain, silk, nankeens, embroidery, lacquered ware, and carved ivory work. The chief **exports** are tea, silk, and various manufactured goods. The **imports** are textiles, hardware, metals, kerosene oil, and opium. The trade is chiefly with Great Britain and her colonies, Japan, the United States, and Russia.

201. There are few railways or good carriage roads. Communication is carried on by the rivers and numerous canals, the most important of the rivers being the Yang-tse and the Si. The Imperial Canal, extending from Hangchow-fu northerly 650 miles, is the longest canal in the world. Traffic with Russian and Western Asia is carried on by caravans. China has recently granted railway and mining concessions to various foreigners which will result in opening up the resources of the country.

202. **Tibet** is an elevated plateau, traversed by lofty mountains, with a cold, dry climate. Lying north of the Himalaya Mountains, it is inaccessible from India except by difficult passes. The **products** of the warmer valleys are the grains and fruits of the temperate zone, but generally the country is suited only to grazing. The most important domestic animals are sheep, goats, and the yak, which is much used as a beast of burden.

203. The **inhabitants** are Mongolians. Buddhism of that form known as *Lamaism* has its chief seat in Tibet. The priests, of whom there are several grades, are called *lamas*. There are two supreme pontiffs or high priests, known as the *Dalai-Lama* and the *Tesho-Lama* or *Bogdo-Lama*, who exercise civil authority, each being supreme in his own territory. The former, having the larger territory, is the more powerful, and is called the *Grand Lama*.

204. **Lhasa**, the capital, and residence of the Chinese Viceroy, is the sacred city of Buddhists. In and near the city are several monasteries, where the mysteries of Buddhism are taught. The Dalai-Lama resides in a convent on Mount Botala, near the city. The Buddhist monks are suspicious of foreigners, and rigorously exclude them from the city.

205. **East Turkestan** comprises two sections, divided by the Tian Shan Mountains—*Kashgaria* on the south, and *Sungaria* on the north. It is, for the most part, a rainless region, comprising part of the Desert of Gobi. The valleys

of the streams which flow from the mountains are made fertile by irrigation. The leading industries are grazing, agriculture, and the caravan trade. The majority of the inhabitants are Mohammedans. Large herds of wild asses roam over the grassy plains.

206. **Kashgar**, the capital, is a manufacturing and commercial town. **Yarkand**, situated in a fertile valley, on the Yarkand River, manufactures leather, and has an important trade. The caravan trade between China and the west passes through Yarkand.

The ruins of ancient cities buried by the drifting sands of the deserts yield interesting relics.

207. **Mongolia** is principally within the Desert of Gobi. It is inhabited chiefly by nomadic Mongol herdsmen, whose wealth consists in horses, camels, and sheep.

Maimatchin is a small town in the north, opposite Kiachta, on the Russian frontier. Here the Russians and Chinese exchange goods. **Urga**, on the caravan route between Pekin and Irkutsk, in Siberia, is a holy city, and has a fair every three years. **Karakorum**, now in ruins, was the capital of Ghengis Khan, the great Mongol conqueror.

208. **Manchuria** is a large territory varied with mountains, plains, and river valleys. The climate and products differ according to latitude and elevation. In the north are vast forests of oak, walnut, and pine. The soil over large areas is very fertile, suited to wheat and other grain. The southern valleys yield grapes, sorghum, rice, tobacco, and opium. In recent years many Russians have settled in the country.

Mukden, a flourishing city, the capital of Manchuria, is on the Liau River and the Trans-Siberian Railway. It is a walled city, and has also an inner walled enclosure, within which are royal palaces and government buildings. Its port is **Niuchwang**, at the mouth of the Liau. **Kirin** is an important city on the Sungari River.

209. The **Government** of the Empire was for ages an absolute monarchy. By a recent revolutionary movement a republic has been established.

The army is large, comprising in time of peace about 300,000 men, and on a war footing about 1,000,000; but, lacking discipline and proper equipment, its strength is not at all proportionate to its size. The fleet also is very ineffective, and in the war with Japan in 1894–95 suffered disastrous defeat.

210. China has experienced many revolutions and changes of dynasty. Kublai Khan, the great Mongolian conqueror, became master of the country near the close of the thirteenth century. The Manchoo Tatars conquered it in the seventeenth century, and established the dynasty which ruled till 1912.

To protect themselves from invasion by the Tatars, the Chinese about 220 B.C., built a great wall along their northern frontier 1,500 miles in length, and varying in height from 15 to 30 feet.

211. **Hainan** is a mountainous island on the coast, about two-thirds the size of Nova Scotia, belonging to China. It has a population of about 2,000,000.

212. **Foreign Possessions in China.**—**Hong-Kong**, an island near the mouth of the Canton River, having an area of 29 square miles, which, with a district on the adjoining mainland, forms a Crown Colony, was acquired by Great Britain in 1841. The island, which is strongly fortified, is an important naval station and distributing centre for European merchandise. *Victoria*, the capital, situated on a terraced highland ridge of the north coast, has one of the best harbors in the world.

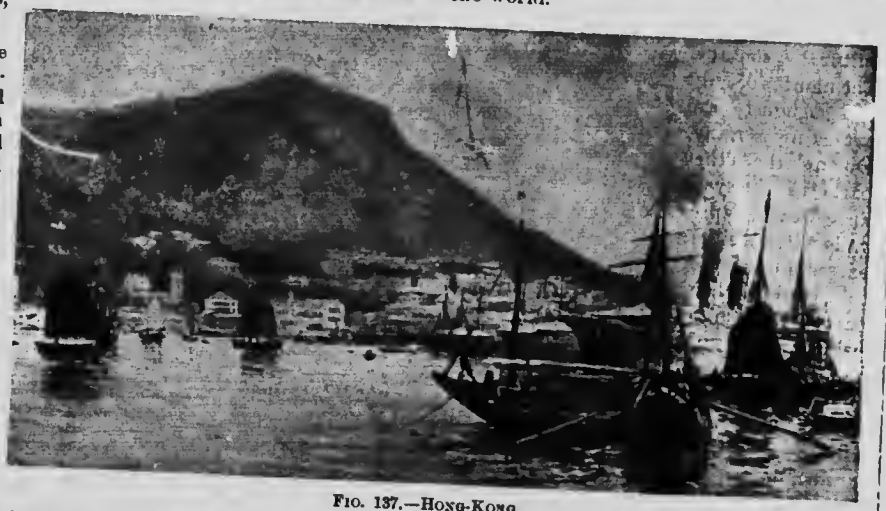


FIG. 137.—HONG-KONG.

213. **Wei-hai-wei**, a commanding naval station and strategic position at the eastern extremity of Shantung peninsula, is occupied by Great Britain under lease from China.

214. **Port Arthur**, a strongly fortified port in the south-east of Manchuria, and **Dalny**, a commercial port and the south-eastern terminus of the Siberian Railway, taken from Russia in the late war, are now held by Japan.

215. **Kiau-chou Bay**, on the south of the peninsula of Shantung, with the islands in the bay and the points of land commanding the entrance to the bay, is now held by Japan, having been taken from Germany in 1914.

216. **Kwang-Chau-Wan**, on the south of the peninsula of Leichow, opposite the island of Hainan, is leased to France, to secure to that country like privileges to those of other Great Powers.

217. **Macao**, a country district and city at the mouth of the Canton River, belongs to Portugal. The territory once formed a separate island, but is now a peninsula, joined by a narrow isthmus to the island of Hiang-shan. The inhabitants are chiefly Chinese. The trade of the city, once considerable, has largely drifted to other parts.

KOREA.

218. Korea consists principally of the large peninsula between the Sea of Japan and the Yellow Sea, having an area nearly equal to that of the island of Great Britain. It is, in the main, a mountainous country, divided by a mountain range into an eastern and a western section. The western division is a rugged, hilly country, with many fertile valleys and slopes, well watered and suited to agriculture. The eastern division, between the mountains and the Sea of Japan, is a highly fertile agricultural country. The months of July and August are exceedingly rainy. During the other parts of the year fin weather prevails, without either extreme heat or cold, the southern part of the country being much warmer than is the northern. **The products** are maize, rice, wheat and other grains, beans, and tobacco, in the south; barley, millet, oats, and various vegetables, in the north. There are extensive forests on the mountains, in which are found bears, tigers, leopards, antelopes, deer, hogs, beavers, and martens.

FIG. 138.—JAPANESE WOMEN AND CHILDREN.

219. The mineral wealth is great, including iron, coal, silver, copper, and gold, but it is undeveloped. **The population**, though not definitely known, is estimated at about 10,000,000. The Koreans belong to the Mongolian type. While their average stature is somewhat below that of Europeans, they are a well-formed and intelligent people. The women are much secluded, and are treated as inferiors. Except the worship of ancestors, which prevails as in China, and the fear of evil spirits, who are supposed to be propitiated by certain charms practised by a priesthood called Shamans, there is little religious sentiment among the people. American and Canadian Christian missions have been established, and are meeting with much success in various parts of the country.

220. **Seoul**, the capital, has a beautiful situation near the coast of the Yellow Sea. Women are kept rigidly secluded, appearing on the street at certain hours in the evening, announced by the tolling of the Great Bell, when men are required to retire to their homes. **Chemulpo** is the port of Seoul, and one of the chief treaty ports of the country. **Fusan** and **Wonsan** are also treaty ports, with good harbors open all the year.

221. Agriculture, carried on in a primitive fashion, is the chief pursuit. The chief **exports** are rice, beans, ginseng, hides, and wheat. The **imports** comprise cotton, woollen, and silk goods, metals, and kerosene.

The roads through the country are in a very bad condition. Transport in the interior is mainly by porters, pack-horses, and oxen.

222. Korea, once a native kingdom, is now a part of the Japanese Empire. The powers of its government are restricted to home affairs, all relations with foreign countries being managed by the Japanese Government.

On account of its exclusiveness in shutting out foreigners, Korea was called *The Hermit Nation;* but this exclusive policy is now abandoned.

JAPAN.

223. The Empire of Japan, called by the natives "Dai-Nippon," is made up wholly of islands on the east coast of Asia. The three most important of the group are *Honshu* (the main island), *Kiusiu*, and *Shikoku*. The empire also includes the large but thinly populated island of *Yezo*, in the north, the *Loochoo* and *Kurile* Isles, *Formosa*, and many

small islands. In insular position, excellent harbors, and commercial advantages, Japan resembles Great Britain.

224. The **surface** is generally hilly and mountainous, some peaks rising above the snow-line. Volcanoes are numerous, and the islands are frequently visited by earthquakes. *Fuji-san*, an extinct volcano on the main island, has an elevation of 12,365 feet.

225. By the earthquake of 1891, 10,000 persons lost their lives, and in 1896 the waves of the sea caused by an earthquake destroyed many thousands of the inhabitants on the coast.

226. The **climate** is humid, especially in the southern islands, and varies from warm temperate in the south to cold in the north. The islands are sometimes visited by violent cyclones.

227. The **soil** is fertile and carefully cultivated, and agriculture is the leading industry. The **products** vary on different islands according to temperature—cereals, vegetables, and fruits of te perate climes, being raised in the north; rice, sugar-cane, tea, tobacco, cotton, mulberry, and fruits of warm countries, in the south. Next to China, Japan is the greatest silk-producing country in the world. The f ts yield lumber, lacquer gum, camphor, and bamboo. e bamboo grows very luxuriantly, and is used in the making of houses, boats, paper, baskets, and chairs. The island of Yezo has dense forests, the home of wild boars, bears, stags, and other animals. Japan has few domestic animals, such as sheep, oxen, and horses; hence the country is poorly supplied with such important articles as wool, milk, butter, cheese, and leather. Also the service rendered by oxen and horses in other countries is largely performed by human labor. A small two-wheeled vehicle, called the *jinrikisha*, drawn by one or two men, is extensively used in Japan as a conveyance.

228. The islands are like Great Britain in being rich in minerals, including iron, sulphur, coal, copper, antimony, silver, and porcelain earth. The copper mines are very rich.

229. The **population** numbers about the same as that of the British Isles, and is found chiefly in the three southern islands. The Japanese are the most progressive people of the Mongolian race. The women have a higher social position than have the Chinese, but they are kept in seclusion. Within the past half century Japan has entered upon a new era of progress and civilization. For over two centuries it had pursued a policy of seclusion. Foreigners were not allowed to enter the country, and the natives were forbidden to go abroad. Trade with foreigners was prohibited, excepting only the Chinese and Dutch. The latter were restricted to two ships annually, which were confined to the port of Nagasaki. These restrictions were removed in 1854, since which the country has made unparalleled progress in civilization. The government has been completely remodelled, railroads and telegraph lines have been constructed, and a system of public education has been established. Common schools are numerous throughout the land, and some of the advanced institutions of learning hold high rank. Many young men of the country have been educated in England or the United States.

Combined with ancestor worship, the religion is Buddhism and Shintoism, the latter being a system of nature and hero worship. The numerous Christian missions in the country have in the main been prosperous, and have exercised much influence in remodelling institutions of the empire.

230. **Tokio**, the capital, on the island of Honshu, is a great commercial and manufacturing city, and is the seat of the imperial university. **Yokohama**, 18 miles from Tokio, with which it is connected by rail, is the most important treaty port, and has a large foreign trade. It is the terminus of the Canadian Pacific and other steamers.

231. **Kioto**, the ancient capital, in the south of the island of Honshu, has important porcelain and silk manufactures. It is noted for its Buddhist temples. **Osaka** is a large commercial and manufacturing city, containing many Buddhist and Shinto temples.

232. **Nagasaki**, on the south-west coast of Kiusiu, is in the neighborhood of coal mines, and exports coal, rice, tea, camphor, and tobacco. **Hakodate**, a treaty port on Yezo, has a good harbor.

233. The leading manufactures of Japan are pottery, silk, embroidery, paper, inlaid metal ware, and ivory carving. The Japanese have great skill as artisans. The factory system of manufacturing is coming into use in place of the old-time handwork.

234. The **exports** are raw and manufactured silk, tea, rice, pottery, lacquer ware, and copper. The **imports** comprise cottons, woollens, machinery, iron, and petroleum, and various manufactured goods. Japan has an extensive foreign commerce, principally with Great Britain, the United States, and Canada. Foreign vessels are admitted only to certain ports known as treaty ports.

235. The **government** of Japan is a limited monarchy, with a ministry and parliament composed of a House of Representatives and a House of Peers. Japan has a strong military and naval force.

236. The **Kurile Islands**, situated on the north-east of Yezo, were obtained from Russia in exchange for the Japanese part of Saghalien, which was also restored to Japan in 1905. They are valuable chiefly for furs.

237. The **Loochoo Isles**, situated on the south-west of Japan, yield rice, sugar, millet, cotton, and other products of warm countries.

238. **Formosa** is a mountainous island, ceded to Japan by China in 1895. It has an area nearly as large as the peninsula of Nova Scotia. The valleys and plains are fertile, yielding rice, sugar, tea, pine-apples, and other tropical fruits. There are extensive forests, yielding camphor and other valuable products. The **inhabitants**, many or whom are low in the scale of civilization, number about 2,000,000. The island is the field of important missionary work. The chief ports are **Taiwan** (the capital), **Tamsui**, and **Kelung**.

AFRICA.

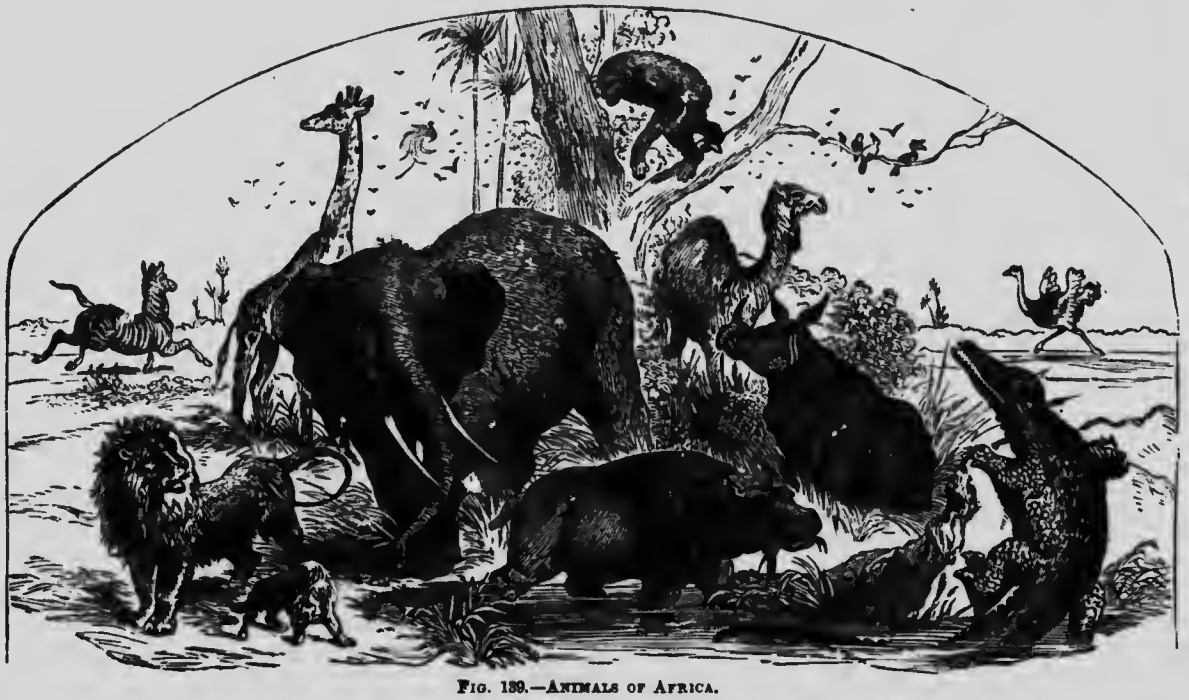


FIG. 139.—ANIMALS OF AFRICA.

1. **Position.**—Africa is a great peninsula, connected with Asia by the Isthmus of Suez, about 72 miles in breadth. It is separated from Europe by the Mediterranean Sea, the two lands approaching within eight miles of each other at the Strait of Gibraltar. It has the Red Sea and the Indian Ocean on the east, and the Atlantic on the west. It lies pretty equally on both sides of the Equator, is principally in the Torrid Zone, and no part of it extends to the cold regions of the north or south.

Lat. 37° 20′ N.—34° 50′ S.; long. 17° 32′ W.—51° 20′ E.

2. **Coast.**—Africa is very compact and regular in its coast-line, in this regard resembling the other southern lands South America and Australia, and contrasting with Europe. While its area is three times that of Europe, its coast-line is but four-fifths that of the smaller continent. The northern part spreads out much more broadly than does the southern.

Ceuta, a fortified town belonging to Spain, stands on a rocky promontory anciently called *Abyla*, opposite the Rock of Gibraltar. These promontories were called the *Pillars of Hercules*.

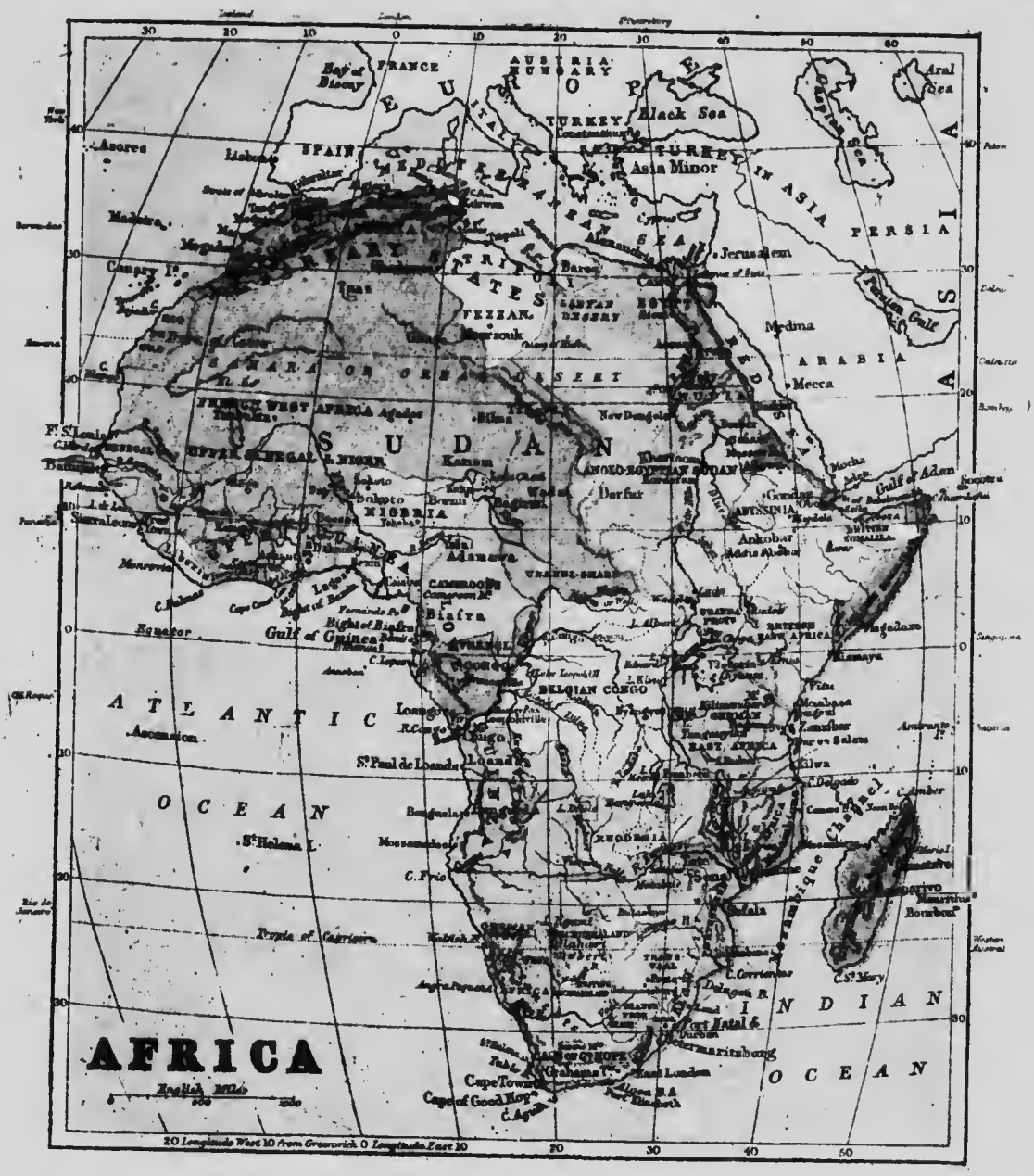
3. The principal **islands** on the coast of Africa are—*Socotra*, *Seychelles*, *Amirante*, *Zanzibar*, *Bourbon*, *Mauritius*, and *Madagascar*, on the east; *Madeira*, *Canaries*, *Cape Verde*, *Fernando Po*, *Prince's*, *St. Thomas*, *Annabon*, *Ascension*, and *St. Helena*, on the west.

4. The **Seychelles** are a group of small islands belonging to Great Britain. They export cocoa-nut oil and vanilla. *Victoria* is the chief port. The **Amirante Isles** also belong to Great Britain.

5. **Zanzibar** is a small fertile island noted for the production of cloves. (*See East Africa.*)

6. **Bourbon**, or **Reunion**, is mountainous and volcanic, about one-fourth the size of Cape Breton. It belongs to France. Sugar is the chief product. *St. Denis* is the capital.

7. **Mauritius**, or **Isle of France**, belonging to Great Britain, is



AFRICA.

Boundaries— *N.* Mediterranean Sea. *E.* Red Sea. Indian Ocean. *S. & W.* Atlantic Ocean. **Coast Waters—** Strait of Gibraltar.	Gulf of Cabes. G. of Sidra. G. of Suez. Red Sea. Strait of Bab-el-Mandeb G. of Aden. Mozambique Channel. G. of Guinea. Delagoa Bay.	Walfisch Bay. **Islands—** Socotra. Zanzibar. Madagascar. Bourbon. Mauritius. St. Helena. Ascension. Cape Verd Islands.	Canary Islands. Madeira Islands. Annabon. St. Thomas. Fernando Po. **Capes—** Spartel. Bon. Guardafui. Delgado.	Corrientes. Good Hope. Frio. Palmas. Verd. Blanco. Nun. **Rivers—** Nile (Atbara, Blue Nile). Zambesi. Limpopo.	Orange (Vaal). Congo (Aruwimi). Niger (Benue). **Lakes—** Victoria. Albert. Tanganyika. Nyassa. Bangweolo. Ngami. Tchad.

about the size of Bourbon. The island is sometimes visited by violent hurricanes. Sugar is the chief export. Many of the laborers on the sugar plantations are coolies from India. *Port Louis* is the capital. The island of *Rodriguez* is a dependency.

8. **Madagascar**, separated from the mainland by Mozambique Channel, is nearly 1,000 miles in length, and has an area slightly greater than Ontario, being one of the largest islands in the world. The coast country is low, humid, and unhealthy; the interior is mountainous, having an extreme height of about 9,000 feet. The products of the lowlands are sugar, rice, and tropical fruit of all kinds. The mountain slopes, especially on the eastern side of the island, are covered with dense forests. The inhabitants, except in the west, where they are of negro type, belong to the Malay race. Through the labors of English missionaries many of them have been converted to Christianity. *Tanavarivo*, in the interior, is the capital. *Tamatave* and *Mojanya* are the chief ports. Madagascar was, until recently, an independent monarchy; but, after a hard struggle, it has been compelled to submit to the power of France.

9. **Madeira** is the principal of a group of small volcanic and mountainous islands belonging to Portugal. The products are vines, oranges, bananas, coffee, and, on the higher slopes, the grains and fruits of temperate climes. Madeira, on account of its salubrity, is a favourite resort of invalids. *Funchal* is the capital.

10. The **Canaries**, belonging to Spain, comprise a group of five mountainous islands, having a united area equal to that of Cape Breton. The products are wine, sugar, and cochineal. Teneriffe, the largest of the group, contains the famous volcano called the *Peak of Teneriffe*, 12,182 feet high. *Santa Cruz de Teneriffe*, on Teneriffe, is the capital.

11. The **Cape Verde Islands**, belonging to Portugal, include five principal islands, with a united area of 1,650 square miles. They are mountainous and volcanic. The products are sugar, maize, cotton, coffee, and tropical fruits. *Porto Praya* is the capital.

12. **Fernando Po** and **Annabon** belong to Spain; **St. Thomas** and **Prince's** to Portugal.

13. **St. Helena**, about 1,200 miles from the west coast of Africa, noted as the place of exile of Napoleon I., belongs to Great Britain. The island is about 10 miles in length, and is principally a rude mass of rock. *Jamestown* is the principal place. **Ascension** also belongs to Great Britain.

14. **Area.**—Africa is the second in size of the great divisions of the globe, ranking next to Asia in this regard. The area is estimated at 11,500,000 square miles.

15. **Physical Features.**—In its relief Africa differs from the other great divisions, except Australia, in having no mountain backbone through the interior. In a general way it may be described as a vast plateau, bordered around by a narrow margin of low coast lands. The triangular southern portion is much the more elevated. But notwithstanding the comparative lack of great mountain ranges, the vast extent of its table-lands gives Africa a greater average elevation than has Europe. The mountain ranges that do occur are for the most part along the margin of the plateau, forming a rim between it and the low coast country.

16. The **Atlas Mountains**, in the Barbary States, are

FIG. 140.—RELIEF MAP OF AFRICA.

the most definitely developed mountain ranges of Africa. They consist of two main parallel ranges, with an intervening plateau. They are highest towards the west, the culminating point being 14,600 feet in Morocco. The cultivated territory lying along the coast on the north of these mountains is called the *Tell*.

17. The **Sahara**, lying south of the Atlas Mountains, and extending from the Atlantic Ocean to the Nile valley, is the largest desert in the world, having an area nearly as large as the Dominion of Canada. The greater portion of it is a rocky plateau of varying elevation, the hills near the middle rising to the height of over a mile above the sea-level. The western portion, which is less elevated, is covered with loose sand, which the winds move about in vast overwhelming clouds. The Sahara is the hottest region on the globe, and is subject to great extremes between its summer and winter temperature, as well as

between that of day and night. It lies within the region of the north-east trade wind, and over a large portion of it rain seldom or never falls. In the most arid parts vegetable or animal life is almost unknown. In other portions there is a dry stunted herbage on which sheep, goats, and camels are able to subsist. More favoured

Fig. 141.—Caravan Crossing the Sahara.

spots, called oases, watered by springs, occasionally relieve the desolation of this wide waste. These fertile portions are covered with grass and groves of date-palm, and sustain a large population. They are most numerous and fertile in the eastern part of the desert. Water is often found in the desert by sinking deep wells.

18. Traffic is carried on over the desert by caravans, consisting of a large company of men and camels. The oases afford resting-places in these wearisome and perilous journeys. Most of the people who live in the desert are wandering Arabs.

19. Broken mountain ranges occur along the eastern side of the continent. The isolated peaks *Kilimanjaro* (19,680 feet) and *Kenia* (18,500 feet) are the highest points in Africa.

20. The highlands of Eastern Africa are separated from the plateau of the interior by a depression which extends northerly from Lake Nyassa along the basins of Lake Tanganyika, Victoria Nyanza, and the Nile to the Mediterranean.

21. The **Drakenberg** or **Quathlamba Mountains** extend along the south-eastern border of the plateau of South Africa, from Cape Town to the valley of the Zambesi, a distance of 1,600 miles, varying in general height from 3,000 to 7,000 feet, but in Basutoland rising to 11,000 feet. The low coast region between these highlands and the ocean varies in breadth from 20 to 80 miles.

The Drakenberg seem high from the coast side, but not so from the interior, where they rise but little above the general level. The vast plateau, comprising a large proportion of South Africa, stretches away to the north and west with an average height of from 3,000 to 5,000 feet, varied by rocky hills, and descending on the north to the valley of the Zambesi. Throughout the greater part of this plateau the rainfall is scanty. A large territory on the north of the Orange River, comprised chiefly in Bechuanaland, is known as the **Kalahari Desert.** This desert is less arid and desolate than is the great Sahara. It is a region too dry for cultivation, and one may travel for hundreds of miles without meeting with running water. It affords, however, extensive ranching tracts, and in many places water may be obtained by digging.

22. The great **rivers** of Africa are the *Nile*, the *Niger*, the *Congo*, the *Zambesi*, and the *Orange*.

23. The **Nile** is the longest river in Africa, having an entire length of about 3,000 miles. Its great reservoir is the *Victoria Nyanza*, the largest fresh-water lake in the world, covering an area greater than the Province of New Brunswick. It has several large affluents, of which the most important is the *Kagera*. The Nile leaves the lake by Ripon Falls, and flows onward to the *Albert Nyanza*, a long, narrow lake, which also receives the waters of the Albert Edward Nyanza. The Nile flows from the Albert Nyanza at a point near that of its entrance. Its principal tributaries in its middle course are the *Bahr el Ghazal*, from the west, and the *Sobat*, the *Blue Nile*, and the *Atbara*, from the east. In its lower course, for about half its length, it receives no tributary, but flows on through its hot arid valley with ever diminishing volume. The navigation of the river is obstructed by several cataracts in the Libyan Desert, but below the first cataract, near Assuan, the river is navigable throughout, and also above the cataracts as far as Lado.

One of the most remarkable features of the Nile is the regular annual rise of its waters and overflow of its banks along its lower course. This seems the more wonderful to the people who live along the Lower Nile from the fact that it is a rainless region. It occurs during the summer months, and is due to the melting snow on the mountains of Abyssinia, and the heavy rains which fall there and also in the tropical regions farther south at this season. The rushing waters of the Blue Nile and the Atbara carry down the mountain slopes immense quantities of rich earth, which are deposited on the flood plains of Lower Egypt.

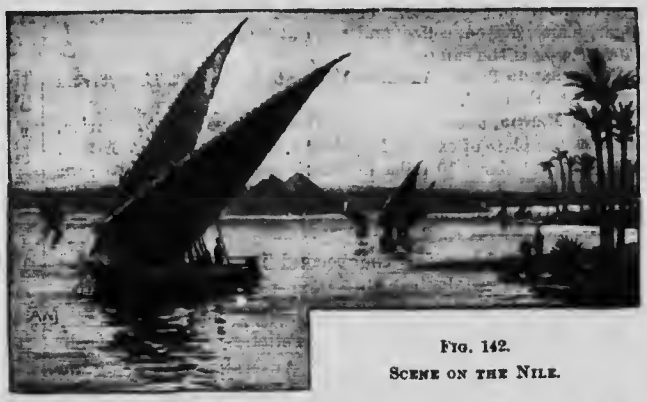


Fig. 142.
Scene on the Nile.

About 90 miles from its mouth the Nile divides into two principal branches, the *Damietta* and *Rosetta*, which enclose a rich alluvial country known as the Delta.

24. The **Niger**, or **Joliba**, in its head-waters the *Tembi*, flows

north-easterly away from the ocean. Farther on in its course it bends to the south-east and south, finally entering the Gulf of Guinea by several mouths, and forming a large delta. Following the *Benue*, the chief tributary, steamers have 600 miles of navigable water.

25. The **Congo**, with its tributaries, drains a large humid country, and conveys more water to the ocean than does any river in the world except the Amazon. It is formed by the junction of the *Luapula* and the *Lualaba*. From the east and north it receives the *Lukuga* (which flows from *Lake Tanganyika*), the *Aruwimi*, and the *Mobangi*, and from the south the *Kwa*. About 350 miles from the sea it forms a deep lake, known as Stanley Pool. It is navigable through its estuary to Matadi, about 100 miles, from which to Stanley Pool, about 250 miles, navigation is obstructed by rapids and falls. Above Stanley Pool it is navigable for 1,000 miles. The basin of the Congo has a very rich vegetation, and it is the home of many large wild animals, as the elephant, rhinoceros, and crocodile.

26. The **Zambesi** is the largest river of Africa flowing into the Indian Ocean. Through its tributary the *Shiré* it receives the surplus waters of Lake Nyassa, a large lake over 350 miles long. The Zambesi enters the ocean by several mouths, which are obstructed by sand-bars. In passing from the plateau to the lowlands the river forms the magnificent cataract *Victoria Falls*, having a breadth of half a mile, and a descent of 360 feet.

27. The **Orange River**, rising in Basutoland, is over 1,000 miles in length, but, flowing through a dry region, it is for three-fourths the year a small stream. Its chief tributary is the *Vaal*.

28. The **rivers** of **Central Sudan**, of which the *Shari* is the most important, flow into *Lake Chad*. This large body of fresh water, 140 miles in length, has no outlet except at the rainy season, when its surplus waters are carried away by streams which lose themselves in the desert.

29. **Climate.**—The northern and southern extremities of the continent have a warm temperate climate; but the greater portion of the country, lying between the tropics, is very hot. Throughout the greater part of the tropical region there are but two seasons in the year, the wet and the dry. During the former, which follows the sun north and south of the Equator, it rains in torrents for a part of every day. During the dry season it seldom rains, and the country is parched with burning heat. At the Equator there are two wet seasons in the year. A vast tract of country between the parallels of 15° and 30° N., stretching from the Atlantic to the Red Sea, and even crossing that water into Asia, is nearly or quite destitute of rain.

This portion of the continent is within the region of the north-east trade wind, which is deprived of its water vapor in passing over Asia.

Southern Africa, again, is within the region of the south-east trade wind, which gives copious rains along the south-east coast and the highlands facing in that direction, but, having lost the greater part of its water vapor in crossing these highlands, leaves the central plateau with little or no rain. The tropical coast regions, through their humidity and intense heat, are very insalubrious.

Wherever rain is abundant, Africa has a rich vegetation; but the arid regions yield only grass and stunted herbage, or are bare and desolate. The products in the warm temperate regions of the north and south are similar to those of Southern Europe. The palm, in one or other of its species, flourishes throughout the whole continent, except in the extreme south and on the highlands. The larger part of the continent has a tropical vegetation, comprising palms, gum trees, india-rubber, and many valuable woods; also rice, cotton, tobacco, sugar, bananas, and all sorts of tropical fruit.

30. **Animals.**—Africa is noted for the number, variety, and size of its wild animals. Some of the most important are the elephant, rhinoceros, hippopotamus, lion, hyena, leopard, panther, buffalo, giraffe or camelopard, zebra, antelope, monkey, chimpanzee, gorilla, and crocodile.

The ostrich is the most remarkable bird of Africa. It is very tall, strong, and fleet. It does not fly, but uses its wings in running. The rearing of ostriches is an important industry in some parts of Africa. Vultures, eagles, parrots, and guinea-fowl are numerous. Among the insects may be mentioned locusts, termites or white ants, and the tsetse fly, the bite of which is fatal to the ox and most other domestic animals.

31. **Minerals.**—Africa is rich in minerals. Gold is found in many parts of the continent, and is especially abundant in South Africa, the Transvaal ranking among the first countries in the world in the production of this metal.

The diamond mines of Cape Colony are the richest in the world. Coal is abundant in Natal.

32. **Inhabitants.**—The number of people in Africa is not definitely known. The estimated number is 168,000,000. The people of the Mediterranean States comprise Arabs, Berbers, Jews, and Europeans. Those of the Sahara are generally Arabs. The natives of Africa south of the desert belong chiefly to the black race, comprising many tribes. Those of the Sudan are of a higher type than those of their race elsewhere, but even they are not far advanced in civilization. The Kafirs, a well-formed, intelligent race, occupy a large part of the south-east coast. The Hottentots are a deformed and ugly people found on the west side of Southern Africa. A people of small stature, known as pigmies, timid, and low in the scale of civilization, are found in different places through Southern Africa. Mohammedanism is the principal religion in the north of Africa. The natives of the centre and south are pagans, and exceedingly superstitious.

33. **Divisions.**—There are no powerful native states in Africa. Several European powers, including Great Britain, France, Germany, Portugal, Belgium, Italy, and Spain, have taken possession of large portions of the continent. Most of the territories which they have not fully appropriated they claim as hinterlands within the sphere of their influence, so that there is but little of the continent which is not to a greater or less extent subject to European control. Some of the territories are organized as colonies under the immediate supervision of their respective governments in Europe. Other territories are controlled by companies chartered by these governments. The boundary lines of

the territories claimed by the various powers are often very indefinite, especially in the interior. The countries of Africa are usually somewhat loosely grouped under the divisions North, East, West, Central, and South Africa.

THE BARBARY STATES.

34. The **Barbary States**, so called from the *Berbers*, who form a large part of the population, extend along the north of Africa from Egypt to the Atlantic. They comprise *Morocco*, *Algeria*, *Tunis* or *Tunisia*, and *Tripoli*.

Morocco, in the north-west, is a French Protectorate. The **Atlas Mountains**, in several parallel ranges, lie along the south near the Sahara. *Miltsin* (11,400 ft.) and *Ayachin* (14,600 ft.) are the highest points. A much lower range lies near the coast. The country near the Mediterranean is generally well watered, and has several important short rivers. On the south of the Atlas Mountains there is less rain. The rivers are generally longer, but most of them are finally absorbed by the hot sand of the desert. Except on mountain heights and the desert, the **climate** is temperate, without extreme of cold or heat.

35. The **soil** is fertile, especially in the river valleys and wadies, but agriculture is much neglected. The **products** are wheat, millet, grapes, and other fruit of Southern Europe. Cattle, horses, sheep, and goats are the support of the nomadic Arab tribes. The manufactures include carpets, leather, and Fez caps.

Trade is chiefly with Great Britain, France, Germany, and Belgium. The **exports** are cattle, hides, wool, eggs, and barley. The **imports** are cottons and various manufactured goods.

The **inhabitants** are mainly Arabs, Berbers, Moors, and Jews.

The chief towns are **Fez, Morocco, Mequinez, Tangier, Ceuta, Tetuan, Laroche, Rabat, Casablanca, Mogador,** and **Agadir.** Fez, the capital and largest city, and Morocco have many mosques.

The despotic **government** of the Sultan is now overruled by the power of France.

36. **Spanish Morocco** comprises several detached territories, including the coast towns *Ceuta*, *Tangier*, *Larache*, *Alkazar*, and an Atlantic coast district bordering on Spanish Rio d'Oro.

37. **Algeria** is a French province, comprising a fertile northern region, called the *Tell*—a central highland region varied by mountains, tablelands, and valleys. The resources of the country are rich and varied. Agriculture is aided by irrigation with water from rivers and artesian wells. The leading **products** of the north are grain and vegetables; of the central regions, olives; and of the southern, dates.

The rearing of cattle, horses, mules, sheep, and goats is an important industry. Coast fisheries are valuable. The minerals are zinc, copper, lead, and phosphates. Manufactures are confined chiefly to carpets, leather, wine, and olive oil.

The **exports** are grain, vegetables, domestic animals and their products, olive oil, wine, esparto grass, and phosphates. The **imports** include many kinds of manufactured goods. **Trade** is chiefly with France, Great Britain, Spain, Germany, and Belgium.

The **inhabitants** are chiefly Arabs, Berbers, Jews, and French. Great progress in many lines has been made under French rule, including education, government, agriculture, trade, and railway construction.

38. The chief cities are **Algiers, Oran, Bona,** and **Tlemcen.**

Government is vested in a Governor-general and an Advisory Council appointed by the Government of France. The laws are made by the French Parliament, to which Algeria sends representatives.

39. **Tunis**, or **Tunisia**, now a French Protectorate, formed a part of the ancient Carthaginian kingdom. The country is similar to Algeria in physical features, products, and inhabitants. The northern half is varied with low mountains, tablelands, fertile valleys, and plains. The highlands have extensive oak forests and large areas covered with esparto grass.

40. The *Majerda*, the largest river, flows easterly into the Gulf of Gabes. This region abounds in hot springs, furnishing water for irrigation. Among the rich products of the district are date-palms, which have given the name *Belad-el-Jerid* ("Land of Dates") to a section of the country. Some of the hot springs are very salt, and their surplus water in the rainy season flows into shallow lakes. In the dry season the water evaporates, leaving an incrustation of salt on the lake bed.

The **exports** include grain, olive oil, dates, cattle, wool, hides, phosphates, and fish.

41. **Tunis**, the capital and the third in size of the cities of Northern Africa, is situated on a lagoon which is connected by ship canal with the seaport **Goletta**, on the Bay of Tunis. The ruins of ancient Carthage are about ten miles north of Tunis. Other small towns are **Bizerta, Beja, Monastir, Mahdiza,** and **Gafsa.**

42. The **Government** is administered by a resident French officer. The country has greatly improved under French rule.

43. **Tripoli** comprises *Tripoli Proper*, *Cyrenaica*, and *Fezzan*. Fertile districts are found in the valleys and plains, yielding grain, cotton, olives, dates, and other products of Southern Europe. Lack of water hinders successful agriculture, and much of the country is desert. It was, however, much more productive in ancient times. Nomadic shepherd life now prevails.

The **inhabitants** are Berbers, Arabs, Jews, Italians, and other Europeans.

Cyrenaica is noted for the remains of its ancient civilization. It comprises a region once called *Pentapolis*, from its five cities, *Cyrene*, *Appolonia*, *Arsinoë*, *Berenice*, and *Barca*.

Fezzan is a desert land varied with oases with luxuriant palm groves.

44. **Tripoli**, the capital of Tripoli, has a fairly sheltered but shallow harbor. It manufactures carpets, silks, and leather, and carries on a caravan trade over the desert, exchanging European manufactures for ostrich feathers, ivory, and gold of Central

Africa. Other cities are **Benghazi, Derna,** and the ports **Tobruk** and **Bomba.**

Murzuk, in Fezzan, is a halting-place for caravans.

45. Tripoli, long a dependency of Turkey, is now annexed to Italy. A war broke out in 1911 to determine the ownership of the country, and it was ceded to Italy in 1912.

EGYPT.

46. Egypt, in the north-east of Africa, including also the Sinaitic Peninsula in Asia, within the rainless region, owes its existence as a habitable country to the Nile. It has an area greater than that of the Province of Quebec, but, with the exception of the delta and the narrow valley of the Nile, comprising an area less than that of the peninsula of Nova Scotia, it is a desert region. Exclusive of the Sudan, it forms two natural divisions—the delta, known as Lower Egypt, and that part of Egypt lying south of the delta, called Upper Egypt. The delta country begins near Cairo, about ninety miles from the mouth of the Nile. The great river here divides into various branches, two of which, the Damietta and Rosetta, flow onward through the delta to the sea, the others flowing into lakes which lose their surplus waters by evaporation. The valley of the Nile above the delta varies in breadth from two to ten miles, and is separated by rocky hills from the desert country on each side. It seldom rains in Egypt, and the land is watered partly by the annual overflow of the Nile, and partly by irrigation, the water being led off through the country by a network of canals. This system of irrigation has been provided at great cost by English capital and English engineers, thus vastly increasing the productiveness of the country. The overflow of the river occurs during the summer months. In October the water subsides into its original channel, leaving a deposit of mud which fertilizes the soil. Rude methods of agriculture are pursued. The principal crops are wheat, cotton, sugar-cane, rice, maize, beans, flax, indigo, and tobacco. Some of these need no watering from the time they are sown, others are watered by irrigation.

47. At the apex of the delta a barrage or dam is constructed across the valley of the Nile, forming a reservoir from which the waters can be drawn for irrigation. A similar work has been constructed, at vast expense, farther up the river, near Assuan. By means of the water which will be impounded by this dam, irrigation can be so extended as to reclaim from the desert lands equal in area to one-fifth of those now capable of cultivation.

48. The **inhabitants** comprise the Fellahin, or tillers of the soil, who are descendants of the ancient Egyptians, and form three-fourths of the whole population; also Arabs, Jews, and a few thousand Europeans of different nationalities. Mohammedanism is the prevailing religion.

49. Egypt was the seat of one of the most renowned and powerful nations of antiquity. The advancement of its early inhabitants in art and civilization is demonstrated by the remains of magnificent pyramids, temples, sepulchres, statues, and obelisks.

50. **Cairo,** the capital of Egypt and the largest city of Africa, is situated about a mile east of the Nile, near the head of the delta. Among its objects of interest are several splendid mosques, the tombs of the caliphs, and the Nilometer, a marble column by which the height of the river is measured. In the neighborhood of the city are the famous Pyramids, the largest of which is 461 feet in height, and covers an area of over twelve acres. Near Cairo, also, is the site of the ancient cities of Heliopolis and Memphis, the ancient capital of Egypt.

Fig. 144.—The Sphinx and Pyramids, near Cairo.

51. **Alexandria,** at the north-west extremity of the delta, is the chief port and commercial centre of Egypt. It was founded by Alexander the Great, 322 B.C. It was famous as a seat of Greek culture and for its great library. **Rosetta** and **Damietta** are small towns situated near the mouths of the Rosetta and Damietta branches of the Nile respectively. The famous Rosetta stone, the inscriptions on which furnish the key for deciphering ancient Egyptian hieroglyphics, was discovered near Rosetta.

52. **Port Said** is a seaport built on small islands, at the northern end of the Suez Canal. **Suez,** at the southern end of the canal, is a small town on the Gulf of Suez.

53. **Assiut** or **Siut,** and **Assuan,** near the first cataract, are small cities in Upper Egypt, connected with Alexandria by rail. Still farther up the Nile are the ruins of ancient Thebes, containing remains of great interest, including ruins of temples, the statues

Fig. 145.—Street Scene in Cairo.

of Memnon, and the tombs of the kings. In the vaulted, rocky chambers are remarkable sculptures and hieroglyphic inscriptions, the objects of admiration and study of learned men of modern times. **Ipsambul** is noted for its ancient rock temples.

34. The chief **exports** of Egypt are raw cotton, cotton-seed, grain, and vegetables. The **imports** are textiles, metals and metal goods, and coal. The trade is chiefly with Great Britain, Turkey, France, Germany, and America.

55. The Nile forms a grand highway from the Mediterranean nearly to the Albert Nyanza, except at the cataracts between Assuan and Khartum.

The Suez Canal, from Port Said to Suez, 87 miles, is a great highway for commerce and travel between the maritime countries of Europe and those of Southern Asia and Australia. Of the ships, with their gross tonnage, passing through this canal, about two-thirds belong to Great Britain.

Alexandria and Cairo are connected by rail. A railway extends up the Nile from Alexandria to Khartum in Egyptian Sudan. A railway also connects Cairo with the Suez Canal at Ismailia, midway between Port Said and Suez.

56. The **government** of Egypt is a hereditary monarchy, the sovereign having the title of Sultan. Egypt was nominally a part of the Turkish Empire, but was occupied by Great Britain, an annual tribute of about $3,500,000 being paid to the Sultan of Turkey. On the entry of Turkey into the Great European War in 1914, Egypt was declared a British Protectorate.

57. The **Anglo-Egyptian Sudan** extends 1,650 miles from N. lat. 22° to the Albert Nyanza near the Equator, and from the Red Sea and Abyssinia on the east to Wadai, French Congo, and Congo Free State on the west, comprising a territory about equal to one-fourth of the Dominion of Canada. The western limits are not definitely determined. It is watered by the Nile and its great tributaries. The southern portion has abundance of rain and luxuriant vegetation. Towards the north it becomes dry, and is, for the most part, an arid desert. The chief **exports** are gold dust, ostrich feathers, gums, hides, and skins. The principal towns are *Khartum*, *Omdurman*, *Wady Halfa*, *New Dongola*, *El Obeid*, *Sennar*, *Kasala*, and *Suakin*.

58. **Khartum**, the capital, is situated at the junction of the White Nile and Blue Nile. In 1885 this town, held by General Gordon, was taken by the Mahdi, and Gordon was slain during the storming of the city. The place was reduced to ruins, but is now being restored. **Omdurman**, on the left bank of the Nile opposite Khartum, was the capital of the Kalifa during his rule of the country. **Wady Halfa** is situated at the second cataract of the Nile, near the northern limit of the territory. **El Obeid** is the chief town in Kordofan, formerly noted for its trade in gums and ostrich feathers. **Suakin**, situated on the Red Sea, is the starting-point of caravans for the Sudan, and exports cotton, gum, ivory, and senna. Near it is **Port Sudan**, the terminus of a railway to the Nile.

59. The rule of Egypt over this country was interrupted in 1882 by a revolt led by a Mohammedan enthusiast, known as the Mahdi. General Gordon, a noted English officer, having been sent to assist in withdrawing the Egyptian army from the country, failed to accomplish this object. The country was held by the Mahdi and his successor, the Kalifa, until 1898, when it was retaken by an Anglo-Egyptian army under Lord Kitchener. The new constitution places the country under the joint control of Great Britain and Egypt. The flags of the two countries are used together, and the Governor-General is appointed by Egypt with the assent of Great Britain.

Fig. 146.—The Suez Canal.

EAST AFRICA.

60. **Abyssinia** is a high plateau broken by many deep valleys. The climate and products vary according to elevation, comprising cotton, sugar-cane, date-palm, coffee, grapes and other fruit, millet, wheat, and barley. Agriculture receives but little attention, the care of cattle, sheep, and goats being the chief industry. The forests yield valuable wood. Civet, coffee, gold, and ivory are exported. The imports are cottons, woollens, and cutlery.

61. The Abyssinians are a warlike people. They were converted to Christianity in the fourth century, and they still adhere to a form of this religion. The head of the church is a Copt appointed by the patriarch of Alexandria.

62. Abyssinia is an empire comprising the kingdoms of **Tigré** in the north-east, **Amhara** with **Gojam** in the west and centre, and **Shoa** in the south. These States are united by a feudal organization, the King of Shoa being at present the chief ruler. The towns are all small, none exceeding 7,000. **Gondar** is the capital of Amhara; **Adua** is the capital of Tigré; **Adis Abeba** of Shoa. Other important places are **Ankober, Debera, Tabor, Magdala,** and **Makoille.**

63. **Italian East Africa** comprises Eritrea, on the coast of the Red Sea, and a portion of Somaliland. **Eritrea** has a hot climate, and without irrigation is too dry for agriculture. The **inhabitants** are nomadic, having their chief wealth in camels, sheep, and goats. Pearls and mother-of-pearl are obtained in the coast waters. *Massowah*, the capital and port of Eritrea, has considerable trade.

64. **Italian Somaliland** is an extensive region lying along the Indian Ocean from Cape Guardafui to the Juba River. It is peopled by roaming herdsmen.

65. **French East Africa** consists of Obock, with a part of the Somali country along the coast of the Red Sea, the Gulf of Aden, and Bay of Tajurrah. The towns of **Obock** and **Tajurrah** are the chief places.

66. **British East Africa** includes part of the Somali coast, the British East Africa Protectorate, Uganda, Zanzibar, and the Island of Socotra.

67. **British Somaliland** lies on the south of the Gulf of Aden, adjoining Abyssinia. The **inhabitants** of Somali are mostly a nomadic, pastoral people. The **exports** are skins, hides, cattle, sheep, ivory, ostrich feathers, and gums. The **imports** are cotton and rice. **Berbera** is the chief town.

68. The island of **Socotra** is less than half the size of Cape Breton. It yields dates, gums, and aloes. The care of cattle, sheep, and goats is the chief industry. The island is ruled by a native Sultan under British protection. **Tamarida** is the chief town.

69. The **East Africa Protectorate** extends along the Indian Ocean between the mouths of the Juba and Umba Rivers, Italian territory lying on the north, and German on the south. The boundary line follows the Juba to 4° N. lat., that parallel to 35° E. long., and that meridian to the Blue Nile. In the interior it is bordered by Abyssinia and Egyptian Sudan. The southern boundary extends along the north of Kilimanjaro to 1° S. lat. on Lake Victoria; it is bordered on the west by this lake, Uganda, Congo Free State, and French Congo. The plateau of the interior

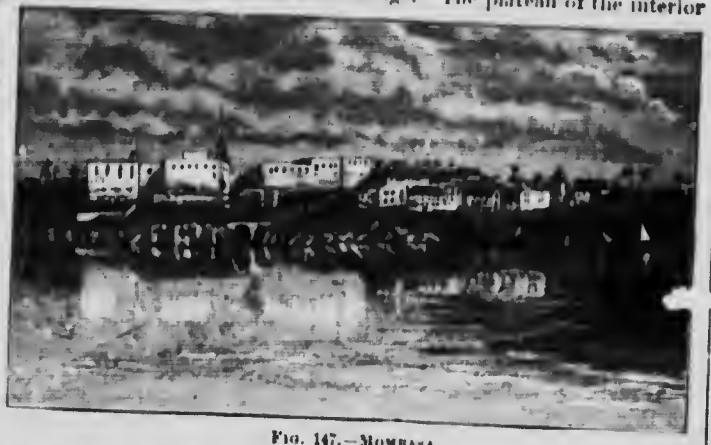


Fig. 147.—Mombasa.

yields rich grass suitable for ranching, and the care of cattle and goats is the chief industry. The principal exports are ivory, india-rubber, cattle, goats, animal products, grain, copra, and gum-copal. The imports are cottons and other British manufactures. *Mombasa*, the capital, has a fine harbor. A railway is under construction across the country from Mombasa to Lake Victoria.

70. The **Uganda Protectorate** comprises Uganda proper, **Unyoro,** and **Usoga.** It lies on the west of the East Africa Protectorate, between Victoria Nyanza, Albert Edward Nyanza, and Albert Nyanza, being bordered on the south by German territory, and on the west by the Congo Free State. The **soil** is very fertile, adapted to the growth of coffee. Under the influence of Protestant and Roman Catholic missionaries, the natives have made considerable progress in civilization. They show much mechanical skill, especially in iron-working and pottery. Roads have been made between various places, and the country will soon be connected with the coast by a railway to Mombasa. **Mengo,** on Lake Victoria, is the capital. In its neighborhood is the British fort *Kampala.* The country is ruled by a native king, under the control of Great Britain.

71. **Zanzibar,** including the islands of Zanzibar and Pemba and small portions of the mainland, is ruled by a sultan under British protection. The islands, which have a united area of about 1,000 square miles, are very fertile, and are noted for the production of cloves. The natives are generally Mohammedans. There are various Christian missions in the country. The town of **Zanzibar,** the capital, is the largest city on the eastern coast of Africa. The trade is chiefly carried on by foreigners. Ivory and cloves are important exports.

72. **German East Africa** lies south of the British Protectorate, between Lake Tanganyika and the ocean, having the Congo Free State on the west. The coast country has forests of mangrove, cocoa-palm, baobab, and tamarind trees. Bananas, coffee, vanilla, tobacco, and maize are the chief **products**. Many goats, sheep, and cattle are reared. The natives consist of various tribes of negroes of the Bantu type. Several Protestant and Catholic missionary societies are doing work in the country. **Dar-es-Salaam** is the chief port and trade centre. The principal **exports** are ivory, caoutchouc, sesame, and gum. The **imports** are cottons and other manufactured goods.

73. **Portuguese East Africa** extends from the German territory along the Indian Ocean for about fourteen hundred miles to the British colony of Natal. It is bounded on the west by British territories. The coast land is low and level. The interior is more elevated, is well watered, and very fertile, yielding tropical products. The climate is hot, and in some parts malarious. The Portuguese have established a few sugar plantations in the country. The chief ports are **Mozambique, Quilimane, Beira,** and **Lorenzo Marques.** A railway extends from Delagoa Bay westerly to Pretoria in the Transvaal. There is also a line from Beira to Salisbury in Mashonaland.

WEST AFRICA.

74. **Spanish West Africa** lies along the Atlantic coast between Cape Blanco and Bojador. It is mostly a barren desert, affording scanty pasturage for the flocks of the nomadic tribes who inhabit the territory. **Wadan** is the principal place.

75. **French West Africa** is a large territory of uncertain area, as in some parts the boundary line is not determined, leaving disputed claims to be settled; but it is at least equal to one-third of the Dominion of Canada. Senegal, French Guinea, French Sudan, the Ivory Coast, and Dahomey are situated in the south-western part of the broad northern expansion of the continent. The territory claimed by France extends easterly to Lake Chad, and northerly across the Sahara to the confines of Algeria and Tunis. The northern portion of the territory is an arid desert; the central part is fairly well watered, yields rice, maize, millet, and cotton, and affords pasturage for many cattle and sheep; the southern portion is humid, and has a luxuriant tropical vegetation. Trade between the interior and the Barbary States is carried on by caravans over the desert. The chief **exports** are ground-nuts, varnish-gums, palm-kernels, palm-oil, ivory, and gold.

76. **Senegal** is situated on the Lower Senegal. The capital and chief town is **St. Louis.**

77. **French Guinea,** once forming a part of Senegal, is on the coast between Portuguese Guinea and Sierra Leone. **Conakry,** on the island of Tombo, is the capital.

78. **French Sudan** is on the Upper Senegal and the Upper and Middle Niger, extending westerly to Lake Chad.

79. **French Ivory Coast** is on the Gulf of Guinea, between Liberia and the British Gold Coast Colony, and extends inland to include Kong.

80. **Dahomey** lies on the Slave Coast between German Togoland and British Lagos. **Abomey,** in the interior, is the capital, and **Whydah** is a trade centre.

81. **French Congo** lies between Kamerun and the Congo Free State, and extends into the interior northerly along the basins of the Sanga and Shari Rivers to Lake Chad, and eastwards to the watershed of the Nile. This is a well-watered, fertile region covered with large forests. The French carry on extensive trade, and have many stations on the coast and rivers. The country has no roads other than footpaths. The chief **exports** are caoutchouc, ivory, palm-oil, palm-kernels, ebony, mahogany, coffee, and other tropical products.

82. **Portuguese Guinea** is situated on the coast of Senegambia, between Senegal and French Guinea, and includes the Bissagos group of islands and the Island of Bolama. The exports are rubber, wax, palm-oil, ivory, and hides. **Bolama,** on the island of the same name, is the capital. **Bissan** is the chief port.

83. **Angola,** which also belongs to Portugal, extends along the west coast for a thousand miles between the mouth of the Congo and Cape Frio. The coast is low, hot, and unhealthy; but the table-lands of the interior have a temperate and healthful climate, and a soil well adapted to agriculture. The **products** are coffee, rubber, wax, sugar, palm-oil, cocoa-nuts, ivory, and fish. The chief exports are coffee and rubber; the imports, textiles. The capital is **St. Paulo de Loanda.**

84. **British West Africa** includes the four Crown Colonies Gambia, Sierra Leone, Gold Coast, and Lagos; and also Niger Coast Protectorate and British Sudan.

85. **Gambia** is situated at the mouth of the river Gambia. The **exports** are ground-nuts, hides, beeswax, rice, cotton, corn, and india-rubber. **Bathurst,** on the Island of St. Mary, is the chief town.

86. **Sierra Leone,** including the Island of Sherbro, on the coast north-west of Liberia, was purchased by Great Britain in 1787 as a home for liberated slaves. The climate is hot, humid, and unhealthy. The chief **products** and **exports** are palm oil and kernels, ground-nuts, india-rubber, copal, and hides. **Freetown,** the capital, is strongly fortified, and is an important coaling station of the British navy.

87. **Gold Coast** is on the Gulf of Guinea, east of the Ivory Coast. The **exports** are palm-oil, palm-kernels, india-rubber, and native woods. The chief places are **Accra, Elmina,** and **Cape Coast Castle. Ashanti,** on the north of Gold Coast Colony, is a British Protectorate.

88. **Lagos** comprises the Island of Lagos and a district of the mainland along the Slave Coast. Some of the inhabitants are very low in the scale of civilization. The climate is very unhealthy. The **exports** are palm oil and kernels, ivory, gum-copal, cotton, rubber, cocoa, and coffee. The **imports** are cotton goods and hardware. **Yoruba** (capital, *Abeokuta*), on the borders of Lagos, is a British Protectorate.

89. **Niger Coast Protectorate** lies between Lagos and Kamerun, and includes the State of Benin. The chief **exports** are palm-oil, palm-kernels, india-rubber, ivory, ebony, indigo, gums, and hides. There are many trade stations in the country.

90. **British Sudan** or **Nigeria**, formerly the territories

FIG. 148.—ACCRA.

of the Royal Niger Company, lies mainly north of the Niger Coast Protectorate, extending along the Niger to the town of Say, bounded on the north by French territory, on the east by Lake Chad and Kamerun. It includes *Sokoto*, the most fertile and populous part of the Sudan; *Gando*, *Borgu*, on the right bank of the Middle Niger north of Dahomey; and the western portion of *Bornu*. It is rich in agricultural resources. The **exports** are similar to those of the other portions of British West Africa. Cotton is extensively grown and manufactured. Among the **imports** is salt, obtained from the Sahara. **Asaba** is the capital. There are many important towns and trade centres in the country, such as **Wurno**, the capital of Sokoto, and **Gando**, the capital of Gando.

91. The **Republic of Liberia**, adjoining Sierra Leone on the south-east, was founded in 1822 by benevolent persons in the United States of America as a home for liberated slaves. The population, which is over one million, are all negroes. The **products** are coffee, palm-oil, palm-kernels, rubber, cocoa, sugar, arrowroot, and ivory. **Monrovia** is the capital.

92. **German West Africa** includes Togoland and Kamerun.

Togoland lies on the Gold Coast, between the Gold Coast Colony and Dahomey. It is a small, populous country, inhabited chiefly by negroes. The coast lands are low and unhealthful. Maize, yams, tapioca, coffee, and ginger are cultivated. **Lome** is the capital and chief port.

Kamerun lies along the Bight of Biafra north of French Congo, and is bounded on the north-west by British territory. It has been enlarged by territory from French Congo, extended southerly at one point to Congo River. The soil is fertile, and the cultivation of coffee, cacao, vanilla, cloves, and other spices, has been introduced. The inhabitants belong to different negro tribes. Kamerun is the chief town. The **exports** of Togoland and Kamerun are similar to those of the other States in West Africa.

CENTRAL AFRICA.

93. The central portions of the Sudan comprise several States more or less independent, of which Bornu, Wadai, and Kanem are the most important. The inhabitants are chiefly negroes, but there are also many Arabs and people of mixed races. The Mohammedan religion prevails.

94. **Bornu** borders on the western and southern shores of Lake Chad, and is separated from Bagirmi by the Shari River. It is about twice as large as the Province of New Brunswick, and has an estimated population of about five millions. Some of the tribes are considerably advanced in the arts of civilized life. Their woven fabrics and pottery are important articles of trade in the Sudan and among the tribes of the desert. The sultan is an absolute monarch, and supports his authority by a large standing army. Besides **Kuka**, the capital, there are many small towns.

95. **Wadai** includes many tributary States, and extends from the eastern shores of Lake Chad to Darfur in the Egyptian Sudan. A large part of the territory is an arid, sandy plain, suited to the camel and the ostrich. The southern and eastern portions are more fertile. The **exports** are ivory, ostrich feathers, and slaves. The sultan is an absolute monarch.

96. **Kanem**, one of the vassal States of Wadai, lies along the northern and eastern shores of Lake Chad.

97. The **Belgian Congo**, with the exception of a narrow coast country along the shore of the Congo estuary, lies wholly in the interior. It comprises nearly all the basin of the Congo, having an area equal to one-fourth of the Dominion of Canada. It is for the most part a well-watered, fertile region, covered with dense tropical forests, and of great undeveloped resources. It is said to comprise the largest forest-covered territory in the world. Bananas, manioc, cocoa, coffee, tobacco, sweet potatoes, arrowroot, millet, and maize are cultivated. The chief **exports** are rubber, ivory, palm-oil, palm-nuts, copal, and gold.

98. The chief products are rubber, palm-nuts, palm-oil, ivory, and white copal. Coffee, sugar-cane, and tobacco are cultivated. In the forests are groves of baobab—a large, wide-spreading tree, the bark of which yields a valuable fibre.

The forests abound in wild animals, such as the elephant, two-horned rhinoceros, gorilla, chimpanzee, and many other varieties of the monkey tribe. The natives comprise many tribes of negroes, chiefly of the Bantu type. Many of them are savages, and practise cannibalism. Among them are wandering tribes of pigmies who live by hunting. There are many mission stations, both Catholic and Protestant, in the country. **Boma**, situated on the right bank of the Congo River, is the capital. **Leopoldville** is an important town on Stanley Pool. It is connected by a railway 250 miles in length with Matadi, below the rapids of the Congo. **Aruwimi**, at the confluence of the Aruwimi with the Congo, is an important place. The rivers give 6,000 miles of water-way.

99. The territory, formerly under the sovereignty of the King of the Belgians, was annexed as a colony of Belgium in 1909. The natives have been greatly oppressed under a cruel system of slavery by the king's officers.

100. **Nyassaland** is a British Protectorate, lying along the southern and western shores of Lake Nyassa. It is a fertile country, yielding rice, wheat, oats, and coffee. Ivory and coffee are exported. Several mission stations are established, and the natives are making progress in civilization. There are many good roads, and the country has connection with the seaboard through the Shiré and Zambesi Rivers. **Zomba** is the capital, and **Blantyre** is the largest town.

101. **Rhodesia** is an extensive British territory in the southern part of Central Africa, between Congo Free State and the Transvaal. It is under the control of the British South Africa Company. It is divided by the river Zambesi into Northern and Southern Rhodesia, the latter including Matabelelaud and Mashonaland. It is for the most part a plateau country, generally healthful, and suited to the growth of wheat, coffee, and the fruits of warm countries. It has also extensive pasture lands. Mashoualand and Matabeleland are rich in minerals, comprising gold, silver, diamonds, copper, and lead.

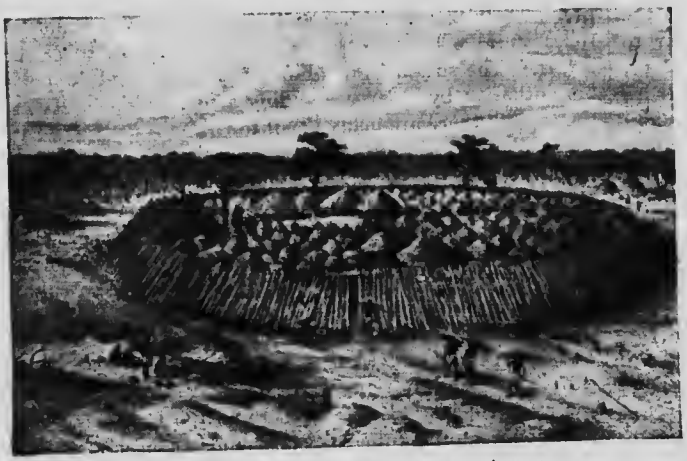


Fig. 149.—Native Village in Central Africa.

The **Rhodesian Railway**, an extension of the line from Cape Town, is now open to Broken Hill Mine, 466 miles north of the Zambesi. There remain 2,500 miles between this place and Khartum to complete the famous "Cape to Cairo" line.

102. **Salisbury**, the capital, and Bulawayo are on this line. Salisbury is also connected by rail with Beira, on the Portuguese coast.

THE UNION OF SOUTH AFRICA.

103. The four Colonies *The Cape of Good Hope*, *Natal*, *Orange Free State*, and *Transvaal* were united under one general government by Act of the Parliament of Great Britain in 1909, to take effect in 1910. The Act of Union provides also for the admission of Rhodesia and other adjoining British territory.

104. The **Union** as thus formed lies between the Limpopo River, on the north, and the Cape of Good Hope. The northern portion is separated from the Indian Ocean by Portuguese East Africa, and from the Atlantic Ocean by German South Africa.

105. The **coast line** comprises about 1,700 miles along the Indian and Atlantic Oceans. The chief **harbors** are those of *Port Natal*, *East London*, *Port Elizabeth*, *Cape Town*, and *Port Nolloth*.

106. **A low lying country** borders on the Indian and Atlantic Oceans. In the interior the land rises by successive terraces to a vast highland region, varied by table-lands, rocky hills, and parallel mountain ranges. The high plains between these ridges are called *karroos*. The **Great Karroo**, which is the most elevated, is 300 miles long and 100 miles broad.

107. The **rivers** are of little value as commercial highways. The largest are *Orange*, *Vaal*, and *Limpopo*. Many small streams flow across the lowlands of the south-east into the Indian Ocean. The **Tugela** is famous for the stirring events that occurred in its neighborhood during the Boer War (1899–1902).

108. The **climate** in the **lowlands** bordering on the Indian Ocean and in the valley of the Limpopo is tropical. These districts are well watered. During the rainy season of the summer months south-easterly winds from the Indian Ocean prevail. The **highlands of the interior** have warm summers and cool winters. Scarcity of rain renders irrigation necessary to successful agriculture over a large part of this territory, but the atmosphere of these dry highlands is beneficial to invalids.

109. The **chief resources** are the mines, the grazing lands, and the soil. South Africa is rich in **minerals**, including gold, diamonds, coal, copper, and lead. The **gold mines** of Transvaal are among the richest in the world; and the **diamond mines** of Cape Colony surpass those of all other countries combined. The annual yield of gold is valued at $130,000,000, chiefly in Transvaal; of diamonds, at $48,000,000, chiefly in Cape of Good Hope. A **diamond**

SOUTH AFRICA
BECHUANALAND
PROTECTORATE
KALAHARI DESERT
GREAT NAMAQUA LAND
SOUTH WEST AFRICA
TRANSVAAL
ORANGE FREE STATE
NATAL
CAPE OF GOOD HOPE
ATLANTIC OCEAN
INDIAN OCEAN
Cape of Good Hope
CAPE TOWN
Longitude East of Greenwich

FIG. 150.—CAPE TOWN AND TABLE BAY.

obtained at Kimberley was valued at $300,000. A much larger one from Orange River Colony was damaged by a flaw.

110. **Pastoral industries** are a source of great wealth. The estimated number of cattle is 3,313,000; of sheep, 21,324,000; of goats, 7,295,000. **Ostrich farming**, especially in Cape Colony, yields large profits.

111. The **agricultural products** comprise the various grains, vegetables, and fruits of temperate climates; and in the warmer sections cotton, oranges, pine-apples, bananas, sugar-cane, and tobacco.

112. The **population** is estimated at about 5,500,000. About one-fifth of the inhabitants are of European descent, mainly Dutch and British. The others, except about 115,000 Asiatics, are aborigines, including Kafirs, Bechuanas, and Hottentots.

113. The **exports** include gold, diamonds, copper ore, wool, mohair, hides, and ostrich feathers. Total value about $265,000,000. The **imports** include all kinds of manufactures, flour, and other food-stuffs.

114. **Pretoria** is the capital, in which the members of the Union Government have their offices. **Cape Town** is the meeting-place of the Union Parliament. **Bloemfontein** is the seat of the Appellate Court, or High Court of Appeal.

115. **Railways** connect all the principal places with each other and with the chief ports. Of the 4,000 miles in operation the greater part is owned by the Union Government. A trunk line extends from Cape Town to Kimberley, Mafeking, and Vryburg. A branch line from this runs *viâ* Klerksdorp to Johannesburg and Pretoria. A line from Port Elizabeth extends to Bloemfontein, Johannesburg, and Pretoria, and another trunk line runs from Durban to Pretoria. Pretoria is also connected by rail with Beira, on Delagoa Bay.

116. The **Union Government**, though similar to that of Canada, differs from it in important particulars. The Governor-General represents the Sovereign of Great Britain. He is advised by a **Ministry** or Executive Council responsible to Parliament. The Governor-General and his Ministers have their offices in Pretoria.

117. The **legislative power** is vested in a Parliament which meets annually in Cape Town. It consists of the Governor-General, the Senate, and the House of Assembly. The **Senate** comprises 40 members, 8 of whom are appointed by the Governor-General, and 32 are elected by the local legislatures of the colonies, 8 from each colony. The members of this body hold their position for the term of ten years, subject to earlier dissolution.

118. The **House of Assembly** comprises 121 members—51 for Cape of Good Hope, 17 for Natal, 17 for Orange River, and 36 for Transvaal. Each colony is divided into as many electoral divisions as it has members in the Assembly, each division in any one colony having, as nearly as may be, the same number of electors. The members hold their seats for five years, unless dissolved by the Governor-General. Members of the **Executive Council** or Ministry may be chosen from either House; and any member of this Council may sit and speak in either House,

Fig. 151.—Diamond Mine, Kimberley.

but he can vote only in the House of which he is a member. All matters of general interest to all the colonies are under the control of the Union Government.

119. In **the local governments** the chief executive officer, styled **Administrator,** is appointed by the Governor-General in Council for the term of five years. The **Legislature,** called the **Provincial Council,** is elected for the term of three years, and it cannot be dissolved until its term has expired. The Provincial Council elects, not necessarily from its own body, an **Executive Committee** of four members, of which the Administrator is chairman. The members of the Executive may sit in the Council and take part in its deliberations, but may not vote.

120. The **Provincial Council** has **power to legislate** in matters relating to education, agriculture, public roads, municipal affairs, charitable institutions, and all purely local concerns.

THE CAPE OF GOOD HOPE.

121. The **low coast region** and the **southern slopes of the highlands** in Cape Colony are well watered and fertile, yielding wheat, maize, tobacco, grapes, and all the grains, vegetables, and fruits of warm-temperate climates. Considerable wine is manufactured.

122. The **highlands** have a long dry season, when they become parched, and, except dry prickly shrubs, plant life disappears. When the rainy season sets in, these plains are clothed with grass and flowers. Successful agriculture is possible here only by the aid of irrigation, for which water is stored in ponds and cisterns during the rainy season. The rearing of cattle, sheep, and goats is the chief industry on these dry plains. Large farms are devoted to the rearing of ostriches.

123. The **mineral wealth** of the colony is very great, including diamonds, gold, and copper. The **diamond mines** at Kimberley are the richest in the world. Rich **copper mines** are worked in Little Namaqualand, near the mouth of the Orange River. The ore is exported to England from Port Nolloth.

124. The **annual value of exports** is—diamonds, $45,000,000; wool, $12,000,000; ostrich feathers, $9,000,000; mohair, $4,500,000; hides and skins, $4,000,000; copper, $2,500,000.

125. The **population** is estimated at about 2,500,000, of which about one-fourth is of European descent, chiefly Dutch and British. The natives, varying in color from brown to black, are chiefly Kafirs, Bechuanas, and Hottentots. Some of them are considerably advanced in civilization, but generally they are uncultured.

126. **Cape Town,** the capital of the colony and the seat of the Union Parliament, has a beautiful situation. In front of the city is the noble bay, with its good **harbor**; and in the rear, rising to the height of about 3,500 feet, is **Table Mountain.** Parliament House, costing over a

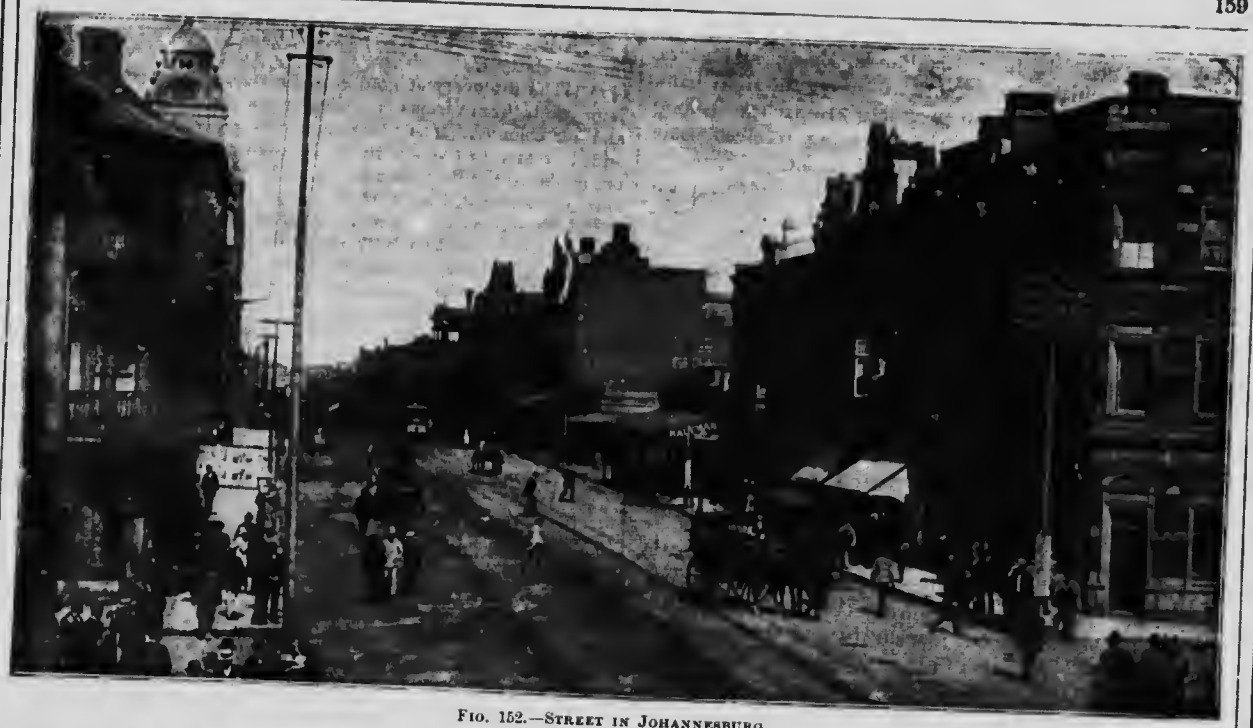


FIG. 152.—STREET IN JOHANNESBURG.

million dollars, is a fine building. The **suburbs** of the city, including several small towns with their fine residences and gardens, are very beautiful. **Port Elizabeth,** on Algoa Bay, and **East London** have a large foreign trade.

127. **Kimberley,** 4,000 feet above the sea-level, is famous for its diamond mines, and also for its successful resistance to a four months' siege during the Boer War (1899–1902). **De Beers** and **Beaconsfield** are also noted for diamond mines. **Parl** is a small town in a wine-producing centre. **Beaufort West** is a great wool centre, and a resort for invalids. **De Aar** is at the junction of the railways from Port Elizabeth and East London.

Mafeking, in Bechuanaland, is noted for its successful defence, conducted by General Baden-Powell, during the Boer War.

NATAL.

128. **Natal,** "the Garden of South Africa," lies between the Drakenberg Mountains and the Indian Ocean. It is somewhat larger than the Province of New Brunswick. **The low coast region** is narrow, and the land rises rapidly to lofty mountains two miles above sea-level. The mountain scenery in its grandeur rivals the Alps. Small **rivers** are numerous. The **Tugela** is famous for the stirring events that occurred in its neighborhood during the Boer War (1899–1902).

129. **The lowlands** have a **hot** and **humid climate.** Their products are sugar, cotton, coffee, bananas, pine-apples, and other tropical fruits.

130. The **midland country** yields all the products of mild-temperate climates. The cultivation of the tea plant has been successfully introduced.

131. On the **highlands** the rearing of cattle, sheep, and goats is the chief industry. **Coal** is abundant, and the mines near Dundee are extensively worked. Rich **iron** ore is found in the same neighborhood.

132. The **population** is over a million. About one-tenth of the inhabitants are of European descent, of which two-thirds are British and one-third Dutch. The natives are chiefly Kafirs, once a fierce, warlike people, but now partially civilized.

133. **Education** for white children is well looked after, and some provision is made for the education of those of the colored races.

134. **Pietermaritzburg,** the capital, is 70 miles inland. **Durban** is the chief port.

ORANGE FREE STATE.

135. This colony, lying between the Orange River and the Vaal, is an undulating plateau, varied by flat-topped hills five or six hundred feet high. The **rainy season** comprises two or three months in early summer (winter in Canada). At this season the plains are clothed with verdure. Throughout the rest of the year the parched country presents a dreary aspect.

136. **Grazing** is the **chief industry**, and the wealth of the country consists in cattle, horses, sheep, and goats. The **best agricultural districts** are along the right bank of the Caledon River. The **products** are such as belong to temperate climates. **Ostrich farming** receives some attention. Forest lands are of limited extent.

137. **The diamond mines** of Jagersfontein give an annual yield valued at $4,000,000. **Coal mines** of considerable value are worked.

138. The **population** is about 400,000, of which one-third is of European origin, chiefly Dutch. Free schools are open to all white children. The colored natives are not allowed the full privileges of citizenship.

139. **Bloemfontein**, the capital of the colony and the seat of the High Court of Appeal for the Union, has about 35,000 inhabitants, divided about equally between Dutch and native.

TRANSVAAL.

140. Transvaal, about five times as large as Nova Scotia, is chiefly a **highland country**, lying between the Vaal River and the Limpopo. During the dry season these high plains yield little but low shrubs and thin grass, but after the rainy season sets in they afford good pasturage.

141. **A lowland**, well-watered district with a tropical climate lies along the valley of the Limpopo. The **forests** in this Bush Veld country are the home of many **wild animals**, including the elephant, rhinoceros, buffalo, antelope, leopard, and lion.

142. The **chief industries** of Transvaal are grazing and mining, though some sections are well suited to agriculture. The herdsmen move about with their cattle and sheep from one place to another as they can find pasturage.

143. The **principal minerals** are gold, diamonds, and coal, but tin, lead, and iron are obtained. The **most important gold mines** are in a rocky ridge known as the *Witwatersrand*, often called "the Rand." The miners are chiefly of native races. The annual value of gold obtained is over $125,000,000, and the value of diamonds over one-sixth of that amount.

144. The **population** is about 1,350,000. Less than one-fourth of the inhabitants are of European descent. Education is provided for white children. Few of the natives can read or write.

145. **Pretoria** is the capital of the colony, and the offices of members of the Union Government are in this city. **Johannesburg**, with a population of about 237,000, situated on the Rand, is the largest city. It is the chief centre of the gold-mining industry of the colony. Nearly half its inhabitants belong to colored races.

146. **Historic Note.**—The Boers of Orange River Colony and Transvaal migrated from Cape Colony in 1836. They were still, however, British subjects, and their territory formed a part of British South Africa. They disliked British rule, and to secure their independence they took up arms against Great Britain, gaining two or three victories, the most important of which was at **Majuba Hill** in 1881. Subsequently, Great Britain granted them self-government, reserving the right of control over their foreign relations.

147. **The discovery of gold** in 1885 attracted a large number of immigrants from various countries, especially from Great Britain and her colonies. The newcomers were enterprising, and they added greatly to the wealth of the country. But, though they outnumbered the Boers two to one, and were heavily taxed by the Boer Government, they were denied political privileges and subjected to serious disabilities. Finally, instead of yielding to expostulation, the two Boer states declared war against Great Britain (1899), invaded Natal and Cape Colony with armed forces, and proclaimed the annexation of portions of these colonies. Great Britain sent a large army against them, comprising many volunteers from Canada and Australia.

148. After a **bitter war** of many months and a large expenditure of life and money, the Boers were subdued, and the two states were annexed as British colonies. For a short time they were governed as Crown colonies. A constitution and responsible government was granted to Transvaal in 1906, and to Orange River Colony in 1907.

BASUTOLAND.

149. Basutoland, a Crown colony governed by a resident Commissioner, is a **rugged table-land**, varied by high mountains. It is noted for its **beautiful scenery**, and is called the Switzerland of South Africa. The country is **well watered** and has a **fine climate**. Its fertile valleys are said to be the **best wheat-producing lands** in South Africa. The **plateaus** and lower mountain slopes afford excellent pasturage. **Stock-raising** is the leading pursuit.

150. Basutoland has a **population** of about 350,000, almost exclusively of native tribes. Europeans are regarded with suspicion, and are not allowed to own lands in the country.

151. **Maseru**, the capital, is a mere village of about a thousand inhabitants. It is connected with Bloemfontein by railway.

GERMAN SOUTH-WEST AFRICA.

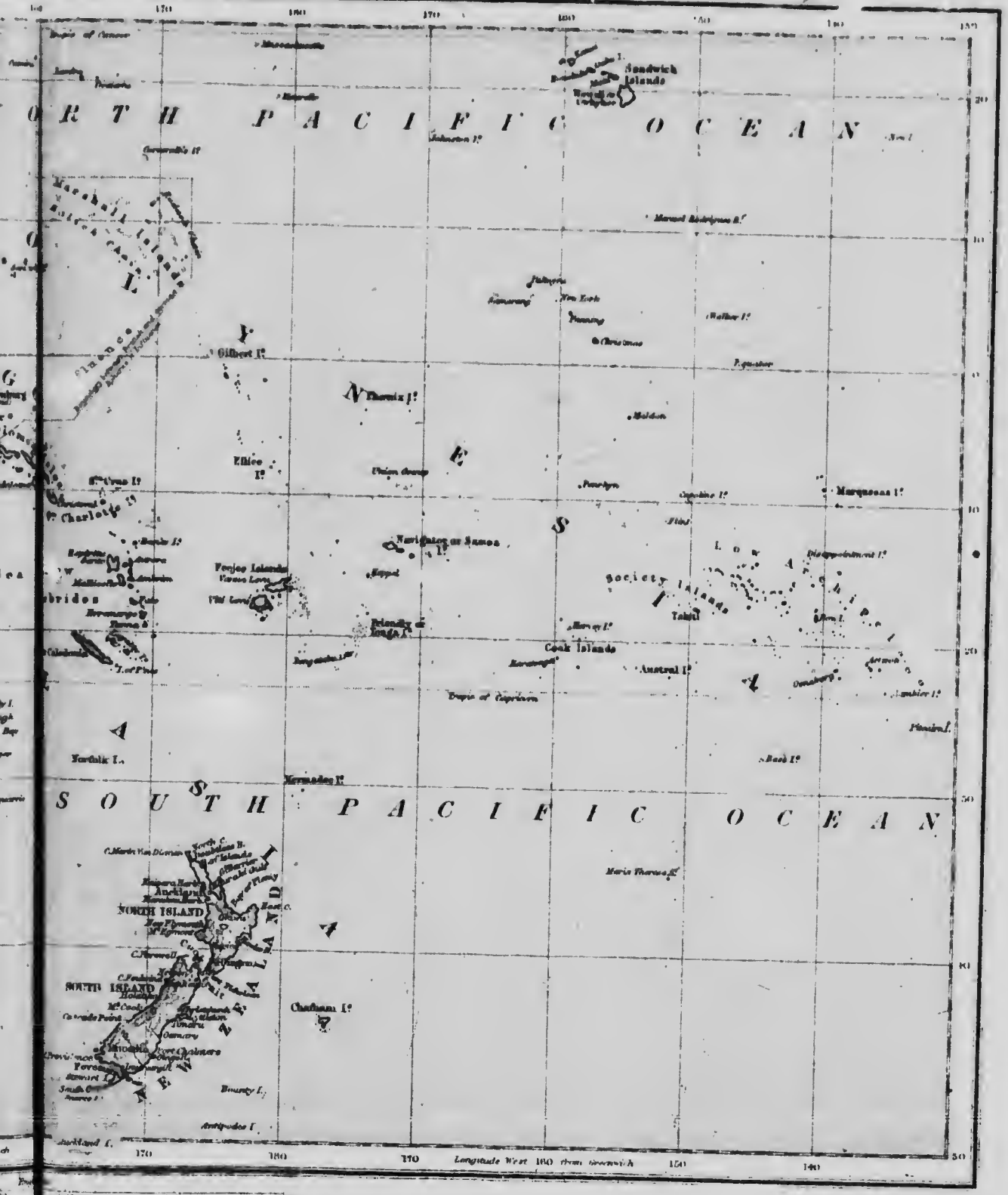
152. German South-West Africa is a territory with an **area** of about 322,000 square miles, and a **coast line** of 800 miles, without any good harbor. The **interior** is a **dry, barren table-land**, ill-suited to agriculture. Water is obtained by boring.

153. Tobacco and the vine are cultivated, and **silk** is among the products. **Pastoral industry** is the main dependence. Cattle, sheep, and goats are numerous. Ostrich feathers and guano are exported. Copper and diamonds are obtained.

154. The **population** is about 200,000, consisting chiefly of native tribes, including Hottentots, Bushmen, and Bantus. Europeans number about 8,000.

155. **Windhoek**, a small place, is the headquarters of the German Governor. Several hundred miles of **narrow-gauge railway** run through the territory.


CHINA
BURMA
Tonquin
SIAM
Bangkok
Gulf of Siam
CHINA SEA
PHILIPPINE ISLANDS
Manila
U.S.A.
Ladrone or Marian I.
Germany
Caroline Islands
EASTERN ARCHIPELAGO
Celebes Sea
BORNEO
Java Sea
Banda Sea
Flores Sea
Arafura Sea
Timor Sea
Torres Strait
Gulf of Carpentaria
Coral Sea
INDIAN OCEAN
AUSTRALIA
NORTHERN TERRITORY
WESTERN AUSTRALIA
QUEENSLAND
SOUTH AUSTRALIA
NEW SOUTH WALES
VICTORIA
TASMANIA
Great Australian Bight
Perth
Adelaide
Melbourne
Sydney
Brisbane
Hobart
Christmas I.
Kaiser Wilhelms Land
Longitude East 100 110 120 130 140 150 from Greenwich


NORTH PACIFIC OCEAN
SOUTH PACIFIC OCEAN
Sandwich Islands
Marshall Islands
Gilbert Is.
Phœnix Is.
Ellice Is.
Marquesas Is.
Navigators or Samoa
Society Islands
Tahiti
Cook Islands
Austral Is.
Low Archipelago
Friendly Is.
Fanfou Islands
Norfolk I.
Kermadec Is.
NORTH ISLAND
SOUTH ISLAND
NEW ZEALAND
Chatham Is.
Auckland I.
Antipodes I.
Bounty I.
Maria Theresa Is.
Longitude West 180 from Greenwich

OCEANIA.

1. **Oceania**, or the *Island World*, comprises the archipelagoes and islands of the Pacific and Indian Oceans. Their united area is estimated at rather more than half that of North America, and their population at 50,000,000. The islands are usually considered under three divisions—*Malaysia*, *Australasia*, and *Polynesia*.

MALAYSIA.

2. **Malaysia**, or *the Land of the Malays*, comprises the islands on the south and east of Asia, between the meridian 90° E. and the west shores of New Guinea, and extending southerly to the parallel 10° S. The principal islands are the *Greater Sunda Isles* (*Java*, *Sumatra*, *Borneo*, and *Celebes*), the *Philippines*, the *Moluccas*, and the *Little Sunda Isles* (*Bali*, *Lombok*, *Sumbawa*, *Sandalwood*, *Flores*, *Timor*, and *Timorlaut*).

3. Malaysia includes some of the largest and most important islands in the world. The entire area equals about one-fifth that of the Dominion of Canada. Most of the islands are mountainous and of volcanic origin. Active volcanoes are numerous, and earthquakes are of frequent occurrence.

4. The **climate** is tropical and humid. A belt lying along each side of the Equator, about four degrees in width, has no well-defined rainy season; outside this belt the rainy and dry seasons alternate, the rainy season following the sun north and south across the Equator. With the exception of the Philippines, the islands are not subject to hurricanes.

5. **Dense forests**, second only to those of Brazil, clothe the interior, yielding ornamental and dye woods, caoutchouc, gutta-percha, resins, and gums. The **cultivated products** are rice, maize, millet, coffee, tea, sugar-cane, cotton, tobacco, nutmegs, cloves, and every kind of tropical spice and fruit. Sago (the starchy pith of a kind of palm), the cocoa-nut, banana, and yam, are much used as food on some of the islands. Bamboo is one of the most valuable products. Its hollow, jointed stems are used in the making of houses, boats, baskets, chairs, beds, and many other things.

6. The **minerals** include gold, silver, tin, copper, iron, and coal. The shores of some of the islands are covered with beautiful shells, and valuable pearls are obtained on the shores of the easterly groups.

7. The number of the **inhabitants** is not accurately known, but it is estimated to be about 42,000,000. There are two native races—the *Malays* and the *Papuan Negroes* or *Melanesians*. The Malays are characterized by low stature, olive-brown skin, bare face, straight hair, and oblique eyes. The majority of them are Mohammedans. The Melanesians are taller and darker than the Malays. Their hair is frizzled, and many of them have full beard. Most of them are pagans. Among the inhabitants are also many Chinese and Europeans, who live chiefly in the seaport towns. Roman Catholicism is the prevailing religion in the Philippines.

8. The islands may be divided, by a line passing east of the Philippines, Borneo, and Bali, into two groups, distinguished by certain physical and biological features. The islands of the westerly division rest on a submarine plateau, and have forms of life similar to those of the Asiatic continent, characteristic trees being the palm and the bamboo, and the animals including the elephant, tiger, rhinoceros, and monkey. The majority of the inhabitants are Malays.

9. The islands of the easterly division are surrounded by deep sea, and their plants and animals are like those of Australia, including the eucalyptus and acacia among the trees, and the marsupialia among the animals. The natives are chiefly Melanesians.

10. **Political Connection.**—With the exception of the Philippines, which belong to the United States of America, the islands of Malaysia belong either wholly or in part to Holland. A large territory on the north-west of Borneo forms a British Protectorate. The north-eastern part of Timor belongs to Portugal.

11. The **Dutch Islands**, known as the *Dutch East Indies*, have a population of about 34,000,000, of which Java has 25,000,000. They are ruled by a Governor-General, appointed by the Government of Holland, who is assisted by a Council. Subordinate to the Governor-General are lieutenant-governors and residents, who exercise administrative and judicial powers in their various provinces. The

revenue is derived largely from government monopolies on opium and salt, and from the sale of coffee grown under labor exacted as a tax from the natives.

12. The most important **exports** are coffee, sugar, tobacco, and indigo.

13. **Sumatra**, over a thousand miles in length, and one of the largest islands in the world, is divided by the equator into two nearly equal portions. Lofty mountains containing many volcanic peaks extend through the island. The chief products are pepper, rice, cotton, tobacco, sugar-cane, maize, tropical fruit, ivory, gutta-percha, camphor, and cabinet-wood. The lowlands are very unhealthy.

14. **Palembang**, a river port on the east, and **Padang**, on the west coast, are the chief cities. The small islands **Banca** and **Billiton**, off the east coast of Sumatra, are noted for their tin mines, which yield annually from twelve to fifteen thousand tons of this metal.

15. **Java**, the most important island of the Dutch East Indies, is about 650 miles in length, and has an area of about 50,000 square miles. It is a hilly and mountainous country, broken by deep gorges, through which flow rushing streams, and it is said to have more volcanoes than any other equal area on the globe. Java is the most populous and fertile island of Malaysia, and is noted for the variety of its vegetables, fruits, and flowers. Its **products** comprise rice, maize, sugar, coffee, tea, indigo, cotton, and cinchona, large quantities of which are exported, chiefly to the Netherlands. Sugar is largely exported to Great Britain in exchange for cottons, woollens, and machinery. Good **roads** extend through the island, and some of the principal places are connected by railway.

16. The **inhabitants** are more highly civilized than are those of the adjoining islands.

17. **Batavia**, on the northern coast, is the capital, and the greatest commercial city in Malaysia. It exports coffee, rice, sugar, and spices. **Surabaya** and **Samarang** are large commercial cities on the north coast.

18. **Borneo**, about 800 miles in length, is the largest of the East India islands, and is third in size among the islands of the world. The vegetation of Borneo is very luxuriant. The chief **products** are sago, rice, coffee, sugar, spices, tobacco, tropical fruit, tapioca, gutta-percha, camphor, and timber. **Benjermasin** is the chief town in Dutch Borneo. Many of its **inhabitants** live in houses built on floating **rafts**. **Pontianak** exports large quantities of gutta-percha.

19. Extensive territories, comprising North Borneo on the north coast and Brunei and Sarawak on the north-west coast, belong to Great Britain. Tobacco, coffee, and pepper are extensively cultivated, and with forest products form the chief exports. **Sandakan** is the chief town in North Borneo.

20. **Labuan**, a small island on the coast of North Borneo, also belongs to Great Britain. It has coal mines of some importance.

21. **Celebes** is remarkable for its irregular outline, having four peninsulas branching off from a common centre. Celebes is the third in size of the East India islands. The **surface** is varied with mountains and valleys. The **soil** is very fertile. The chief **export** is coffee. The pearl fisheries on the coast are valuable. **Macassar**, the capital, exports rice, sandal-wood, ebony, spices, and other products. A large part of the island is ruled by native chiefs.

22. The **Moluccas**, or **Spice Islands**, comprise *Gilolo*, *Ternate*, *Ceram*, *Buro*, *Amboyna*, and the *Banda Isles*. They yield the finest cloves, nutmegs, and other spices. On the coast are pearl and trepang fisheries. **Amboyna**, a small seaport on an island of the same name, is the capital.

23. The **Little Sunda Isles** include many islands, most of them of small size, extending from Lombok in the west to Timorlaut in the east. **Timor**, the largest of the group, is 300 miles in length. **Deli** is the capital of the Portuguese portion of the island.

24. The **Philippine Islands** comprise a group of about 1,200 islands between 4° and 21° N. lat. **Luzon**, about the size of Newfoundland, and **Mindanao**, somewhat smaller in size, comprise more than half the whole area. Next in size are *Samar*, *Panay*, *Palawan*, *Mindoro*, *Leyte*, and *Negros*. The islands are mountainous, and have numerous active volcanoes. **Apo**, on Mindanao, is over 10,000 feet high. The **climate** is hot, and, during the rainy season, very unhealthful for Europeans. Violent hurricanes, called typhoons, often cause much damage during the rainy season. The **soil** is very fertile, but is badly cultivated. The **products** are sugar, tobacco, rice, coffee, manila hemp, maize, cacao, yams, cocoa-nuts, and bananas. The forests yield fine wood for cabinet and building purposes. They also produce bamboo, rattan, and gutta-percha. Large quantities of manila hemp and raw sugar are exported to Great Britain, in exchange for cottons and other manufactured goods. A few of the original dark-skinned **inhabitants**, called **Negritos**, are found on the islands, also many Chinese and Spaniards, but the majority of the people are Malays.

25. **Manila**, on Luzon, is the capital. It has extensive trade with Great Britain and the United States, exporting the various products of the country, and importing manufactured goods of different kinds. Manila cigars are very celebrated. The Philippine Islands were ceded to the United States by Spain in 1899.

AUSTRALASIA.

26. Australasia, on the south and south-east of Malaysia, comprises the four large islands *Australia*, *Tasmania*, *New Zealand*, and *Papua*; also many small islands, as *Norfolk*, *Auckland Isles*, *Antipodes*, and *Chatham*.

27. With the exception of a large part of Papua, the whole of Australasia belongs to Great Britain.

THE COMMONWEALTH OF AUSTRALIA.

28. Australia, having an area nearly as large as the Dominion of Canada, may be regarded as the smallest of the continents, or as the largest island in the world. It was discovered by the Dutch in 1606. In 1770 Captain Cook visited Australia, and took formal possession of it in the name of King George the Third of Great Britain. The first settlement was a convict colony, established by the British Government at Sydney in 1778. During the succeeding fifty years, 70,000 criminals were transported to this country. The last convict ship arrived in 1839.

29. Australia is about 1,600 miles south of Asia. It is crossed by the Tropic of Capricorn; the northern part, including about one-third the area, is in the Torrid Zone, and the remainder is in the South Temperate Zone.

30. In the regularity of its coast-line Australia resembles Africa and South America. The principal inlets of the sea are the *Gulf of Carpentaria* on the north, and the *Bight of Australia*, *Spencer*

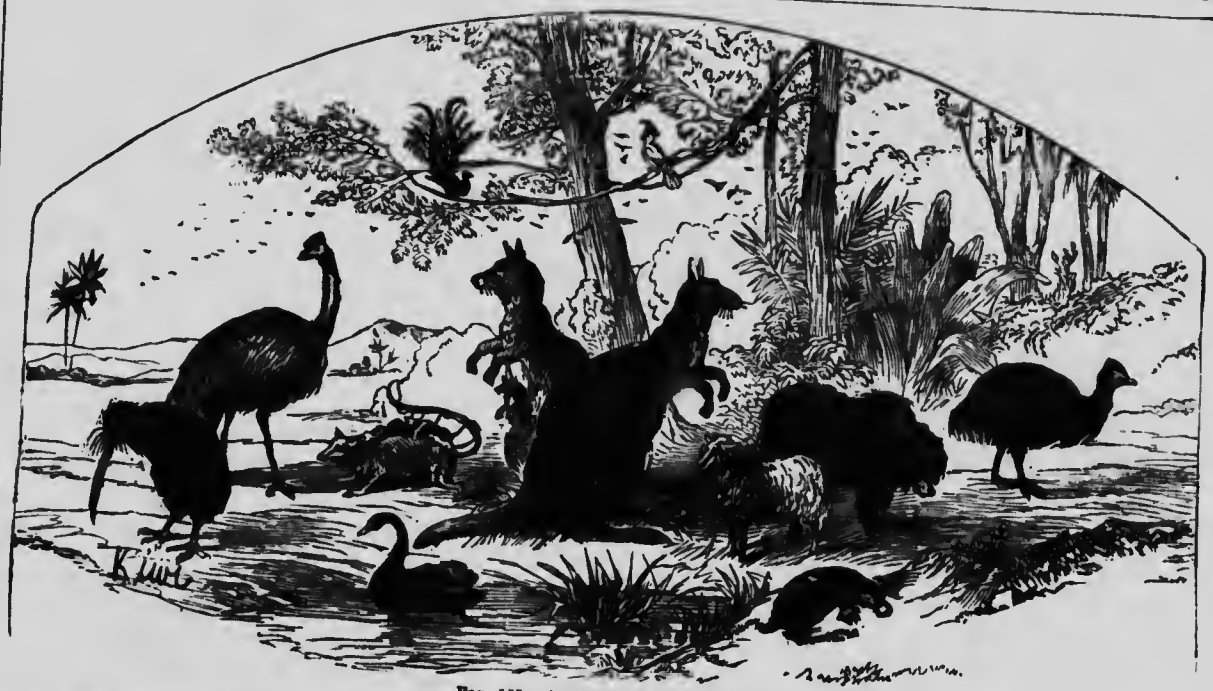


FIG. 155.—ANIMALS OF AUSTRALIA.

Gulf, and *St. Vincent Gulf* on the south. A coral reef extends for about 1,200 miles along the eastern coast, at an average distance of about 30 miles from the shore, forming a channel that is never disturbed by violent storms.

31. Australia has comparatively little diversity in its **physical feature.** The interior, comprising nearly two-thirds the entire area, is a vast low-lying desert region, with table-lands and mountains between it and the sea. On the east side lies the principal mountain range, known as the *Great Divide*, which, under different names, extends throughout the whole length of the island. It rises somewhat abruptly from the narrow lowlands on the east, and slopes more gradually on the west. The *New England Range*, the *Liverpool Range*, the *Blue Mountains*, and the *Australian Alps*, in New South Wales, are parts of this long mountain range.

32. The **Blue Mountains** are much broken by deep chasms and canyons, and the wild scenery is much enriched by numerous waterfalls.

33. The **Australian Alps** are also noted for the grandeur of their scenery. **Mount Kosciusko**, in this section, the highest land in Australia (7,308 feet), rises above the limit of perpetual snow. The table-lands and plains on the west of the Great Divide are vast grazing lands.

34. The **rivers** are less numerous than in the other great divisions of the world. Those on the east of the Great Divide are short, flow rapidly, and are liable to overflow for a short period in the rainy season. Those that rise on the western side of the mountains, except the Murray-Darling, are small streams, and fail to reach the sea, but either lose themselves in the arid lands through which they flow, or discharge their waters into salt lakes.

35. The **Murray**, which is about 1,000 miles long and is the largest river in Australia, rises on the west side of the mountains. Fed by the melting of the snow on the Australian Alps, and joined by the Darling and other tributaries, it maintains considerable volume to the sea throughout the year. It is navigable for small steamers to Albury. **Lake Alexandrina**, in New South Wales, is a large expansion of the Murray near its mouth. **Lake Torrens**, 125 miles in length, is the largest of the salt lakes of the interior basin.

For nearly 1,000 miles the southern coast is unbroken by any river mouth.

36. The **climate** is generally healthful. Little frost is known in the coast regions, and the heat of summer, even within the tropics, is not extreme. The interior is in summer excessively hot and dry, but the air becomes quite cold in winter.

37. The coast regions are generally well watered. The most humid section is the Pacific coast country, including the easterly mountain slopes, the central and southern portions of which lie within the sweep of the south-east trade winds. This region is sometimes visited by violent rain-storms, which send devastating floods over the lowlands. In crossing the mountains the vapor-bearing winds are so divested of moisture that they carry little rain to the interior, which is an arid desert, resembling the Sahara of Africa.

38. **Products.**—Remote and isolated from the other great

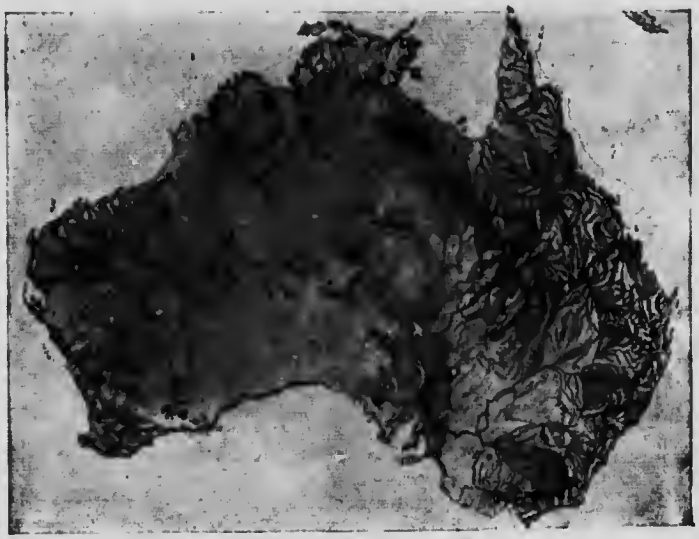


FIG. 156.—RELIEF MAP OF AUSTRALIA.

divisions of the world, Australia differs from them by marked biological features. Most of the native trees are evergreen, and their leaves, standing in a vertical position, afford little shade. Conspicuous among them are the eucalyptus, or gum-tree, and the acacia, each having many species. The arid wastes of the interior produce only scrubby bushes, thorny acacias, and wiry grass. Indeed, vast regions, strewn with stones, are destitute of plant life.

39. The **agricultural products** are wheat, maize, and other cereals, cotton, sugar-cane, tobacco, grapes, and the various fruits and vegetables of tropical and temperate climates.

40. Vast areas, too dry for cultivation, afford pasturage for millions of cattle and sheep. Australia is one of the greatest grazing countries in the world. Many of the sheep are merinoes, and yield wool of unsurpassed excellence. It is estimated that it has over 90,000,000 sheep, 11,500,000 cattle, and 1,600,000 horses.

41. The **native animals** are remarkably different from those of other parts of the world. None of them are very large. Many of the quadrupeds are marsupials, or pouched, the largest of which is the kangaroo. The dingo, or native dog, a wolf-like animal, is very destructive to sheep. The duck-bill is a queer creature, half bird, and in many features like a mammal. The most remarkable birds are the lyre-bird, the emeu, and the black swan.

English rabbits have become very numerous, and are destructive pests. In New South Wales large territories are protected from their ravages by many thousands of miles of rabbit-proof wire fence.

42. Australia is rich in **minerals**, including gold, silver, copper, coal, and tin. In the production of gold and silver it ranks third among the countries of the world, the annual yield of gold being between $50,000,000 and $60,000,000, and of silver about $20,000,000.

43. The total **population** of Australia is about 3,500,000, chiefly of British origin.

44. The **aborigines**, estimated at about 60,000, are rapidly decreasing in number. They stand very low in the scale of civilization, wear little or no clothing, and some of them are said to practise cannibalism. In color they are black or dark brown, but they have few characteristics of the African Negro. They are wonderfully skilled in throwing a singular weapon called the *boomerang*. This is a curved piece of wood about three feet long. When hurled by a native it takes a spiral course, and after striking the object at which it is aimed, it returns and falls at the feet of the thrower.

45. The chief **industries** of Australia are agriculture, sheep-farming, mining, and manufacturing.

46. The **exports** comprise gold, silver, copper, wool, meat, hides, tallow, and other products of the country. Large quantities of wool are exported to England; also frozen meat, taken in ships fitted with refrigerators. The **imports** include textiles, iron, and manufactured goods of all kinds.

47. **The Commonwealth of Australia.**—The island of

FIG. 157.—ABORIGINES OF AUSTRALIA.

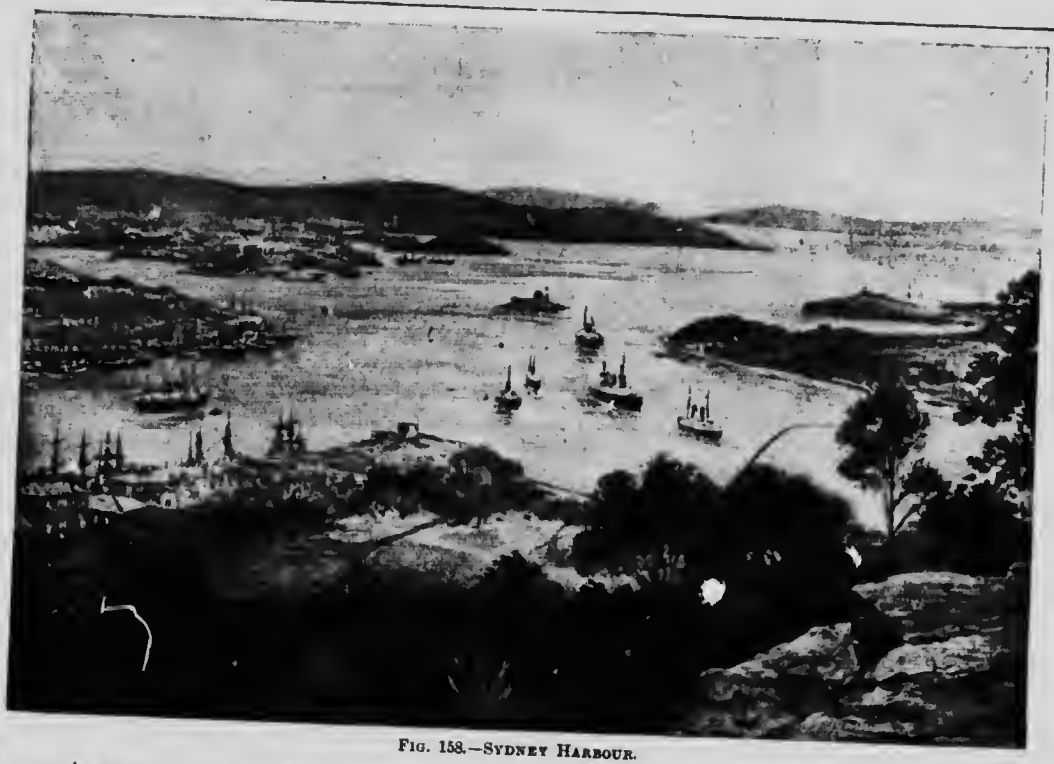


FIG. 158.—SYDNEY HARBOUR.

Australia comprises five colonies or states—*Queensland*, *New South Wales*, *Victoria*, *South Australia*, and *West Australia*. These colonies, together with the island of *Tasmania*, were united in 1901 into one confederate state of the British Empire, under the name of *The Commonwealth of Australia*. The **Government** of the Commonwealth is representative, with a responsible ministry, resembling that of the Dominion of Canada.

48. The constitution vests the legislative power in a *Governor-General*, appointed by the Crown of Great Britain, a *Senate*, and a *House of Representatives*. Both the Senate and the House of Representatives are elected by the people —the Senate being chosen for the term of six years, and the House of Representatives for three years. Each colony has a local legislature.

The terms of union provide that the capital shall be in New South Wales, but not within one hundred miles of Sydney. The city of Melbourne was made the temporary seat of government; **Yass-Canberra** was chosen in 1910 as the site of the permanent capital.

49. **QUEENSLAND** is one of the three largest colonies of Australia. The mountains are here farther inland, giving broader lowlands and longer rivers than are those of New South Wales and Victoria. Stock-raising, farming, and mining are the great industries. The sheep are pastured on the mountains and the dry plains of the interior, the cattle and horses on the coast lowlands. The stockmen move rapidly on horseback over the large pastures, looking after their cattle and sheep.

Much of the work on the sugar plantations is done by laborers imported from Polynesia.

50. The Mount Morgan gold mine is said to be the richest mine in Australia.

51. **Brisbane**, the capital, on the Brisbane River, 20 miles from its mouth, exports the products of the colony. In 1893 the city was inundated by river floods, resulting in great damage and loss of life.

52. **Rockhampton** exports wool and other produce of the pastures. **Mackay** exports sugar. **Thursday Island** is a fortified coaling station.

53. **NEW SOUTH WALES** is the oldest and wealthiest of the Australian colonies. It has much rugged grandeur in its mountain scenery. The climate in the north is dry and warm, in the south cooler and more humid. The agricultural products are wheat, maize, oats, potatoes, tobacco, grapes, peaches, oranges, and, in the northern districts, sugar-cane. The chief wealth of the colony is in its cattle, sheep, and minerals, comprising gold, silver, coal, tin, copper, and iron. The annual value of wool produced is over $70,000,000; of minerals, $54,000,000.

54. **Sydney**, the capital and second city of Australia as regards population, on Port Jackson, has a superior harbor and a large trade. It has many fine public buildings, and its suburbs are richly embowered in gardens and orchards.

55. **Newcastle** is an important coal-mining centre. **Bathurst** is the centre of an agricultural and gold-mining district. **Broken Hill** is in a silver-mining district. **Paramatta** is surrounded by orchards and orange groves. **Albury**, on the Murray River, is a rising town in a rich agricultural and wine-producing country.

56. **VICTORIA** has grand mountain scenery. The southern slopes of the Alps are covered with magnificent forests. Specimens of the eucalyptus, or gum-tree, found here are said to measure from 50 to 80 feet in circumference, and to attain the height of over 300 feet. Victoria is the most densely peopled and one of the most prosperous of the Australian colonies. It has a delightful climate and a fertile soil, and it takes first rank among these colonies in its production of gold. The annual value of its yield of gold is about $16,000,000; that of wool, $27,000,000.

57. **Melbourne**, the capital, on the Yarra-Yarra, 8 miles from its mouth, an insignificant place of a dozen shanties at the accession of Queen Victoria, has become the largest city of Australia, and is the emporium through which ninety per cent. of the foreign trade of the colony is carried on. On Port Phillip, at the mouth of the river, are *Port Melbourne*, *Williamstown*, *St. Kilda*, and *Brighton*.

58. **Ballarat** is the centre of the richest gold field in the world. One nugget found in the neighborhood was worth over $30,000. *Bendigo* and *Geelong* are important towns.

59. **SOUTH AUSTRALIA** lies to the west of Victoria and New South Wales, and is bounded on the north by the twenty-sixth parallel of south latitude. In the interior are wide deserts and great salt lakes.

60. The southern coast region is a fine farming country, and so well is it adapted to the growth of wheat that the colony has been called the "granary of Australia." It is also well suited to fruit-raising, and the wines made in the colony are of excellent quality. Wool is a staple product. Copper is the most abundant mineral. The richest mines are *Wallaroo* and *Moonta*.

61. **Adelaide**, the capital, is a beautiful city situated on the river Torrens, 7 miles from its mouth. **Port Adelaide** has a fine harbor on Spencer Gulf.

62. **NORTHERN TERRITORY**, formerly included in South Australia, but now administered by the Commonwealth Government, extends from latitude 26° S. to the Indian Ocean. The interior is desert, but the coast regions are fairly well watered, and yield tropical products.

63. **Palmerston**, the chief place in the Northern Territory, has an excellent harbor. **Melville Island** has valuable pearl fisheries.

64. **WESTERN AUSTRALIA** includes the vast territory of Australia lying west of 129° east longitude. The principal inhabited part of the colony lies along the west coast, the interior being comprised within the great desert. The south-west coast country, which is the most densely peopled, is well suited to agriculture, and is covered with wheat fields, vineyards, orchards, and pasture lands. The arid regions have within a few years been found to comprise rich gold fields, and gold mining has become a remunerative industry.

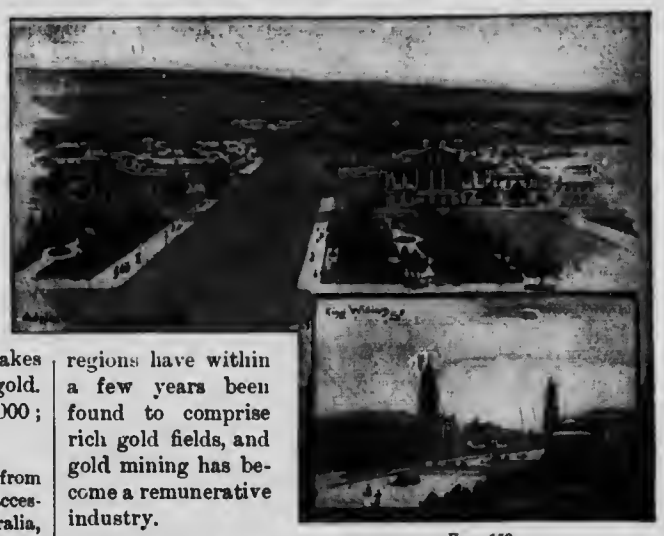


FIG. 159.

65. **Perth**, the capital, is a small but beautiful city, situated on Swan River, about 10 miles from its mouth. **Fremantle**, at the mouth of the river, is the chief port. **Coolgardie**, in the interior, is the centre of rich gold mines.

66. **Albany**, on King George Sound, is a fortified port, and a coaling station for the British navy.

67. **TASMANIA**, formerly named *Van Diemen's Land*, and sometimes called the "Switzerland of the South," is greatly diversified with mountains, table-lands, plains, and valleys. The largest rivers are the *Derwent* and the *Tamar*.

68. The **climate** is mild and healthful, without extreme heat or cold, and the atmosphere is remarkably clear. The native **plants** and **animals** are similar to those of Australia. A large part of the island is covered with forests, which yield valuable timber.

69. The **cultivated products** are wheat and the various kinds of grain, vegetables, and fruit of warm-temperate climates.

70. Tasmania is rich in **minerals**, including gold, silver, tin, copper, iron, and coal.

71. The chief **industries** are agriculture, sheep-rearing, and mining.

72. The **exports** comprise wool, gold, silver, tin, apples, and other fruit.

73. **Hobart**, the capital, has a fine harbor on the estuary of the Derwent. **Launceston**, on the Tamar, is the chief port in the north.

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74. **NEW ZEALAND**, discovered by the Dutch explorer Tasman in 1642, was proclaimed British territory by Captain Cook in 1769, and was organized as a British colony in 1840.

75. The colony comprises two main islands, **North Island** and **South Island**, separated by Cook's Strait, 25 miles in

breadth at the narrowest part. New Zealand also includes many small islands, of which *Stewart Island* is the most important. The group is about 900 miles east of Tasmania, and is nearly midway between the Cape of Good Hope and Cape Horn.

76. A mountain range having several volcanic peaks extends through North and South Islands. The range attains its greatest elevation in the Southern Alps of South Island, Mount Cook rising to the height of 12,360 feet. The grand scenery of these mountains is enriched by magnificent glaciers, which are said to surpass those of the Alps; by many lakes, some of which are boiling hot, surrounded by lofty peaks; and by geysers finer than those of Iceland.

77. The **climate** is humid and healthful, and, except on the mountain heights, free from extremes of heat and cold. As the islands extend through more than twelve degrees of latitude, there is much diversity of temperature. The climate and soil are admirably adapted to agriculture and grazing. All kinds of grain, vegetables, and fruit grown in the Dominion of Canada are successfully cultivated, and most of the fruits of Southern Europe are grown in North Island. Sheep-raising is a leading industry.

78. The kauri pine of New Zealand, on account of its lightness and elasticity, is highly prized for shipbuilding. It also yields a valuable gum. Kauri gum is also obtained in large quantities as a fossil. New Zealand flax, the large fibrous leaf of which is used for making rope, is one of the most valuable native plants. Nearly one-third of the land is covered with forests.

79. New Zealand is rich in **minerals**, including gold, silver, and coal.

80. The **native animals** are small and few in number. Rabbits, which were introduced from Europe, have become numerous, and are very destructive to the farmers' crops.

81. The **inhabitants** are chiefly of British descent. The natives, called *Maoris*, of whom there are now about 50,000, are almost stationary in numbers. They are much superior to most barbarous races. Many of them have become Christians, and occupy high positions in the colony.

Fig. 160.—Some Towns in New Zealand.

82. The chief **industries** of New Zealand are agriculture, grazing, and mining. The number of sheep in the colony is about 20,000,000.

83. The leading **exports** are wool, frozen meat, butter, cheese, gold, and kauri gum.

84. **Wellington**, the capital, has a beautiful situation and a superior harbor on the south of North Island. **Auckland**, also on North Island, is the largest city and the chief seaport. **Dunedin**, on South Island, is an important commercial city in the neighborhood of rich gold mines. **Christchurch** is in the rich agricultural district of Canterbury Plains.

85. The **government** is like that of other self-governing British colonies. Women have the right of franchise. It is expected that New Zealand will join the Commonwealth of Australia.

86. **Chatham, Antipodes, Auckland, Campbell**, and the **Macquarie Islands**, on the east and south of New Zealand, are important stations for the whalers in the Southern Seas.

87. **Norfolk Island**, on the north of New Zealand, noted for its gigantic pines, was formerly used by the British Government as a convict station.

88. **PAPUA**, or **NEW GUINEA**, next to Greenland the largest island on the globe, lies between the equator and 10° south latitude. It is a mountainous island, the greatest elevation rising from 15,000 to 20,000 feet above the sea-level. The largest river is the Fly, which is over 600 miles in length. The climate is hot and humid, except on the mountains. The marshy lowlands are subject to malaria.

For the most part the flora and fauna resemble those of Australia. The cultivated plants include rice, sugar-cane, maize, yams, bananas, bread-fruit, oranges, and spices.

89. The forests comprise acacias, palms, banyan, rubber-tree, ebony, and sandal-wood. The island is noted for its various species of birds, including the bird of paradise.

90. The native inhabitants are chiefly Papuan Negroes.

91. New Guinea is divided among Great Britain, Germany, and Holland.

92. **British New Guinea** is a Crown colony, occupying the eastern part of the island and a few adjoining small islands. The chief industries are alluvial gold-mining, pearl-fishing, and obtaining india-rubber. **Port Moresby**, the principal place, has a population of about 1,000 natives and 50 Europeans.

93. **German New Guinea**, or **Kaiser Wilhelmsland**, occupies the north-east of the island. It has a luxuriant vegetation. The Bismarck Archipelago forms part of the colony.

94. **Dutch New Guinea**, which includes over half the island, lies on the western side. There are several trading and mission stations along the coast.

POLYNESIA.

95. Polynesia comprises the islands in the Pacific Ocean east of Papua, Australia, and New Zealand, and lies mainly within the tropics. Some of these islands are volcanic and mountainous; others are coralline and lie low, slightly above the sea-level. Many of the low islands are atolls, consisting of a narrow ring of land with a lagoon in the centre. In some cases the ring is broken here and there, allowing a water passage to the lagoon. The inner shore of the ring, along which the natives have their dwellings, is always calm, while the outer shore is beaten by the wild waters of the ocean.

96. The **climate** is tropical, tempered by sea-breezes, with abundant rainfall. The soil is generous, generally yielding abundance of food for the natives with little labor. The cocoa-nut palm is a characteristic product, and the dried kernel, called copra, is an important export. The islands also yield bread-fruit, coffee, sugar-cane, rice, bananas, oranges, and all kinds of tropical fruits.

97. The **native inhabitants** are chiefly black, frizzle-haired Papuans in the western islands, while those of the eastern groups are lighter-colored, curly-haired Polynesians. The two races are, however, considerably intermingled.

98. Polynesia is often divided into three groups, though the boundary lines vary somewhat with different authors:—

(1.) **Micronesia**, in the north-west, including the *Ladrones*, *Caroline*, *Pelew*, *Marshall*, and *Gilbert Islands*.

(2.) **Melanesia**, in the south-west, including the *Admiralty Islands*, *Bismarck Archipelago*, *Solomon Islands*, *Louisiade Archipelago*, *New Hebrides*, *D'Entrecasteaux*, and *New Caledonia*.

(3.) **Polynesia Proper**, in the east, including the *Hawaiian Islands*, *Fanning Islands*, *Ellice*, *Fiji*, *Samoa*, *Friendly*, *Cook*, *Society*, *Austral*, *Low*, *Marquesas*, *Pitcairn*, and *Easter*.

99. The **Ladrones** comprise ten high islands in the north, and five low islands in the south. They yield yams, maize, and sugar-cane. They are subject to hurricanes and earthquakes. With the exception of Guam, which belongs to the United States, all belong to Germany.

100. The **Caroline** and **Pelew Islands** are surrounded by coral reefs. The products are cocoa-nuts, bread-fruit, bananas, tara, and yams. These islands and the Ladrones were purchased from Spain by Germany in 1899.

101. The **Marshall Islands** are chiefly low atolls, with a lagoon in the centre of the ring. The products are cocoa-nuts and bread-fruit. They belong to Germany.

102. The **Gilbert Islands** comprise many atolls and low coral islets, ruled by native chiefs under British protection.

103. The **Admiralty Islands** and the **Bismarck Archipelago** belong to Germany.

104. The **Solomon Islands** include twelve large and many small islands. The inhabitants are savages. The northern islands of the group belong to Germany, the southern to Great Britain.

105. The **Louisiade Archipelago** belongs to Great Britain.

106. The **New Hebrides** comprise a chain of volcanic islands, extending in a line for about 500 miles, with a united area equal to that of Cape Breton. The principal of the group are *Espiritu Santo*, *Mallicollo*, *Ambrym*, *Annatom*, *Erromango*, *Tanna*, and *Efate*. They are noted as the scene of the labors of Canadian and Scottish missionaries. John Williams and the Gordons were barbarously murdered on Erromango. The islands are under the joint protection of Great Britain and France.

107. The **D'Entrecasteaux Islands** belong to Great Britain.

108. **New Caledonia**, with several neighboring small islands, midway between Australia and New Zealand, belongs to France. French convicts form one-seventh of the population. New Caledonia is one of the two principal sources of the world's supply of nickel. **Noumea**, the capital, has a good harbor.

109. The **Hawaiian Islands**, of which the principal are *Hawaii*, *Maui*, *Molokai*, *Oahu*, and *Kaui*, extend in line for about 340 miles. They are volcanic and mountainous; the cones of *Mauna Loa*, an active volcano, and *Mauna Kea*, an extinct volcano, on Hawaii, rise to the height of nearly 14,000 feet. The most important products are sugar, rice, and bananas. The islands, however, yield almost all the products of tropical and temperate climates. The inhabitants, numbering about 154,000, comprise Hawaiians, Japanese, Chinese, Portuguese, Americans, and English. The native Hawaiians, who form about one-fourth of the population, are considerably advanced in civilization. **Honolulu** (40,000), the capital, on Oahu, is a port of call for steamers between the western ports of America and Australia and eastern Asia and Australia. The islands were annexed to the United States in 1898. **Fanning** and **Christmas Islands** belong to Great Britain.

110. The **Ellice Islands** consist of nine atolls. The natives, generally, have embraced Christianity. The islands are under the protection of Great Britain. Interesting experiments to ascertain the nature of the underlying rocks have been made on one of these islands. In a boring of 1,000 feet in depth, coral was the only rock passed through.

111. **Fiji** comprises two larger islands, *Viti Levu* and *Vanua Levu*, and many small islands. They are mountainous, and are surrounded by barrier reefs broken by navigable channels. The

chief products are sugar, maize, bananas, and cocoa-nuts. The natives furnish a noted example of successful missionary work, having been brought from a state of cannibalism to Christianity through the labors of Wesleyan missionaries. At the request of the ruling chiefs, the islands were annexed to Great Britain in 1874. **Suva**, the capital, on Viti Levu, is a place of call for steamers between Vancouver and Australia.

112. **The Samoan Islands**, formerly known as *Navigator Islands*, consist of a fertile group of islands on the route of steamships sailing between the western ports of America and Australia. They are subject to destructive hurricanes. The principal islands of the group are *Savii*, *Upolu*, and *Tutuila*. **Pango-Pango**, on Tutuila, is the only good harbor. The chief exports are copra, coffee, and cotton. **Apia**, on Upolu, is the only town. On the mountain overlooking the town is the tomb of Robert Louis Stevenson, who made this island his home during the closing years of his life.

FIG. 161.—FIJI: VIEW FROM VITI LEVU.

For several years Samoa was ruled by a native king, under the joint protection of Great Britain, Germany, and the United States. In 1900 this arrangement was broken up. Great Britain withdrew, leaving Tutuila with its harbor *Pango-Pango* to the United States, and the other islands to Germany.

113. The **Friendly Islands**, of which the native name is *Tonga*, and **Cook Islands**, the largest of which is *Raratonga* (30 square miles), belong to Great Britain.

114. The **Society Islands**, the **Austral Islands**, the **Low Archipelago**, and the **Marquesas Islands**, belong to France. **Tahiti**, the largest of the Society Islands, is nearly divided into two islands by inlets of the sea. **Papute**, the capital, has a beautiful situation in the midst of cocoa-nut trees and orange groves.

115. **Pitcairn**, having an area of 3 square miles, is a mountainous island, noted as the place of settlement of the mutinous sailors of the ship *Bounty* in 1789. In 1856, the colony, having become too large for their small island home, removed to Norfolk Island, but subsequently part of them returned to Pitcairn.

116. **Easter Island**, the most easterly of the Polynesian islands, belongs to Chile. It is remarkable for its sculptured stone busts and dwellings, the work of an extinct race of higher civilization than any people now in Polynesia.

PRINCIPAL COUNTRIES AND CITIES OF THE WORLD.

AREA AND POPULATION.

	AREA—SQ. MILES.	POPULATION.
North America	8,870,000	120,000,000
South America	7,300,000	46,000,000
Europe	3,760,000	392,300,000
Asia	16,050,000	830,000,000
Africa	11,262,000	est. at 150,000,000
Australia	2,946,691	4,260,000
Islands	500,000	3,000,000
Total	50,688,691	1,545,560,000

NORTH AMERICA.

DOMINION OF CANADA	3,729,665	7,206,643

PROVINCES OF THE DOMINION OF CANADA.

Nova Scotia	21,428	492,338
New Brunswick	27,985	351,889
Prince Edward Island	2,184	93,728
Quebec	706,834	2,003,232
Ontario	407,262	2,523,274
Manitoba	251,831	455,614
British Columbia	355,855	392,480
Alberta	255,285	374,663
Saskatchewan	251,700	492,432
Yukon	207,076	8,512
North-West Territories	1,242,224	18,481

CITIES AND TOWNS OF CANADA.

Halifax, N.S.	46,619
Sydney, N.S.	17,723
Glace Bay, N.S.	16,562
Amherst, N.S.	5,973
Sydney Mines, N.S.	7,470
Yarmouth, N.S.	6,600
New Glasgow, N.S.	6,363
Truro, N.S.	6,107
Springhill, N.S.	5,713
North Sydney, N.S.	5,413
Dartmouth, N.S.	5,068
Pictou, N.S.	3,179
Lunenburg, N.S.	2,681
St. John, N.B.	42,511
Moncton, N.B.	11,945
Fredericton, N.B.	7,208
Bathurst, N.B.	5,248
Charlottetown, P.E.I.	11,203
Montreal, Que.	470,480
Quebec, Que.	78,190
St. Jean Baptiste (Part of Montreal)	40,364
St. Henri (Part of Montreal)	30,335
Maisonneuve, Que.	18,664
Hull, Que.	18,222

	POPULATION.
Sherbrooke, Que.	16,405
Westmount, Que.	14,879
Three Rivers, Que.	13,691
Verdun, Que.	11,629
Ste. Cunégonde, Que.	1[illegible],174
Lachine, Que.	10,8[illegible]
St. Hyacinthe, Que.	9,797
Valleyfield, Que.	9,449
Sorel, Que.	8,620
Levis, Que.	7,452
Thetford Mines, Que.	7,261
Fraserville, Que.	6,774
Joliette, Que.	6,246
St. Johns, Que.	5,903
Chicoutimi, Que.	5,280
Toronto, Ont.	327,753
Hamilton, Ont.	81,969
Ottawa, Ont.	73,1[illegible]
London, Ont.	46,300
Brantford, Ont.	23,132
Kingston, Ont.	18,874
Peterborough, Ont.	18,360
Windsor, Ont.	17,829
Fort William, Ont.	16,499
Berlin, Ont.	15,196
Guelph, Ont.	15,175
St. Thomas, Ont.	14,054
Stratford, Ont.	12,946
Owen Sound, Ont.	12,558
St. Catherine's, Ont.	12,484
Port Arthur, Ont.	11,220
Sault Ste. Marie, Ont.	10,964
Chatham, Ont.	10,770
Galt, Ont.	10,299
Sarnia, Ont.	9,947
Belleville, Ont.	9,876
Brockville, Ont.	9,374
Woodstock, Ont.	9,320
Niagara Falls, Ont.	9,248
North Bay, Ont.	7,737
Oshawa, Ont.	7,496
Collingwood, Ont.	7,090
Lindsay, Ont.	6,964
Orillia, Ont.	6,828
Cornwall, Ont.	6,598
Barrie, Ont.	6,430
Smith's Falls, Ont.	6,270
Kenora, Ont.	6,156
Cobalt, Ont.	5,638
Welland, Ont.	5,216
Port Hope, Ont.	5,092
Cobourg, Ont.	5,074
Winnipeg, Man.	136,157
Brandon, Man.	13,839
St. Boniface, Man.	7,493

	POPULATION.
Portage la Prairie, Man.	5,892
Vancouver, B.C.	123,902
Victoria, B.C.	31,660
New Westminster, B.C.	13,199
Nanaimo, B.C.	8,168
Calgary, Alta.	43,704
Edmonton, Alta.	24,900
Lethbridge, Alta.	8,050
Medicine Hat, Alta.	5,606
Strathcona, Alta.	5,579
Regina, Sask.	30,213
Moose Jaw, Sask.	13,823
Saskatoon, Sask.	12,004
Prince Albert, Sask.	6,254

POPULATION OF UNITED STATES.

Continental	91,972,266
Alaska	64,356
Hawaii	191,909
Porto Rico	1,118,012
In Military and Naval Service	55,606
	93,402,151

STATES.

New England States—	
Maine	742,371
New Hampshire	430,572
Vermont	355,956
Massachusetts	3,366,416
Rhode Island	542,610
Connecticut	1,114,756
Middle Atlantic States—	
New York	9,113,614
Pennsylvania	7,665,111
New Jersey	2,537,167
Delaware	202,322
Maryland	1,295,346
Virginia	2,061,612
West Virginia	1,221,119
District of Columbia	331,069
Southern States—	
North Carolina	2,206,287
South Carolina	1,515,400
Georgia	2,609,121
Florida	752,619
Alabama	2,138,093
Mississippi	1,797,114
Tennessee	2,184,789
Arkansas	1,574,449
Louisiana	1,656,388
Texas	3,896,542
Oklahoma	1,657,155
East Central States—	
Kentucky	2,289,905
Ohio	4,767,121
Illinois	5,638,591
Michigan	2,810,173
Wisconsin	2,333,860
West Central States—	
Minnesota	2,075,708
Iowa	2,224,771
Missouri	3,293,335
Kansas	1,690,949
Nebraska	1,192,214
South Dakota	577,056
North Dakota	583,888
Highland Section—	
Montana	376,053
Idaho	325,594
Wyoming	145,965
Colorado	799,024
Utah	373,351
Nevada	81,875
New Mexico	327,301
Arizona	204,354
Pacific Section—	
Washington	1,141,990
Oregon	672,765
California	2,377,549

CITIES.

New York, N.Y.	4,766,883
Chicago, Ill.	2,185,283
Philadelphia, Pa.	1,549,008
St. Louis, Mo.	687,029
Boston, Mass.	670,585
Cleveland, Ohio	560,663
Baltimore, Md.	558,485
Pittsburg, Pa. (including Allegheny)	533,905
Detroit, Mich.	465,766
Buffalo, N.Y.	423,715
San Francisco, Cal.	416,912
Milwaukee, Wis.	373,857
Cincinnati, Ohio	364,463
Newark, N.J.	347,469
New Orleans, La.	339,075
Washington, D.C.	331,069
Los Angeles, Cal.	319,198
Minneapolis, Minn.	301,408
Jersey City, N.J.	267,779
Kansas City, Mo.	248,381
Seattle, Wash.	237,194
Louisville, Ky.	233,928
Indianapolis, Ind.	233,650
Providence, R.I.	224,326
Rochester, N.Y.	218,149
Denver, Colo.	213,381
Portland, Oreg.	207,214
Columbus, Ohio	181,548
Toledo, Ohio	168,497
Atlanta, Ga.	154,839
Oakland, Cal.	150,174
Worcester, Mass.	149,986
Syracuse, N.Y.	137,249
New Haven, Conn.	133,605
Birmingham, Ala.	132,685
Memphis, Tenn.	131,105
Scranton, Pa.	129,867
Richmond, Va.	127,628
Paterson, N.J.	125,600
Omaha, Nebr.	124,096
Fall River, Mass.	119,295
Dayton, Ohio	116,577
Grand Rapids, Mich.	112,571

	AREA—SQ. MILES.	POPULATION.
Nashville, Tenn.		110,364
Lowell, Mass.		106,294
Cambridge, Mass.		104,839
Spokane, Wash.		104,402
Bridgeport, Conn.		102,054
Albany, N.Y.		100,253
NEWFOUNDLAND	42,000	242,000
St. John's, N.F.		31,500
Harbor Grace, N.F.		8,000
MEXICO	767,005	13,607,259
Mexico City		344,721
Guadalajara		101,206
Puebla		93,152
Leon		62,623
San Luis Potosi		61,019
CENTRAL AMERICA—		
Guatemala	47,426	1,991,361
New Guatemala		90,000
Honduras	46,658	774,900
Salvador	7,230	1,000,000
San Salvador		60,000
Nicaragua	51,660	600,000
Leon		45,000
Costa Rica	23,000	379,533
San José		27,500
British Honduras	8,266	40,458
Belize		10,478
WEST INDIES—		
Cuba	44,000	2,048,980
Havana		297,000
Santiago de Cuba		45,000
Matanzas		37,000
Haiti	28,000	1,300,000
Haiti, Republic of	10,204	800,000
Port-au-Prince		100,000
Dominican Republic	18,045	500,000
San Domingo		25,000
Porto Rico	3,600	1,118,012
San Juan		45,716
BRITISH ISLANDS—		
Jamaica	4,193	806,690
Kingston		57,379
Bahamas	4,404	53,735
Nassau		10,000
Trinidad	1,754	233,397
Port of Spain		60,000
Barbadoes	166	196,588
Bridgetown		30,000
Windward Isles	506	157,271
Leeward Isles	700	122,751
Bermudas	20	18,994
FRENCH ISLANDS—		
Guadeloupe	780	182,110
Pointe-a-Pitre		18,000
St. Bartholomew	8	3,000
Marie Galante	55	14,268
Desirade	10	1,200
Martinique	381	182,024
St. Pierre and Miquelon	91	6,500
St. Martin (French part)	17	3,000
DANISH ISLANDS—		
St. Thomas	32	11,012
St. John	21	926
Santa Cruz	84	18,500
DUTCH ISLANDS—		
St. Martin (south end)	21	3,187
Saba	5	2,294
St. Eustache	7	1,283
Curaçao	210	30,385
Oruba	69	8,535
Buen Ayré	95	6,235
Margarita	400	40,000
Greenland	34,000	10,516
Iceland	40,497	78,479

SOUTH AMERICA.

Colombia	473,000	4,000,000
Bogota		100,000
Medellin		50,000
Venezuela	363,728	2,663,671
Caracas		85,000
Ecuador	120,000	1,270,000
Guayaquil		60,000
Quito		55,000
British Guiana	90,277	305,090
Georgetown		48,802
Dutch Guiana	49,845	92,142
Paramaribo		33,821
French Guiana	51,000	30,000
Cayenne		12,250
Brazil	3,218,166	20,000,000
Rio Janeiro		811,443
Sao Paulo		332,000
Bahia		230,000
Pernambuco or Recife		136,000
Para		100,000
Porto Alegre		73,574
Maranhao		70,000
Peru	464,000	3,548,000
Lima		141,000
Arequipa		35,000
Callao		31,128
Bolivia	570,000	2,210,000
La Paz		78,856
Sucre		23,416
Chile	290,741	3,110,085
Santiago		250,000
Valparais		180,000
Concepcion		49,251
Talca		42,766
Argentine Republic	1,212,000	6,800,000
Buenos Ayres		1,220,000
Rosario		120,000
La Plata		84,000
Tucuman		55,000
Cordoba		48,000
Mendoza		32,000
Paraguay	173,000	800,000
Asuncion		80,000
Uruguay	72,172	1,000,978
Monte Video		310,000

EUROPE.

	AREA—SQ. MILES.	POPULATION.
England	50,900	34,027,659
Wales	7,400	2,027,610
Scotland	29,000	4,759,821
Ireland	31,750	4,361,951
Norway	124,000	2,370,000
Sweden	172,000	5,521,943
Denmark	14,844	2,568,919
Russia	2,062,490	133,850,700
German Empire	210,000	64,903,423
Austria-Hungary	241,000	51,240,603
Holland	12,582	5,945,155
Belgium	11,373	7,516,730
France	207,218	39,252,245
Switzerland	15,469	3,463,609
Spain	196,173	19,712,585
Portugal	34,500	5,428,800
Italy	110,600	33,910,000
Greece	41,933	4,521,800
Turkey	10,882	1,891,000
Bulgaria	43,305	4,752,997
Rumania	53,489	7,508,000
Servia	33,891	4,547,992
Montenegro	5,603	516,000
Andorra	175	6,000
Liechtenstein	61	9,554
Luxemburg	1,000	259,891
Monaco	8	16,000

POPULATION OF THE PRINCIPAL CITIES OF EUROPE.

England—	
London	4,523,000
"Greater London"	7,252,963
Liverpool	767,606
Manchester	716,354
Birmingham	570,113
Leeds	490,985
Sheffield	478,763
Bristol	382,550
West Ham	328,565
Bradford	295,865
Newcastle-upon-Tyne	286,961
Hull	280,006
Nottingham	266,471
Leicester	248,374
Salford	244,636
Portsmouth	217,989
Cardiff	199,189
Bolton	190,315
Croydon	164,485
Sunderland	161,063
Oldham	144,111
Blackburn	137,972
Gateshead	133,676
Brighton	131,900
Derby	131,256
Plymouth	126,266
Norwich	125,446
Birkenhead	122,431
Preston	119,253
Halifax	112,518
Burnley	107,448
Wolverhampton	105,962
Swansea	96,617
Huddersfield	94,702
Douglas (Isle of Man)	21,101
Scotland—	
Glasgow	864,520
Edinburgh	320,276
Aberdeen	185,703
Dundee	170,906
Paisley	93,584
Leith	86,767
Greenock	73,605
Perth	37,275
Kilmarnock	35,091
Ireland—	
Dublin	402,928
Belfast	391,167
Cork	76,122
Londonderry	39,892
Limerick	38,151
Waterford	36,769
Norway and Sweden—	
Stockholm	341,986
Christiania	240,178
Gothenburg	130,619
Bergen	72,179
Denmark—	
Copenhagen	459,000
Russia—	
Petrograd	1,900,000
Moscow	1,500,000
Warsaw	756,426
Odessa	449,673
Lodz	351,570
Kiev	329,000
Riga	256,197
Kharkof	197,405
Vilna	162,623
Helsingfors	160,000
Kazan	143,707
Saratov	143,431
Ekaterinoslav	135,562
Astrakhan	121,560
Rostov	119,889
Tula	109,279
Nijni-Novgorod	96,000
German Empire—	
Berlin	2,100,000
Hamburg	917,750
Munich	590,000
Leipsic	589,850
Dresden	542,500
Breslau	506,175
Cologne	428,503
Frankfort-on-the-Main	334,951
Bremen	299,526
Nuremberg	294,344
Stuttgart	285,589
Düsseldorf	252,630
Hanover	250,032
Chemnitz	244,405
Magdeburg	240,661
Charlottenburg	237,231
Stettin	224,078

	POPULATION.
Königsberg	219,962
Strassburg	178,891
Altona	168,301
Elberfeld	167,362
Halle	160,031
Dantzic	159,668
Barmen	156,146
Aix-la-Chapelle	143,906
Brunswick	142,554
Krefeld	109,119
Austria-Hungary—	
Vienna	2,050,000
Buda-Pesth	632,703
Prague	497,906
Trieste	223,037
Lemburg	159,818
Gratz	138,270
Cracow	94,696
Holland—	
Amsterdam	570,067
Rotterdam	422,132
The Hague	274,236
Utrecht	114,321
Belgium—	
Brussels	720,000
Antwerp	327,[illegible]
Liège	[illegible],532
Ghent	162,162
France—	
Paris	2,344,336
Marseilles	517,498
Lyons	472,114
Bordeaux	237,707
Lille	196,624
Toulouse	149,438
St. Etienne	146,788
Nantes	123,247
Havre	129,403
Roubaix	119,955
Rouen	111,402
Rheims	102,300
Switzerland—	
Zurich	190,000
Basel	130,000
Geneva	120,000
Berne	75,000
Spain—	
Madrid	540,000
Barcelona	509,589
Valencia	214,000
Seville	150,000
Malaga	130,000
Portugal—	
Lisbon	356,009
Oporto	167,955
Italy—	
Milan	611,184
Rome	500,113
Naples	564,000
Turin	221,962
Genoa	255,294
Florence	220,379

	AREA—Sq. MILES.	POPULATION.
Venice		168,234
Messina		156,812
Catania		157,728
Bologna		153,501
Leghorn		96,823
Valetta		40,406
Greece—		
Athens		238,461
Salonica		160,000
Turkey—		
Constantinople		1,100,000
Adrianople		80,000
Bulgaria—		
Sofia		102,760
Philippopolis		47,929
Varna		41,317
Rustchuk		25,823
Rumania—		
Bucharest		227,643
Jassy		78,987
Galatz		62,678
Servia—		
Belgrade		90,000
Montenegro—		
Cetinje		5,000

ASIA.

Russia	6,336,534		29,926,600
Turkey	680,000		17,000,000
Persia	630,000		10,000,000
Afghanistan	246,000		5,000,000
Baluchistan	132,315		914,561
British India	1,773,000		315,000,000
Ceylon	25,500		4,100,000
Straits Settlements	1,660		650,000
Siam	178,000		6,000,000
French Indo-China	310,000		16,500,000
China	4,299,500		426,000,000
Korea	71,000		12,000,000
Japan	162,655		40,232,822
Arabia	1,200,000		4,825,000

PRINCIPAL CITIES OF ASIA.

Asiatic Russia—	
Baku	179,133
Tiflis	160,645
Tashkend	156,000
Khokand	86,704
Tomsk	63,533
Bokhara	60,000
Samarkand	58,194
Omsk	53,060
Irkutsk	46,106
Vladivostock	28,000
Batum	26,512
Tobolsk	21,401
Asiatic Turkey—	
Smyrna	200,000
Damascus	200,000
Bagdad	145,000
Aleppo	125,000
Beirut	120,000

	POPULATION.
Brusa	75,000
Mecca	60,000
Jerusalem	60,000
Sana	50,000
Basra	50,000
Aden	43,974
Erzerum	43,000
Muscat	40,000
Trebizond	40,000
Jedda	40,000
Diarbekir	38,000
Aidin	36,000
Scutari	32,000
Home	30,000
Riad	30,000
Angora	28,000
Medina	20,000
Persia—	
Teheran	210,000
Tabriz	160,000
Meshed	80,000
Ispahan	60,000
Yazd	60,000
Reshd	60,000
Shiraz	60,000
Bushire	25,000
Afghanistan—	
Kabul	150,000
Kandahar	30,000
Herat	12,000
British India—	
Calcutta	1,216,514
Bombay	972,930
Madras	517,338
Hyderabad	499,840
Rangoon	293,316
Lucknow	260,621
Delhi	232,859
Lahore	228,318
Ahmedabad	215,448
Benares	204,222
Bangalore	189,393
Agra	182,419
Cawnpore	174,061
Allahabad	166,463
Karachi	159,270
Poona	157,666
Amritsar	152,886
Mandalay	138,456
Jaipur	136,491
Patna	136,470
Bareilly	127,476
Srinigar	126,358
Trichinopoli	122,037
Gwalior	119,433
Meerut	115,471
Surat	114,116
Baroda	103,790
Nagpore	101,364
Peshawar	96,147
Multan	87,894
Calicut	76,961

	AREA—SQ. MILES.	POPULATION.
Mysore		68,111
Moulmein		58,346
Tanjore		57,879
Serampore		64,481
Aurangabad		36,837
Simla		35,260
Hardwar		25,867
Darjiling		17,000
Murshidabad		15,168
Arcot		11,000
Howra		(included in Bombay)
Ceylon—		
Colombo		182,099
Straits Settlements—		
Singapore		228,500
Siam—		
Bangkok		628,678
French Indo-China		
Hanoi		100,000
Saigon		64,765
Hué		41,000
Prompenh		30,000
China—		
Canton		1,250,000
Pekin		1,000,000
Singon Fu		1,000,000
Hankow		800,000
Hangchow-fu		800,000
Tien-tsin		750,000
Fuhchow		640,000
Ningpo		500,000
Shanghai	400,000	411,753
Amoy		300,000
Victoria (Hong-kong)		283,905
Mukden		250,000
Nanking		140,000
Kirin		120,000
Yarkand		100,000
Kashgar		62,000
Swatow		60,000
Yvunan Fu		45,000
Lhasa		30,000
Korea—		
Seoul		250,000
Japan—		
Tokio		2,190,000
Osaka		1,200,000
Kioto		350,548
Yokohama		326,035
Nagasaki		153,293
Hakodate		84,746
Taiwan		70,000

AFRICA.

Morocco	314,000		8,000,000
Algeria	184,474		4,500,000
Tunisia	50,000		2,000,000
Tripoli	410,000		1,200,000
Egypt	400,000		11,287,281
Sudan	2,000,000		40,000,000
Abyssinia	350,000		7,000,000

	AREA—SQ. MILES.	POPULATION.
Sahara	2,000,000	2,000,000
Liberia	45,000	2,015,000
Belgian Congo	900,000	15,000,000-30,000,000
Cape of Good Hope	276,995	2,563,024
Transvaal	110,425	1,676,611
Orange Free State	50,392	526,906
Natal	35,371	1,191,958
Madagascar	229,820	2,660,361

CITIES OF AFRICA.

Cairo	663,353
Alexandria	387,916
Tunis	227,519
Johannesburg	155,642
Algiers	145,286
Fez	120,000
Oran	100,499
Zanzibar	100,000
Vida	90,000
Antananarivo	70,000
Durban	69,167
Cape Town (with suburbs, 149,461)	67,170
Tripoli	60,000
Morocco	50,000
Pretoria	48,609
Port Said	42,000
Tangier	40,000
Freetown	34,463
Port Elizabeth	30,676
Kimberley	29,519
Pietermaritzburg	29,347
Bloemfontein	26,929
East London	21,277
Monrovia	6,000
Barberton	2,433

OCEANIA.

Queensland	670,500	605,043
New South Wales	310,367	1,648,210
Victoria	87,884	1,315,000
South Australia	380,070	406,556
West Australia	975,920	280,316
Tasmania	26,215	190,696
New Zealand	104,751	1,071,428
New Guinea	312,329	650,000
Hawaiian Islands	6,449	170,000
Sumatra	162,000	3,186,312
Java	51,000	30,098,008
Borneo	283,358	1,850,000
Celebes	77,855	2,000,000
Philippine Islands	121,395	7,635,426
Moluccas	44,000	431,000

CITIES OF OCEANIA.

Sydney	613,500
Melbourne	568,810
Manila	219,928
Adelaide	192,294
Surabaya	146,944
Brisbane	143,077
Batavia	115,567
Auckland	102,676
Perth	94,560
Christchurch	80,193
Wellington	70,729
Dunedin	64,237
Palembang	53,497
Ballarat	44,000
Honolulu	39,300
Hobart	38,055
Geelong	28,880
Launceston	24,536
Macassar	17,925
Newcastle	14,250
Padang	12,000
Amboyna	8,000
Sandakan	7,000

RACES OF MEN.

Mongolian	650,000,000
Caucasian	545,500,000
Negro	170,000,000
Semitic	80,000,000
Malay	35,000,000
American Indian	23,000,000

RELIGIONS.

Christians—		
Catholics	272,638,500	
Protestant	166,066,500	
Greek Church, Armenians, Copts, etc.	120,638,500	
		558,862,000
Confucians		291,616,000
Mohammedans		216,630,000
Hindus		209,639,000
Buddhists		137,935,000
Jews		11,222,000
Others		77,000,000

HEIGHTS OF NOTED MOUNTAIN PEAKS.

		FEET.
North America—		
Mount Logan	Canada	19,500
Orizaba	Mexico	18,314
Mount St. Elias	Canada	18,015
Popocatepetl	Mexico	17,550
Wrangell	Alaska	17,500
Hooker	Canada	15,700
Whitney	California	14,522
Rainier	Washington	14,444
Shasta	California	14,440
Long's Peak	Colorado	14,270
Pike's Peak	Colorado	14,147
Fremont's Peak	Wyoming	13,570
Hood	Oregon	11,934
Blue Mountain	Jamaica	7,300
Mitchell	North Carolina	6,710
Washington	New Hampshire	6,288
South America—		
Aconcagua	Chile	22,860
Chimborazo	Ecuador	20,498
Cotopaxi	Ecuador	19,613
Arequipa	Peru	19,200
Tolima	Colombia	18,325

			FEET.
Europe—			
Elbrus (Caucasus)	Russia		18,526
Mont Blanc (Alps)	France and Italy		15,781
Monte Rosa (Alps)	Switzerland		15,217
Finsteraarhorn (Alps)	Switzerland		14,026
Mulhacen (Sierra Nevada)	Spain		11,660
Etna	Sicily		10,835
Olympus	Greece		9,750
Ben Nevis	Scotland		4,406
Vesuvius	Italy		4,200
Snowdon	Wales		3,590
Asia—			
Everest (Himalayas)	India		29,002
Demavend (Elburz)	Persia		18,200
Ararat	Armenia		17,300
Fujiyama	Japan		12,365
Hermon	Syria		9,200
Sinai	Arabia		8,600
Africa—			
Kilimanjaro	East Africa		19,680
Kenia	East Africa		18,500
Teneriffe	Canary Islands		12,200
Pico	Azores		7,600
Oceania—			
Mauna Loa	Hawaii		13,760
Mount Cook	New Zealand		12,360
Kosciusko	New South Wales		7,336

LENGTH OF RIVERS.

		MILES.
North America—		
Missouri-Mississippi	United States	8,900
Mackenzie	Canada	2,000
Yukon	Canada and United States	2,000
St. Lawrence	Canada	2,000
Colorado	United States	2,000
Rio Grande del Norte	Texas	1,800
Nelson	Canada	1,500
Columbia	United States and British Columbia	1,400
St. John	New Brunswick	500
South America—		
Amazon	Brazil	3,300
La Plata (with Paraguay and Lower Parana)	Argentine Republic	2,580
São Francisco	Brazil	1,800
Orinoco	Venezuela	1,600
Europe—		
Volga	Russia	2,400
Danube	Eastern Europe	1,770
Dnieper	Turkey	1,200
Don	Russia	1,100
Dwina	Russia	1,000
Dniester	Russia	600
Rhine	Germany, etc.	800
Elbe	Germany	725
Vistula	Northern Europe	650
Loire	France	600
Tagus	Spain	566
Oder	Germany	550
Rhone	France	500
Seine	France	482
Guadiana	Spain	400
Po	Italy	400
Shannon	Ireland	250
Thames	England	228
Severn	England	200
Asia—		
Yang-tse-kiang	China	3,200
Yenesei	Siberia	3,000
Lena	Siberia	2,800
Mekong	Further India	2,800
Hoang-ho	China	2,700
Ob	Siberia	2,500
Amoor	Siberia	2,400
Indus	India	1,800
Brahmaputra	India	1,800
Euphrates	Eastern Asia	1,500
Ganges	India	1,557
Irawadi	Burma	1,500
Africa—		
Nile	Egypt	3,400
Congo	Central Africa	3,000
Niger	Western Africa	2,600
Zambesi	South Africa	1,500
Orange	South Africa	1,200
Limpopo	South Africa	900
Oceania—		
Murray	Australia	1,000

AREA OF LAKES.

		SQ. MILES.
North America—		
Superior	Canada and United States	31,200
Huron	Canada and United States	23,800
Michigan	United States	22,000
Great Bear Lake	Canada	14,000
Erie	Canada and United States	9,600
Ontario	Canada and United States	7,500
Great Salt Lake	United States	2,000
South America—		
Titicaca	Peru	3,200
Europe—		
Ladoga	Russia	6,996
Onega	Russia	3,763
Wener	Sweden	2,200
Wetter	Sweden	733
Geneva	Switzerland	225
Lough Neagh	Ireland	153
Loch Lomond	Scotland	100
Asia—		
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Aral	Russia	24,500
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Dead Sea	Palestine	320
Africa—		
Victoria Nyanza	Central Africa	30,000
Tanganyika	Central Africa	12,650
Chad	Central Africa	4,000-19,000
Nyassa	Central Africa	14,000
Albert Nyanza	Central Africa	2,000

PRONOUNCING VOCABULARY AND INDEX.

KEY TO PRONUNCIATION.

a, or ă, as in *pat*.
ā, as in *pate*.
ä, as in *bar*.
å, as in *ball*.
e, or ĕ, as in *met*.
ē, as in *mete*.
ė, as in *her*.
i, or ĭ, as in *pin*.
ī, as in *pine*.
o, or ŏ, as in *pot*.
ō, as in *bone*.
ȯ, as in *move*.
u, or ŭ, as in *nut*.
ū, as in *mute*.
u, as in *pull*.
ü, German *ü*.
ou, or ow, as *ow* in *cow*.
ai, as in *air*.
oi, as in *boil*.
oh, as in *church*.
g, as in *go*.
j, as in *jam*.
th, as in *thin*.
th, as in *then*.
ñ, French *n*, as in *bon*.

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