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No. 11

Nov.

THE
Nova Scotian

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ACADIAN SCIENTIST.
HALIFAX, N. S.

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A. J. PINEO, EDITOR.

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As this collection is specially designed to illustrate the geology and mineralogy of Nova Scotia, I have, for the greater part, and in as far as practicable, used native material; but in cases where better typical specimens could be procured from other countries, I have not hesitated to select them. Though the variety of the mineral productions of Nova Scotia is great, yet there are some typical minerals, necessary to the student, not represented here. Such have been added in as far as possible.

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The Acadian Scientist.

Devoted to the Interests of Education and Popular Science.

VOL. I.

WOLFVILLE, N. S., NOVEMBER, 1883.

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THE ACADIAN SCIENTIST is published monthly (ten numbers in a volume.) The subscription price is only fifty cents a year. A Canadian Post Office Order for that amount costs but two cents. Canadian or United States stamps taken if no other form of remittance is convenient.

A blue cross on the wrapper indicates that your subscription expires with the present number. We would solicit your renewal of the same at an early date.

WE make this month the promised enlargement. We hope that this is but the beginning of progress, and that we shall soon be able to increase the size and improve the quality of our little journal.

The outlook is promising. A number of eminent educators and specialists in various departments of natural history and science are interested in the movement and have promised assistance. A prominent feature in the SCIENTIST will therefore be scientific lectures, natural history lessons, and hints in regard to teaching, such as will be of value to those engaged in imparting instruction in elementary science, whether in the public school or elsewhere. Our enterprise would seem, therefore, to be worthy of the hearty sympathy and support of members of the teaching profession everywhere; and as by an enlarged subscription list we should be better able to make desired improvements, we ask you first to subscribe yourself, if you have not already done so, and afterwards to induce

others to do the same. The subscription price is but nominal, being placed as near the actual cost as possible. Send *twenty cents* in silver coin for a half-year's trial subscription, and we feel sure that you will be so well pleased with your investment that you will become a permanent subscriber.

According to the custom of most educational journals we shall henceforth give our readers, and ourself the benefit of a midsummer vacation, feeling sure that this will be agreeable to all. Henceforth, therefore, ten numbers will constitute a volume

For the SCIENTIST.

COLLECTING AT BLACK ROCK.

Along the shores of the Bay of Fundy there is scarcely a prettier little harbor than Black Rock, situated from Cape Blomidon westward about twenty-five miles. Here there is a break of a few rods in width in the mural precipice of dark-colored trap which stretches away on either side, and a narrow gorge runs inland towards the summit of the mountain. The little creek at its lower part affords a safe harbor for fishing boats, while a small break water at its mouth provides a shelter for larger vessels which put in to escape the storm, or, more frequently, to be loaded with cordwood for Boston

or some other New England market. The population of this little hamlet consists of a few dozen families most of whom gain a livelihood by practicing the piscatorial art combined with agriculture in a small way, while some, for a moderate recompense, dispense hospitality to summer boarders, for the place is a favorite resort for those who wish to enjoy the cooling sea breezes during the mid-summer months.

The name is not confined, however, to this little harbor but is shared in common with a similar depression half a mile farther west. Indeed if the name were to be restricted it would be more properly applied to the latter place, for there, stretching out from the shore, is the dark basaltic rock of amorphous trap that gave the place its name.

This rock is an object of interest to the marine zoologist. During neap tides the water scarcely leaves the little bar that connects it with the shore; but at other times the retreating tide makes the access easy and even allows the visitor to wander about its ledges and search its crevices and tiny pools for two hours or more.

It was our good fortune in company with a friend, an enthusiastic naturalist, to spend two pleasant weeks of the last mid-summer vacation at this interesting locality. We went there not for the purpose of lounging about and spending the time in listless inactivity as we found others doing, but to work. And work we did. At early morning, equipped with hammers and satchels and well stocked lunch-baskets, we would set off on a tramp of perhaps a dozen miles along the rocky shore; at evening as the shades of twilight were deepening over land and sea we would return and ascend to the little cottage that furnished us a home during our short visit, somewhat wearied with our walk and weight of specimens,

it is true, but enthusiastic still—and hungry.

We were always within sight and sound of the sea. From the little apartment which served as store-room, work-room, sanctum and dining-room, we could look down upon the placid waters of the Bay of Fundy, whose tiny ripples reflected the dancing sheen of the sun-light or spread a golden-paved pathway far out into the glowing west. Then there was varied music. Sometimes could be heard the rippling murmur of the tide upon the sands below and the gentle lappings of the wavelets as they played among the rocks. Again there was a grander anthem as the storm-wind came down in his wrath and lashed the sea into foam, rolling huge breakers shoreward and sending the curling spray high up the cliffs and over the huge "black rock" which lay like some stranded sea-monster amid the angry waves.

When the weather was fair we lost not a day from the shore. Either the cliffs, with their seams and cavities of beautiful minerals, attracted our attention, or the time was spent searching among the rocks and pools for marine life. Occasionally indeed our searching would be turned to practical account and a short time, at low water, would be spent in dragging the resisting and pugnacious lobster from his lurking-place among the rocks. "No canned fruit, this," we remark as we consign our fresh and lively prey to the tender mercies of the cook.

To the mineralogist Black Rock presents superior attractions. Here we found beautiful white stilbite in generous quantities, and of a quality such as we have never seen excelled. Fine doubly terminated sheafs of crystals were not rare. Heulandite, too, is fine and somewhat abundant. The prevailing color is red, but whit

is also found. Much of the trap here is amygdaloid of every variety and texture. In some the cavities are lined with beautiful crystals of heulandite, white and red. In another variety they are filled with Thomsonite, a finely radiated mineral of the zeolite group, while small crystals of diabantite, of the chlorite group, are found encrusting the cavities of another variety. Laumontite is abundant, but owing to the fashion which this mineral was of crumbling when exposed to the air and free from moisture, it is not always easy to get good cabinet specimens. So abundant is it in some places that, owing to its crumbling, the cliff is there made more susceptible to the action of the waves and cavern of considerable dimensions are formed. Apophyllite in square prisms and of a varying green color is also found here, sometimes associated with the preceding. Ulexite, a beautiful mineral composed of satin-like fibres, and quite fragile, was also found in small quantity, as also several others, which, for the sake of the general reader, we will not describe.

Very interesting also were our visits to "The Rock" and to other parts of the beach at low water, on which occasions shells, crabs, star-fishes and other marine animals, together with a variety of sea weeds, would be stowed promiscuously into the collecting basket to be assorted and cared for at leisure. But space forbids a description of our work in this line. Suffice it to say that every minute of those two weeks was thoroughly enjoyed. Even a rainy day was considered no disadvantage. There were animals to be dissected, there were objects to be mounted for the microscope, there were uncertain minerals to be tested, and the accumulating material to be packed for transportation.

We wish that every reader of the SCIENTIST who is at all interested in the study of Nature, could visit Black Rock as we did; and not Black Rock alone but other points of interest near, such as Cape d'Or just across the Bay, Isle Haut, standing grim and solitary farther out, Cape Split to the eastward, standing out like a gigantic break-water to enclose Scotts Bay, a little farther on, Cape Blomidon of poetic fame, and many other localities of equal interest. We have a country of whose mineral wealth in respect both of those that are ornamental and useful we should feel proud. Some of the minerals that we have mentioned, together with others not enumerated, are not to be surpassed by those of any other country, while Nova Scotia's mines of gold and iron and coal rank among the best. What could be more fitting than that every young man and young woman, boy and girl, in Nova Scotia should gain a practical acquaintance with those minerals for which our country is so justly celebrated?

For the SCIENTIST.

CHEMISTRY.

II.

The chemist considers all matter, whether solid, liquid or gaseous as made up of minute particles, which, being arranged in close approximation, go to make up larger bodies. These particles are of themselves too small to be observed. These very minute portions of matter are called by the chemist *molecules*, that is the smallest particle of matter which can exist in a free state, or it is the ultimate limit of divisibility by mechanical means. Thus, one of the smallest particles into which we can conceive a drop of water to be divided would be termed a molecule of water.

Generally speaking these molecules are acted upon by two opposing forces

—cohesion and heat—the former tending to hold them closely together, the latter to separate them. It is these two forces which determine the condition of all matter, solid liquid or gaseous. Some substances at a certain temperature are solid. If heat be applied to these substances liquids are produced, and by a further application of heat these liquids may become gases. A good example of this is ice, which is a well-known solid. By the action of heat this solid soon becomes liquid, and if the heat be continued a gas known as steam will be produced. Ice, water and steam are precisely the same except in their condition.

While molecule is considered the smallest particle into which any substance can be divided by mechanical means, or “the smallest quantity of a substance that can exist in the free state,” yet by chemical means the molecule may be divided into smaller particles called *atoms*. For instance the chemist by passing a current of electricity through a volume of water divides it into two distinct substances oxygen and hydrogen. Every molecule of this water then must consist of these two distinct substances. If this volume of water be weighed and the oxygen and hydrogen be also weighed, it will be found that the weight of the oxygen and hydrogen combined will be the same as the water before its decomposition. It will be further discovered that the volume of hydrogen will be double that of the oxygen. But when taken by weight the oxygen will be found to be eight times as heavy as an equal volume of hydrogen, therefore he will conclude that the weight of hydrogen and oxygen will be in the ratio of 2 to 16. By experiment this ratio of hydrogen to oxygen has always been found to exist in water. Further it has been clearly proved by experiments that all

substances combine chemically in definite proportions and that when one body united with another in more than one proportion, the second is always some multiple of the first. For instance nitrous oxide is formed by taking 28 parts by weight of nitrogen and combining with 16 parts of oxygen. Again nitric oxide is formed by taking 28 parts of nitrogen and 32 parts of oxygen. Here we have by $\frac{1}{2}$ weight oxygen double of what it was in the formation of nitrous oxide. It is impossible to combine oxygen with any substance in different proportions than 16 or some multiple of 16 to the weight of the substance with which the combination takes place. If 28 lbs. of nitrogen and 24 lbs. of oxygen were used the chemist would be unable to produce anything but nitrous oxide, and the 8 lbs. of oxygen would remain uncombined.

The term *radicle* in chemistry may be divided into two classes, simple and compound.

Simple radicles are those which include all the elements. For instance potassium is termed the radicle of a number of compounds, combining with oxygen, chlorine, etc.

A compound radicle is one which is composed of two or more simple substances, which are so closely united as to act in every way like a simple substance, combining with various substances to form compounds. Thus ammonium, a compound of hydrogen and nitrogen, is termed a compound radicle since it may be used in combination the same as the elements and its action in forming compounds is very nearly the same as sodium.

The word *element* which has been used several times, is used in chemistry to denote a substance which will not admit of being analyzed. Chemistry recognises sixty-four simple substances or elements. To these sixty-four ele-

ments and to the compounds which they make certain names have been given, which have been so arranged as to assist the student as far as possible in obtaining information concerning the properties of the bodies and if a compound to tell the nature and proportion of the elements comprising it.

(For the SCIENTIST.)

A DAY IN THE DELLS OF THE WISCONSIN.

It was in the latter part of August, '82, that the writer, in company with a friend from Chicago, started out to visit some of the beautiful summer resorts of Wisconsin, and to see some of its romantic scenery. On board of a northern bound train on the St. Paul road we passed swiftly through the quiet lake-side towns till we came to Milwaukee. Here we rested for a while and refreshed ourselves, but not with lager beer, for which this city is most famous, and again we pushed onward towards the interior of the State till we found the handsome village of Oconomowoc nestling among the lakes and hills. Here we tarried for the night, taking up our quarters at a hotel large enough to accommodate a thousand guests. The next day found us at Kilburn City on the banks of the Wisconsin River. This is a pleasant burg, chiefly so on account of its picturesque location. But I hasten to the Dells. After enjoying another refreshing night's rest in a clear airy atmosphere which we found much more conducive to sleep than that of Chicago, we were up in the early morning and on board of a small river steamer bound for the Dells. These Dells, so attractive to tourists in these parts are nothing more than narrows in the river walled up on either side by high sandstone banks. The river, besides, is very crooked at

this point and the steamers wind backward and forward around sharp points as though they followed the track of a serpent. At a time before rail-roads were so numerous in this part of the country as they are now, great quantities of lumber were rafted down this river and I was shown many sharp, projecting rocks in these narrows where large numbers of lumbermen had met their doom. The current is very swift and the passage very dangerous, but I noticed that some lumber still seeks an outlet this way. At a bend in the river where the bank is low stands the Old Dells Tavern, now deserted, and looking more like a haunted house here in the midst of the forest than anything I have seen before. Marvellous are the stories still told about carousals which took place there when the lumber trade was booming. But the sound of mirth, and high dispute no longer disturb this quiet nook.

Another legend gives a name to the narrowest point of the river. About 1840 occurred here the famous Black Hawk war; and the story is that the doughty chief pursued by the pale-faced foe fled to the bend where the river was only 50 feet wide and made his pony leap to the opposite bank, and so escaped. The name of the place is Black's Hawk's Leap unto this day.

While I am about it I must tell you one more legend as briefly as possible. It adds much to such a trip to hear these legends, especially if you can believe them, and who could not if he heard the old river men tell them? A little north and east from the Dells is a most romantic spot called Devil's Lake. The surroundings are such that it seems as though the mountain had parted and the water flowed in to form the lake. The legend is this. The Indian chief had a very beautiful daughter whom no one was able to

woo. At length some shrewd prince belonging to a distant tribe came and accomplished the fete. But the parent was unwilling to part with his child, and then the tragic moment came. The stranger caught her in his arms and fled to the top of the mountain. The angered father with his tomahawk took up the pursuit; but the stranger on the summit now proclaimed himself as Satan, stamped his foot on the earth, and the mountain clave asunder, and water flowed in which is now known as Devil's Lake. The Indians are said still to hold the place in dread, and will eat no fish which come out of these waters. But I must not weary you with legends as I suppose you deal only in scientific facts.

I believe this section of country is considered to be the oldest part of the American Continent. The rock is a sort of coarse, brown sandstone. It is quite soft and it is very curious to notice the peculiar shapes into which it has been worked by the rapid currents here. One small cove is called the Navy Yard, and the rocks are worn so as to give the appearance of the sterns of a number of ships. Another very peculiar projection has the unpoetic name of the Devil's Elbow. By the way that gentleman seems to have been in high favor here at some time, and the places which bear his name are legion.

All along the banks of the river here are names of youths who have sought to immortalize themselves by carving their names on the highest rocks. I should think the immortality would be somewhat transient as the rock is very easily corroded, and the names will not last much longer than the foot-prints on the sands of time. Nor are they only boys who do this, for at one place I read this inscription "Leroy Gates," Pilot on this river from 1844 to 1880." He was no boy.

Perhaps the most interesting places here are two deep gorges opening from the river up into the side of the bluff. They are known as Cold Water Canyon, and Witche's Gulch. They are merely wide enough in most places for one to walk up them. Indeed at some points you have scarcely room to go through. One such place has the suggestive name of Fat Man's Misery. These canyons have high walls from 40 to 90 feet in height. At the bottom of each flows a stream of clear, cold water which has evidently been the agent that in many centuries has done the work of wearing out these deep gorges. At some places where the gorge widens there are stands with fruit, pea-nuts and lunch for the tourists who are here by the dozen. At the head of one of these gorges I climbed up onto the top of the bluff and gathered some mountain tea-berries, and may-flower leaves, reminders of your old loved Scotia.

I might go on in this way to relate numerous legends, and tell of many sights but I must trespass no further. If any of your readers ever go to Wisconsin, they should visit the Dells themselves.

Yours very truly,

ABOQUERT.

ENTOMOLOGY.

We are glad to observe that the hitherto meagre entomological collections exhibited at our Provincial Exhibition have been excelled at the late Exhibition at St. John. The newspaper reporters spoke highly of two collections, one from Pictou, Nova Scotia, containing twelve hundred and fifty specimens, beautifully mounted, and one from the Natural History Society of St. John, containing seven hundred specimens. We quote the following note of the Principal of the

Pictou Academy, from the *Colonial Standard*:

"In the St. John and Halifax papers, and those quoting from them, the Entomological collection from Pictou which received so much praise was credited to the "Entomological Club of the Pictou Academy." The collection however was not that of the Club but of one of its members. The credit of the exhibit is entirely due to Mr. Lowrey P. McLennan, this year the President of the Club. In about nine months he collected and mounted the 1250 specimens exhibited in St. John in addition to his duplicates and contributions to the collection of the Club which forms one section of the "Science Association" of the Pictou Academy. His single collection being larger than the entire collection from the Natural History Society of St. John, is no small honor to his energy as a student of Natural History. I know the papers referred to will gladly encourage such work and give the credit to whom it is due."

We are glad to see Nova Scotia ahead in at least one branch of Natural History. The object of the ACADIAN SCIENTIST is to stimulate our young people to practical work of this kind. Mr. McLennan's marked success shows what can be done when there is a will. Why should not collections on a similar plan be made in every school section in the Province? From these a Provincial Cabinet could be furnished representing the labor of hundreds of different observers in every region of the country, and illustrating the complete entomological fauna of the Province.

John W. Mackay and James Gordon Bennett have contracted for the laying of two atlantic cables, and the promise is given out that when they are completed ocean telegraphy will be made as cheap as land service.

LIVING LIGHTS.

In a sequestered nook in the midst of the forest is a clear, tranquil pond. Its margin is surrounded by mossy banks and bending reeds, dotted with yellow buttercups and pale white lilies, intermingled with the purple iris supported by its long slender green leaves and graceful stems. Its clear pelucid surface reflects the passing clouds above, and mirrors in its tranquil bosom the tall trunks of the trees which line its banks, forming a living canopy of waving green. There, in this quiet sylvan glade, where the bright sunshine, excluded from the depths of the forest, gladdens and glorifies all nature, shedding a sheen of gold over the scene, the gaily tinted butterfly delights to revel among the flowers, the graceful dragon flies and tiny gnats sport and dance in the sunshine, while the pretty little humming bird sips the nectar from many a painted cup. But, though nature is so lavish by day in her gifts and charms in this favored spot, it is by night that she bestows many an added beauty, many a sweet note to enhance the already numerous attractions here concentrated, as if to lure the visitor to her side. Then, as soon as the moon sheds her pale beams upon the forest glades and mirrors her face in the tranquil bosom of the little lake, tipping each wavelet with a crest of silver and casting a broad stripe of mellow light across its surface, disclosing deep shadows in the surrounding forest, the night birds flit past on noiseless wings like spectres from the depths of the forests, while the bat—that strange creature of caves and ruins—is seen wending its way across the pond. Moths, millers and beetles issue from their concealment and flit among the leaves, while the air over the lake and in the woods beyond is full of dancing lights, spangling the scenes with myriads of brilliant little stars which wander here and there like little lamps.

There are not a few such peaceful little sunshiny spots, set like gems in the dark perpetual shade and twilight of the unbroken forest. In the day time they tempt one to linger by the warm and bright sunshine, the velvety carpet, dotted with many tinted flowers, spread at our feet, and the mossy banks where painted cups and "lady slippers" lift their beautiful heads amidst the green. Such sequestered

nooks, by their bright and vivid colors, form a charming contrast to the dark and gloomy forest that surrounds them rendering them doubly delightful.

One of the greatest attractions to an evening in the country in the summer season, are these numerous little lamps, seen dancing here and there among the green foliage of the forest or garden, or darting through the midnight air like tiny meteors. These little shining stars are the tiny light-winged fire-flies—a small nocturnal beetle, belonging to the genus *Lampyris*.—*Journal of Science*.

PEOPLING THE EARTH.

THE PERIOD OF INCONCEIVABLE MIGRATION BY OUR-HISTORIC ANCESTORS.

Popular Science Monthly for September.

The question arises, how has the human race been able to spread itself over the whole surface of the globe? Is it the product of different and independent origins in the several continents, or have all men sprung from a common cradle, a "mother region?" On this point students are divided, Agassiz holding that men were developed, at different centers, and Quatrefages and the theologians maintaining the unity of their origin. The fact is left that man, the same in all essential characteristics of the species, has advanced into all the habitable parts of the globe, and that not recently, and when provided with all the resources that experience and inventive genius could put at his disposal, but when still young and ignorant. It was then that, weak and almost naked, having only just got fire and a few rude arms with which to defend itself and procure food, the human race conquered the world and spread itself from within the arctic circle to Terra de! Fuego, from the Samoyed country to Van Dieman's land, from the North Cape to the Cape of Good Hope. It is the primitive exodus, as certain as it is inconceivable, accepted by science as well as by dogma, that we have to explain, or at least to make probable; and that in an age when it is only after the most wonderful discoveries, by the aid of the most powerful machinery for navigation, through the boldest and most adventurous enterprise, that civilised man has been able

to flatter himself that he has at least gone as far as infant man went in an age that is so far removed from us as to baffle all calculations.

We must insist on this point, for it brings into light an obstacle which those who have tried to trace out the connection between widely separated races and to determine the course that had been followed by tribes now separated by oceans and vast expanses, have hitherto found insurmountable; for, if man is one—to which we are ready to agree—we must assign a single point of departure for his migrations. In these migrations, man has gone wherever he could, and, at every spot he has occupied and settled, has acquired characteristics peculiar to the place, and which differentiated him from the men settling in other places. Hence the varieties in human races. Some of these spots seem to have been peculiarly favorable to his advancement, and became centres of civilization. The number of such centres is, however, very limited, and their distribution is significant.

Recent explorers of our Pacific territory of Alaska tell large stories of the great rivers of that region. Lieut. Schwatka, striking out from Fort Vancouver, Washington Territory, and travelling 2,800 miles overland reached the head waters of the Yukon river, where he constructed a raft of logs and navigated it to its mouth. His crew of Indians were afraid to shoot the rapids, but by shooting three of them he persuaded the rest, and the rapids were run. The voyage on the raft was 1,329 miles, and officer Leavitt, of the Signal Service, says he has ascended the Yukon 2,000 miles from its mouth. He describes the river as the largest in the world, discharging fifty per cent. more water than the Mississippi, and being at places, seven miles in breadth. Lieut. Storey comes home from Alaska with the report of the discovery of an immense river. He ascended it for fifty miles, where he met Indians who said they had come down on it 1,500 miles, that it went up higher than that, and in some places it is twenty miles wide. Lieut. Storey found flowers and vegetables not hitherto discovered within the arctic circle.—*Portland Transcript*.

NEWS AND NOTES.

M. Victor Saint Paul has placed \$5,000 at the disposal of the Paris Academy of Medicine as a prize to any person, whatever may be his vocation or nationality, who shall succeed in discovering an infallible means of curing diphtheria.

At Chester, Illinois, diggers in a clay bank unearthed, September 20, a number of fossilized remains, among which was the tusk of a mastodon, five feet six inches long, and its root measuring eight inches in diameter. The skull was also found, but was too much decayed to be removed entire.

During a hurricane in the neighborhood of Bologna the other day, a black cloud was seen apparently settling upon the wooded sides of the adjacent hills. Bursting not long afterwards, it ejected a countless number of leaves and tiny twigs, which the fury of the wind had torn off the trees. In addition to this strange burden, the wind had also carried up a small quantity of small toads, which fell, a living rain, from the sky.

A drawing of the skeleton of the gigantic fossil reptile known as *Brontosaurus excelsus* has been made by Prof. O. C. Marsh. Nearly all the bones illustrated belong to a single individual, which was nearly or quite fifty feet in length when alive, and must have weighed more than twenty tons. It had a small head, massive feet and legs, and a large tail. Its small brain indicates that it was a stupid, slow-moving animal. It was more or less amphibious, and its food was probably aquatic plants.

The Westminster Aquarium has a baby walrus, which is believed to be the second of its kind ever caught alive. It is about five months old. The little fellow was captured in Davis Straits by the crew of the whaler Polyna, who killed its mother as she was floating asleep on the water. As the men neared the old walrus the baby suddenly appeared and was taken into the boat, but its piteous cries brought two big walruses to its help, and the crew had a severe fight before killing the would-be rescuers. On board ship the young walrus soon became very docile and a perfect plaything of the sailors, while now he is so fond of human society that he growls and grumbles vigorously if left alone.—*Ex.*

A new thing in stilbite has been found at Black Rock, N. S. The peculiarity in this mineral is its color which varies from light green to dark purple. No complete analysis has yet been made. Associated with it is laumontite running through the same colors.

The population of China is estimated by E. C. Baber, Chinese secretary to Her Majesty's Legation, Peking, in a paper read before the Royal Geographical Society at only 250,000,000. He estimates the population of Peking at less than 500,000, and Hankow at no more than 500,000. The native census is entirely untrustworthy.

House plants have very little effect on the occupants of a room where they are; they consume carbonic acid gas and give out oxygen, but not in quantities to make any appreciable difference in the healthfulness of the atmosphere. But care should be observed in the use of fertilizers; the air of a room may be contaminated by emanations from some kinds of house-plant fertilizers, unless the room is kept constantly ventilated; that is, unless the ventilation is sufficient to change the air completely three or four times in twenty-four hours. The plants should be set in earth that has been thoroughly enriched with stable manure, and long enough to have combined with it; by this combination the earth disinfects the manure by absorbing and neutralizing any noxious gases that may exist.—Hall's Journal of Health.

BATHING IN SALT LAKE.—In the water of Salt Lake a bather can lie on the surface of the water without any exertion whatever, or by passing a towel under his knees and holding the two ends he can remain in any depth of water kneeling, with the head and shoulders out of water, or by shifting it under the sole of the feet he can sit on the water. The one exertion, in fact, is to keep one's balance; none whatever is required to keep afloat. The only danger, therefore, arises from choking by accidentally swallowing some of the water, for the strength of the brine is so intense that the muscles of the throat are convulsed, and strangulation ensues. All the same, I have myself dived several times into Salt Lake, and have survived.—*Phil. Robinson, in October Harper's.*

GEOGRAPHY.

England refuses to allow Australia to annex New Guinea.

The Indian population of British North America, is by a recently issued report placed at about 110,000.

The total length of the Niger is over 2,000 miles according to commandant Gaieni.

The British government has annexed the African territory lying south of Sierra Leone as far as Liberia.

The island of Krakatoa, some six miles long by four or five broad, situated in the straits of Sunda between Java and Sumatra, was shattered to pieces and disappeared beneath the sea during the volcanic eruption near the end of August. The volcanic fires were seen for a distance of 80 miles. The ashes fell as far off as 250 miles, while the terrific detonations were heard even 300 miles, the great tidal wave caused, swept off towns lying around, destroying 100,000 lives.

The discovery of a strange sea monster is reported by Captain Seymore of the American whaling bark *Hope On*, which arrived at Panama on the 7th. ult. While the boats were cruising for whales in the vicinity of the Pearl Islands, about forty or fifty miles from Panama, the crew of one of them saw a strange looking animal rise slowly out of the water and then suddenly disappear as if alarmed. The monster was described by the crew as about twenty feet long, having a head like that of a horse, with two horns projecting from the forehead, four legs or flippers, a brownish hide spotted with black, and a tail divided into two parts. Officers of the Pacific Mail Company state that they have seen this strange animal on several occasions. While this sounds very like a "fish story" no one could pronounce it an impossibility. Discoveries of marine forms of life, new and strange are being constantly made, and when we consider the almost illimitable vastness of the ocean it would seem not improbable that among its countless denizens there may be monsters quite as strange to us as the one described. Even the mythical "sea serpent" may have its counterpart in nature lurking among the caverns of the mighty deep.

SIZE OF SUN SPOTS.—A single spot has measured from 40,000 to 50,000 miles in diameter, in which, as will be readily seen, we could put our earth for a standing point of observation, and note how the vast vacu'ar waves roll and leap about the edge of the spot, and also how the metallic rain is formed from the warmer portions of the sun. In June, 1843, a solar spot remained a week visible to the naked eye, having a diameter of about 77,000 miles; and in 1837 a cluster of spots covered an area of nearly 4,000,000 square miles. When we call to mind that the smallest spot which can be seen with the most powerful telescope must have an area of about 50,000 miles, we can readily see how large a spot must be in order to be visible to the naked eye. Pasternoff, in 1828, measured a spot whose umbra had an extent four times greater than the earth's surface. In August, 1858, a spot was measured by Newall, and it had a diameter of 58,000 miles—more, as you will see, than seven times the diameter of the earth. The largest spot that has ever been known to astronomy was no less in diameter than 153,500 miles, so that across this you could have placed side by side eighteen earths.—*H. A. Smith, in the Popular Science Monthly.*

The Chinese and Japanese exhibits at the International Fisheries exhibition must be novel and striking. An article in *Nature* calls attention to the extraordinary ingenuity displayed in utilizing the most ordinary and unpromising objects for the purpose of fishing. Thus in Swaton they employed a boat drawing a few inches of water, with the rail nearly level with the surface. A narrow plank fixed along one side is painted white, and the light of the moon falling on it causes the fish to mistake it for water. They jump over the plank into the boat, when they get entangled in moss or grass. At Ichang, a wild animal, such as the otter, is trained not to catch fish but to frighten them into the net; while at Ningpo cormorants are regularly and systematically trained to fish. These and many other devices shown at the exhibition, mark the Chinese as the most ingenious and accomplished fishermen in the world.—*American Naturalist.*

LITERARY NOTES.

The current number of the Princeton Review opens with a paper by the Chief Justice Cooley, of Michigan, on "The Abnegation of Self Government, in which he depleors the fact that citizens, have to such a great extent, given over the management of the government to the hands of professional politicians, and says that "Discontent, with the administration of public affairs, has grown in proportion as intelligent and honest citizens have evaded their duty, and given the ignorant and mercenary the opportunity to profit by their evasion." Judge Cooley, hopes that with the reform of National and State civil service, the citizens shall act in concert in overthrowing misgovernment.

Dr. Lenord Woolsey Bacon follows with a stirring article on "Divorce Reform," which will be read with interest at the present time in view of the activity, recently manifested in the effort to reform the iniquitous law of Divorces in the United States.

Tourgeneff, the famous Russian novelist recently deceased, is written upon by Bavard Tuckerman.

"The Foreign Competitive Pauper Labor Argument for Protection" is the title of a paper by Hon. David A. Wells. This article very clearly explains the reasons why the laboring classes of this country should not fear the so-called pauper-labor of foreign countries, but rather should seek its competition. Mr. Wells may be regarded as an authority upon this subject, and his paper is a valuable contribution to the economic literature of the period.

A most interesting, as well as timely topic, is "Currency Problems," which is treated in an able manner by Worthington C. Ford. The various suggestions which have been offered from time to time by eminent financiers in reference to the contraction of the currency, such as an expansion of the legal-tender issue—the substitution of other securities to take the place of the three per cents—the rendering permanent a certain portion of the National debt—are all carefully weighed by Mr. Ford and found wanting. His own panacea is to suspend the coinage of the silver dollar now being minted at the rate of two million of dollars per month, and to reform the tariff.

The number concludes with a scholarly article on "The Critical Study of the Scriptures," by Rev. Francis A. Henry. The *Review* is published at No. 2 Nassau Street, New York. Three dollars a year. Fifty cents a number.

The *North American Review* for November, by the liveliness and the sterling worth of the articles it contains, satisfies the requirements of the most exacting reader. Senator H. B. Anthony writes of "Limited Suffrage in Rhode Island"; Dr. Norvin Green, President of the Western Union Company, in an article entitled. "The Government and the Telegraph", cites the provisions of the Federal Constitution and the determinations of the Supreme Court which appear to debar the General Government from assuming the management of the telegraph lines; and presents statistics designed to prove that the service in this country is both cheaper and more efficient than in any of the countries of Europe where the governments own the lines. The Rev. David N. Utter brings out from oblivion the record of certain alleged atrocious crimes of "John Brown of Osawatomie." There are two scientific articles, namely, "Solar Physics," by Professor Balfour Stewart, and "Modern Explosives," by Gen. John Newton. W. H. Mollock contributes "Conversations with a Solitary"; an imaginary passage-at-arms between a Radical and a Conservative, in which the two opposing theories of government and society are advocated with rare spirit and ingenuity of argument. Finally, "Dr. Hammond's Estimate of Woman", is reviewed by Mrs. Lillie Devereux Blake, Miss Nina Morais, Mrs. Sara A. Underwood and Dr. Clemence S. Lozier. Fifty cents a copy; \$5 a year. Published at 30 Lafayette Place, and sold by newsdealers generally.

THE CANADIAN MINING REVIEW is devoted to the opening up of the mineral wealth of the Dominion the extent of whose resources in this respect is only just becoming known. Contains interesting descriptions of mineral deposits. Published monthly at Ottawa at \$1.00 per annum.

The *American Naturalist* of November comes to us replete with interesting articles. Among these we find T. Sterry Hunt on the "Pre-Cambrian Rocks of the Alps," and Edward B. Sanger on the "Geology of Central Australia." Macloskie writes on the "Achnaels Hairs of Townsendia," and Foerste on "The Hibernacula of Herbs." Zoology is represented by Packard on "The number of segments in the head of Winged Insects," and Ramsay

Wright on "The Hair Sac Mite of the Pig." The Editors Table contains a capital article on "The Study of Zoology in School." The General Notes are a summation of every event of interest in the world of Natural History study. They are most admirable.

The *Bulletin of the Torrey Botanical Club* for September is at hand. It contains several valuable contributions to Botanical Science.

"Mort, ressuscite, et remort, comme aurait dit un celebre maire d'une commune de France, nous ne reparaissons aujourd'hui devant nos lecteurs," que pour leur adresser nos adieux," so "*Le Naturaliste Canadien*" bids farewell to the scientific world, after a useful fifteen years existence. We cannot understand how a government meeting in so intellectual a centre as Quebec could starve out, to save a miserable pittance, this noble enterprise, which has already made the name of *M. L'Abbe Provancher* immortal in Canada.—*Com. Mining Review.*

A HOME-MADE FOUNTAIN PEN.—Take two ordinary steel pens of the same pattern and insert them in the common holder. The inner pen will be the writing pen. Between this and the outer pen will be held a supply of ink, when they are once dipped into the inkstand, that will last to write several pages of manuscript. It is not necessary that the points of the two pens should be very near together, but if the flow of ink is not rapid enough the points may be brought nearer by a bit of thread or a minute rubber band.

PROFESSOR J. S. NEWBERRY, describes a number of facts regarding the bituminous coal fields of the Mississippi valley which clearly show that the "great bog theory" gives the true explanation of the origin of that great deposit as opposed to the "estuary or raft theory" now advocated by some geologists. He holds that the carbonaceous matters in bituminous shales is due to the presence of algae, which thus are the primary source of petroleum and mineral gas.

LEACHERS and others will doubtless find the series of articles on Chemistry, now appearing in the *SCIENTIST*, of valuable assistance in school work or private study. Next month will be begun "Among the Cryptogams," a series of popular articles on this interesting class of plants, by Prof. McKay, an enthusiastic and efficient botanist.

THE ACADIAN SCIENCE CLUB.

The Course of Study is now undergoing a little revision, and in its new form will be ready for publication in December *SCIENTIST*. The chief aim in view is to lessen the amount of text-book work required from student members and to furnish additional assistance in practical work and the study of nature herself.

Now is the time for those intending to unite with the Club to send in their names, so that no time may be lost at the beginning of the year, in taking up the work.

Members not wishing to receive examination papers next month, on account of having failed, from whatever cause, to prepare the work of the year, will please inform the Secretary.

The Acadian Science Club, being a corresponding society, is designed to be international as to its membership. Though it has not yet been two years since its organization, its membership is represented throughout this continent, to Florida on the South and British Columbia on the West. Quite recently notice was made of our society in an English magazine, and we have since received numerous letters of enquiry from England and Scotland. It is hoped that next year the Club will be largely represented in that quarter. This is as it should be, for Science knows no political boundaries.

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