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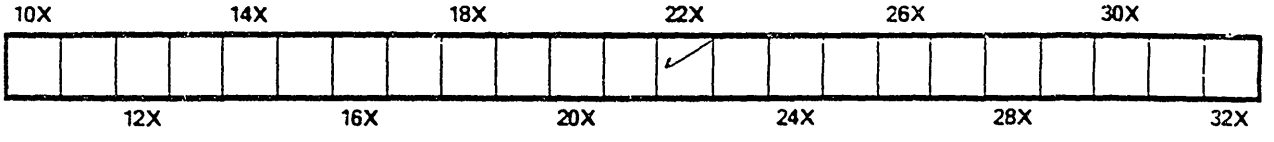

THE

Canadian Agriculturist,

AND

JOURNAL OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. IX. TORONTO, AUGUST, 1858. No. 8.

ANNUAL EXHIBITION OF THE AGRICULTURAL ASSOCIATION OF UPPER CANADA.

The arrangements for this great annual gathering are now (Sept. 13th), nearly completed, and everything seems to indicate that the approaching Exhibition will be very superior to any of its predecessors, in attractiveness and magnitude. The *Crystal Palace*, a capacious and convenient building, is completed, and the fittings up for the arrangement of the articles to be exhibited therein, are fast progressing. This building in itself will be a great attraction, and is so arranged that the most costly articles will be perfectly secure against bad weather, and other accidents; and will be advantageously seen by visitors without the great inconvenience of crowding, hitherto so much and so justly complained of.

It is of importance that all articles not of a perishable nature, should be sent in by Saturday, September 25th,—not later certainly than *Monday* the 27th,—as the arrangements have to be completed by *Tuesday noon*, in the afternoon of which the judges will commence their inspection, in the different classes.—None but members will be admitted to the show grounds till Wednesday noon, when the opening celebration will take place in the Crystal Palace. His Excellency the Governor General has consented to take part in the proceedings and Lord Napier, the British Ambassador at Washington, and several distinguished gentlemen, both from British America and the United States, are expected to be present. The Metropolitan Choral Society, consisting of upwards of two hundred performers, will assist at the inauguration, and sing several standard pieces of the old masters. Another musical performance will take place on the evening of the same day (Wednesday) at 8 o'clock, by Mr. Carter's Sacred Harmonic Choir. On *Friday*, at 10 o'clock a.m., the annual meeting of the Association will be held, to which each County Society has the

right of sending two delegates. The President's address will be delivered at 2 o'clock, on the same day, after which the Premiums will be declared.

Here will end the Exhibition as far as live stock are concerned; but it has been determined by the Directors to re-open it on the following Monday, and keep it open through the entire week, which will afford the public an excellent opportunity of inspecting articles at their leisure. It is expected that the musical societies before mentioned, will each give a performance during two of the evenings of the second week. Exhibitors of such articles as are not perishable are urgently requested to leave their contributions for the second week.

In order to afford people of all classes and employments an opportunity to see the Exhibition, the Directors have determined on lighting the Crystal Palace with gas, by means of upwards of six hundred burners, commencing on the Wednesday evening of the first week.

The Railways and Steamboats, have entered into arrrangements for carrying visitors, stock and articles to and from the Exhibition, at half rates.

EXAMINATION PAPER IN AGRICULTURE, UNIVERSITY COLLEGE, TORONTO, SESSION 1857-8.

Thinking it probable that a large number of our readers have no very definite notion of the nature and extent of the examination of students in Agriculture in our Provincial Collegiate Institution, it may not be devoid of use and interest to publish entire an examination paper belonging to this department. The one subjoined was written by Mr. J. E. Farewell, of Oshawa, in the County of Ontario, and obtained the first prize. The second prize was won by Mr. John Brown, of the County of Wentworth. Two other students had papers of nearly equal merit, and answered several of the questions quite as correctly, though not so fully, as their more successful competitors. These young men had been more or less engaged in practical farming, and availed themselves of several other courses of lectures in the College, besides Agriculture, during the winter season. Young men can enter the College as occasional students, without being subjected to any preliminary examination and may attend such courses of lectures only as meet their more immediate wants. Agricultural students usually take in addition to the history, science and practice of Agriculture, Chemistry, Geology and Mineralogy, Natural History, including Botany and Meterology, History, and English Language and Literature. Youths intended for the business of farming can annually go through such, or, if need be, a more extended course of study, and not be absent from their farms during the busiest and most important seasons of the year. All this can be done for a comparatively small expense; but little exceeding that for board and lodging. It is proper to state that the terminal examinations in the College are conducted on the principle of written answers

to a series of questions, to each of which is assigned a numerical value; the students being strictly prohibited from any intercourse with books, notes, or each other, during the period of examination. The agricultural examination occupied two sittings, of two hours each. We give of course the paper as it was written, with only an occasional verbal correction.

Question 1 —Define Agriculture as a *science* and an *art*.

How can a knowledge of its *Theory* and *Practice* be best acquired?

Answer.—1. Agriculture as a *science*, treats of the principles or laws which govern the operations of converting the inert matter of earth, air and water, into vegetable productions for the support of animal life.

2. As an *art* Agriculture treats of the *application* of these principles to practical purposes. The former gives the rules of the operations, and the reasons for them. The latter applies the rules advanced by science.

The best mode of acquiring a thorough knowledge of the science and practice of Agriculture, authors of high repute seem somewhat to differ.

Stephens—a good authority in practice—says, this can be best done by living with a farmer, who is a good practical man, and who has in his house an instructor in the theory or science, daily pointing out on the farm the practical application.

On the other hand, Professor Norton is in favour of the plan adopted in University College—attending lectures on the theory and practice as given by a Professor, and afterwards reducing their principles to practice on the farm during the active season of sowing, growth and maturity. To such as have had some experience on a farm, this seems the most suitable plan; or instead or this, attending some Agricultural School with a suitable farm attached, and learning both theory and practice at the same time.

Question 2.—Mention those branches of physical science which have relations to Agriculture;—with illustrations.

Answer.—The various departments of Physics or Natural Philosophy relating to Agriculture are—

1. Motion, the moving powers, their nature, laws and operation, the effects of machinery. Mechanics.

2. The weight, pressure and equilibrium of fluids. Hydrostatics.

3. The motion of fluids in pipes or otherwise, and their capability and value as moving powers. Hydraulics.

4. The action of light on vegetation. Optics.

5. The nature, laws and effects of heat.

6. The laws of electricity, and other meterological phenomena.

7. The nature of air as regards its properties of weight, temperature, motion, &c., and the signs which foretell these movements. Pneumatics.

8. Chemistry, explaining the nature and composition of all bodies, and the laws of their combination.

9. Botany, treating of the structure, uses and classification of plants. Also including vegetable physiology, explaining their functions, diseases, &c.

10. Zoology, relating to the structure and classification of the animal kingdom, with which is connected comparative anatomy and physiology of the domesticated animals of the farm.

11. Geology, explaining the structure and arrangements of rocks, their origin and diffusion, with the decomposition whereby soils are formed.

Question 3.—Give a general sketch of the History of Agriculture from the Egyptians, Greeks and Romans to the middle ages. In what way did the Church foster and promote this art during the latter period? What are the principal characteristics of modern Agriculture?

Answer.—Of the various branches of Agriculture, that which relates to the raising of fruit, called gardening, seems to have been first practised.

After the flood "Egypt's alluvial lands" seem to have been the seat of the beginning of agriculture, which was subsequently diffused by the colonizing Greeks who regarded it with honour.

Rome subsequently becoming mistress of the world, carried a knowledge and love of this indispensible art to every portion of the earth which witnessed the triumphs of her victorious armies—Britain among the rest.

Different opinions prevail respecting the agriculture of Egypt, both as to its origin and some of its practical applications. The annual irrigation of the Nile richly manured the land, and great crops of grain—particularly pulse—were unquestionably raised. The pick was the first instrument used in cultivation, as would appear from the engravings on ancient medals and seals. The sacred Ox was the only animal used in agricultural labor. In Greece agriculture was carried on extensively, and some of what we often imagine to be purely modern practices were well understood and followed, such as draining, &c. Xenophon, and other writers, were acquainted with the art and wrote upon it. Mogo, the celebrated Carthagenian, wrote several books upon this important subject.

Rome afterwards encouraged it by every means, and many of her most eminent warriors, statesmen and citizens produced treatises on agriculture and practised it as a pursuit. Among them, Columella, Varro, Cincinnatus, Virgil, &c., from whose writings may be gathered many practical principles that have never been improved.

Agriculture was introduced into the British Islands by the Romans, but did not appear to have made much progress till the Norman conquest, 1066, when many Norman Barons came over and encouraged and cultivated it extensively. They are described by a contemporary historian as being "exceedingly addicted to cultivating the land, and raising horses and cattle." When the dark ages came on, agriculture was preserved on the estates of the Church alone, the Monks being the conservators of this art, as they were

manuscripts and literature; and when learning revived the practice of husbandry diffused itself, and the noble art sprang as it were into new life.

Modern agriculture has for some of its leading characteristics a more general and effectual draining of wet lands, deeper and more thorough cultivation by means of improved implements, as sub and trench ploughing; a more scientific rotation of crops; the economising and more effective application of manures, and the proper adjustment of animals to the amount of land cultivated.

Question 4.—How is matter divided? Define and illustrate *elementary, compound, organic* and *inorganic* substances? What are soil, plants and animals composed of?

Answer.—Matter exists in the following states, viz:—solid, liquid, gaseous and vesicular. A familiar example is water, which by being exposed to a low temperature, becames a solid, (ice) which again is liquified by heat, and by still further heat is converted into an invisible vapour (steam.)

An elementary substance is matter that cannot be reduced to a simpler form; *e. g.*, iron, oxygen, sulphur, &c. A compound body is that which is made up of two or more elementary substances; *e. g.* oxide of iron or rust, consisting of oxygen and iron, sulphate of potassa, composed of sulphur and potassium, &c.

Organic substances are the result of life, in the vegetable or animal, and by heat become decomposed and converted into invisible gases; *e. g.*, carbonic acid, oxygen, hydrogen, &c.

Whereas inorganic bodies do not consume by heat, were never the seat of any sort of life, being purely mineral; *e. g.*, iron, silica or sand, iodine, manganese, &c.

Soils are generally composed of a number of different substances, the principle being clay, sand, and lime, potash, soda, magnesia, manganese, &c., are more or less found in connection with organic substances in all fertile land.

Plants consist mainly of carbon, oxygen, and hydrogen, with small portions of nitrogen, combined with the several substances mentioned in soils.

Animals consist of the same organic elements constituting plants, but with a much larger proportion of nitrogen, and a very great amount of the phosphate of lime in the bones, so valuable as a manure.

Question 5.—State the composition and uses of *atmospheric air and water*, and their relations to vegetable and animal life.

Answer.—Atmospheric air mainly consists of two gases, nitrogen and oxygen; about 79 parts of the former and 21 of the latter in every 100 of common air. There are also diffused through the atmosphere small quantities of carbonic acid gas, ammonia, and some aqueous vapour.

Water consists of a chemical combination of oxygen and hydrogen, in the proportion of 8 of the former with 1 of the latter. This is pure rain water, but the waters of springs, rivers, &c., have in them a number of other ingredients, as lime, soda, &c., in varying proportions.

Neither plants nor animals can live without air and water. The former derives much of their food from the atmosphere by means of their leaves; while water is necessary to dissolve the manuring substances in the soil that they may enter the plant in a fluid state by its roots. Air is essential to the breathing of animals; the nitrogen properly diluting the otherwise too powerful action of oxygen, while the carbonic acid exhaled in breathing forms the principal organic food of plants.

Question 6.—Give a brief description of the general *structure and functions of plants and animals*, and their relation to the soil.

Answer.—Plants consist of various kinds of matter held together by the chemical and vital forces, and arranged into what are termed cellular and vascular tissue. The principal parts are the root, stem and leaves. The root fixes the plant in the soil, and supplies it with inorganic food from the surrounding medium. The leaves expand, and catch and absorb, by means of their numerous and minute pores, organic food, consisting of gaseous matter floating in the atmosphere. Every part of a plant is endowed with tubes, vessels, and cells, for the circulation and elaboration of the sap, which by a power and process, as yet but imperfectly understood, converts these fluids into the different parts of its own solid structure.

Animals are very differently constituted, having the power of locomotion, they can go in search of their food, if need be, and they digest it in their stomachs. Their structure and functions are exceedingly interesting; the blood, like sap to the plant, derived from food, freely circulates through the system and repairs its waste and increases its bulk. Vegetables constitute the connecting medium between the mineral and animal kingdoms. Animals cannot obtain nouishment directly from the earth. The plant lives upon the mineral, converts dead matter into living organisms, and the animal subsists directly on the vegetable, a simple yet truly wonderful arrangement.

Question 7.—What are the essential conditions in the *germination, growth* and *maturity* of plants? What is plant-food, and how is it assimilated? When is the proper time of cutting grass for hay, and also grain? With reasons.

Answer.—Warmth, moisture and air are each essential to the germination and growth of plants. Seeds, when thoroughly secured against these agents, by being buried deeply in the earth or otherwise, will remain for ages, but as soon as exposed to them will show signs of vitality and germinate. Wild mustard in our fields is an illustration in point.

Plant-food consists of the matter of which the structure of vegetables is composed; they get gaseous matters, such as carbonic acid, oxygen, and ammonia, by means of their leaves, from the air; and inorganic materials, such as lime, potash, soda, &c., through their roots from the soil, in a state of solution by water.

The grasses should be mown for hay as soon as in full blossom, when they contain the largest amount of saccharine and other nutritious substances. And

the proper time for cradling grain is when it has got out of the milky state, and begins to harden, and the stems turned yellow. If either grass or grain is allowed to become dead ripe before cutting, the sugar of the former, and the starch of the latter are converted into woody fibre—the bran is increased—and the flour diminished. In practice this truth is too commonly overlooked.

(To be Continued.)

As was advised in our last number, the present issue comprises only the monthly sheet of the Journal. This is done in order to overtake the proper time of publication. The next, the September No., will be got out as quickly as possible, and will appear as heretofore, a sheet of the Journal and one of the Transactions, under cover.

THE CROPS OF 1858.

To the Editor of the Agriculturist.

BUREAU OF AGRICULTURE AND STATISTICS,
September 3rd, 1858.

SIR,—A number of circulars having been issued by this Department for the purpose of gleaning information about the probable yield of crops of 1858, and the diseases affecting them, it is desirable at this season of the year to let the farmers know the result of some of these inquiries, in order to guide them in the sowing of Fall wheat, and enable them to judge of the propriety of leaving part of the land for Spring wheat. Thirty-five returns from twenty-six counties have been received and analyzed. In eighteen of these counties the wheat midge and rust have been very prevalent, and the crop seriously injured—namely, in Waterloo, Oxford, Grey, Norfolk, Durham, South Simcoe, York, Kent, Welland, Victoria, Perth, Essex, Wentworth, Elgin and Ontario, in Canada West, and Vercheres, Brome and Dorchester in Canada East. In three the rust and mildew, without the midge, were very destructive—namely, Waterloo, Peel, and Pontiac. The wheat crops in Stormont, Carleton, Grenville, Lanark, and Russell, in Canada West, and Huntingdon in Canada East, are said to be free from disease of any kind, except a slight rust in Russell.

The average produce of the whole twenty-six counties is 12½ bushels per acre of winter wheat, and 14¾ bushels of spring wheat—showing a deficiency of about 40 per cent. in winter wheat, and 10 per cent. in spring wheat. A fact worth noting is, that the spring wheat called Fife or Glasgow wheat, has entirely escaped injury from rust; and also that all spring wheat sown after the 26th of May, has escaped injury from the midge (or wheat fly,) being too late for the fly, which deposits its ova from the 20th June to the middle of July. Wheat thus late sown is not forward enough to receive the deposit. A species of wheat, called the Mediterranean wheat, is also said to be free from the ravages of the midge, but does not appear to be highly approved in other respects. The spring wheat called club-wheat is universally condemned, as being subject to rust.

Never before in the history of Canada, has so much injury been done by rust as this year. Many of these reports show that it arises generally, if not always, from want of proper drainage, and of early sowing of early kinds of wheat on well-shaped ridges, well water-furrowed, which are a great aid in the way of drainage. It may be, that the influence of hot, damp, close, muggy weather after a drought, are *less sudden* on well-drained, deeply ploughed, well-cultivated land; and these sudden influences are what cause rust, by the greatly increased sap-bursting the straw and flowing downwards, in-

stead of rising to nourish the ear. This is more probably the cause of rust than fungi, or insects, to which many attribute this most destructive disease; the straw of rusted wheat will, on examination, be found to be cracked longitudinally. With regard to the midge, all reports seem to concur that early sowing of early seed on early land, made early by good drainage and well shaped ridges, is the best preventive; but, under present circumstances, I think the cautious farmer would do well to sow one-half of his land in winter wheat, and the other half in spring wheat, using the above precaution of good draining, &c.

A Mr. Alexander McKenzie, a practical farmer, has written a valuable little pamphlet, showing from repeated experiments that a dressing of lime spread on the land soon after the grub of the midge has fallen from the wheat ear, and whilst in a soft state, is a complete remedy, destroying the grub entirely. This little pamphlet is well deserving the attention of farmers, as lime can be easily procured throughout almost all of Upper Canada, and can be burned without any very great expense, and in addition to killing the grub, will add much to the fertility of the soil. A Mr. Swan, the owner of the farm to which was awarded the 1st prize in Cayuga county, New York, as being the best arranged farm, states that he lessened the destructiveness of the midge very materially by sowing a barrel of salt to the acre after the wheat had brairded.

With regard to other green crops, the reports show an average yield about the same as in other yields; rye, 19¼ bushels per acre; barley, 19; oats, 31½; Indian corn, 36½; peas, 21½; potatoes, 124½. Of these last there are fifteen returns which state that they were free from rot up to the 30th August last, and eight, which state that the rot had commenced; the other twelve give no report as to rot, which, no doubt, they would have done had it been prevalent. There is certainly a great decrease in the extent and destructiveness of this disease, and it is hoped the root will hereafter be more generally cultivated. The prevalence of the rot has hitherto deterred many from planting.

I may add that there are other counties which have not yet reported, but which are said to be very seriously affected by midge, rust, and blight, viz:—Hastings, Prince Edward, Middlesex, Lennox, Addington, &c. The new lands, however, north of Hastings, on the Free Grant Road, are entirely free from midge, and nearly so from rust.

Yours, truly,

WILLIAM HUTTON, *Secretary.*

THE WHEAT CROPS OF THE UNITED STATES.

The wheat crop in the several States may be considered as harvested and partially ready for market. We can, therefore, give the following returns with some degree of certainty:

NEW YORK.—The crop is under the last year's about fifteen per cent., but the quality is much better.

PENNSYLVANIA.—The crop is fully an average one, but ten per cent. less than last year per acre.

MARYLAND.—The crop is fully an average, but less per acre and better in quality than last year.

VIRGINIA.—The wheat crop in this state is twenty per cent. less than last year for the amount of ground in cultivation, and the quality not much superior.

NORTH CAROLINA.—The crop in this state is probably nearer to a total failure than in any other. The yield being fully fifty per cent less than last year, and poor in quality.

KENTUCKY.—The crop is above the average, but less than last year; the quality is, however, unsurpassed.

TENNESSEE.—The crop is a good one, but under the average in yield per acre. The quality is good.

MISSOURI.—The amount of wheat crop in this State is not fully known, but it will generally compare well per acre with the other Western States.

OHIO.—The yield of wheat per acre is fully twenty per cent. less than last year, but from the increase of land cultivation, the decrease from an average crop will not exceed ten per cent.

IOWA.—The accounts from the centre of the State in regard to the wheat crop are very gloomy. The crop will hardly average ten bushels to the acre. Oats are generally a failure.

ILLINOIS.—In Southern Illinois the yield of wheat is about a fair average, rather under than over. The winter wheat has been generally successful, and spring wheat the reverse. In other parts of the State the yield will not be over half the usual crop.

INDIANA.—In Indiana the yield of wheat has been from one-half to two-thirds the average crop.

MINNESOTA.—The yield of wheat in this State is of better quality than usual, and in quantity nearly two thirds of their usual crop.

MICHIGAN.—The yield of wheat in Michigan is over two-thirds an average crop, and generally of good quality.

WISCONSIN.—The crop of wheat is up to the average, but the greater extent in cultivation compensating for any deficiency in the yield per acre.—*N. Y. Courier and Enquirer.*

IMPLEMENTS AT THE CHESTER MEETING OF THE ROYAL AGRICULTURAL SOCIETY, ENGLAND.

(*Continued from July number.*)

PORTABLE ENGINES.

The trial of the portable engines occupied several days, and was as severe in its conditions as the society could possibly impose upon this class of machinery. As the trial moreover, was triennial, according to the rules of the society, as suggested by the implement makers themselves, the results were looked forward to with more than ordinary interest, and awakened great excitement during their progress. The last trial of portable engines took place at Carlisle, when Messrs. Tuxford were the victors, as they are on the present occasion. The conditions of trial imposed by the society were framed especially to obviate the production of what are fairly termed "racing engines;" that it has been thoroughly successful on the present occasion we have no reason to doubt. At all events, it has secured the construction of simpler, and, we presume, more useful engines, such as the farmer can safely and practically work, without the apprehension of their being continually subject to the engineer's repairing powers.

The plan for testing the engines was to allot 14 lbs. of coal to the horse-power of each engine, so that an eight-horse engine had 112 lbs. of coal, and others in the same proportion. The coal, however, was not of so good a quality as that used at Carlisle, owing, in all probability, to its being supplied direct from the colliery in Wales, instead of from London, as heretofore, the latter market always securing the best quality. The steam was raised to the working pressure of 45 lbs. to the square inch. The time and the consumption of fuel were accurately noted, and the engine, after working for a short time, was left to cool down. The working parts of the engine were then taken to pieces, and the piston, slide, expansion, valve, and pump valves were examined by the judges; the engine then performed what is called its "duty," which is expressed by the work done in a given time by a certain weight of coal. The decision of the judges is determined, mainly, by "the simplicity of construction and probable durability of the engine considered as a whole and in detail, its portability, the economy of its working power, and the price." The power of the engine is ascertained by a "friction break," which resists the rotation of a drum, driven by the engine strap, and adjusted to the motion required; while the weight sustained is multiplied by the velocity of the periphery of the drum, which represents the power of the engine. The "duty," therefore, of an engine is the

amount of work obtained by consuming a given weight of fuel, and this is ascertained by loading the break-wheel with a certain number of pounds weight, proportioned to the number of revolutions per minute and to the nominal horse-power of the engine. The resistance offered by the engine is proportioned to the fuel supplied, and the longer the time run the greater the economy of working, or, in other terms, the less quantity of coal is burnt per horse-power per hour.

Though several engines were disqualified from competing by not complying with the "conditions" imposed by the society, there were 32 portables and 16 fixed submitted to trial, and the whole number on the ground of both classes amounted to 105. The number of exhibitors of these engines was 39. The following are the results of the trials, as measured by mechanical time :—

	hrs.	min.
Brown and May	2	35
Fowler and M'Collins	1	43½
Butlin	1	14½
Wm. Clay	1	29
Haywood	2	0
Foster	1	34
Maggs	1	27½
Tuxford and Sons	3	34½
Hornsby and Sons	2	40
Clayton and Shuttleworth	3	7
Ransome and Sims	2	35

Messrs. Barrett and Exall and Messrs. Garrett and Sons were disqualified. The time in getting up steam varied according to the "water-space" in the boiler; and if means were taken to measure the quantity required for filling, the fuel allowed for getting up the steam should be proportioned to the quantity of water to be heated.

THE TWELVE-HORSE ENGINES.

	hrs.	min.
Tuxford and Sons	2	57
Hornsby and Sons	2	25
Ransome and Sims	2	29
Clayton and Shuttleworth	2	41

It is necessary to remark that a lump of coal, apportioned to Messrs. Tuxford, turned out slaty, which necessarily interfered with the strength of their working power.

FIXED ENGINES.

The fixed engines were tried by the society's own boiler, and exhibited the following results :—

	hrs.	min.
Maggs'	1	28
Johnson	1	54
Ransome and Sims	2	7
Nash	1	25
Brown and Mag	1	45
Fernabee	2	2
Hornsby and Sons	2	9
Clayton and Shuttleworth	1	54
Barrett, Exall, and Co	3	0

The longest time run was somewhat short of that at the Carlisle trial, owing to the regulations of the society, regarding the tubes, and also in the latter diminishing the quantity of wood, 6½ lbs. per horse power, for lighting up.

The trials, as we have said, were conducted in as strict a manner as possible, and it is rather remarkable that the three manufacturers who competed at Carlisle held precisely the same position as on that occasion. The success of the prize-engine, however, was then attributed to the number of its tubes, and it is worthy of remark, that the one which has obtained the prize on the present occasion has only half the number, though in almost every other respect it is the same in construction. The peculiarity of Messrs. Tuxford's engine consists in the cylinder being vertical, which obviates the oval wearing of horizontal ones, and the working parts are inclosed in an iron case at one end of the boiler, which keeps them free from dust when not in use. The tubes were limited to two and a-half inches internal diameter; and Messrs. Tuxford put on theirs what is called a "bush," which exposes a curved surface, on which the flame impinges, thus effectually protecting the ends of the tubes, which on the usual plan, so rapidly wear away. This invention justly abstracted the attention of the leading engineers present. Clayton and Shuttleworth's engine has the cylinder placed in the smoke-box, which keeps the latter at a high temperature, while that of Hornsby and Sons has the cylinder in the steam-chamber, above the fire-box, for the same purpose, these arrangements being made to economise fuel and avoid the inconvenience of frosty weather.

CROSSKILL'S BONE MILL.

This mill attracted considerable attention, from the circumstance of bone-dust being largely used in Cheshire and the dairy-farming districts for manure. The mill is simple in its construction, and is certainly a strong, powerful, and compact machine; it is furnished with two pairs of rollers, made of case-hardened wrought-iron cutters, for grinding the bones, and a revolving riddle for collecting the dust, and half-inch bones, as they leave the cutters. This mill was firmly bolted to a strong foundation plate; it has a friction sheave for preventing accidents to the cutters, and is provided with extra shafts, driving gear, and fly-wheel, for receiving the strap from a portable engine. When attached to a ten-horse power steam-engine, or water-wheel, the mill will grind and dress from 30 to 40 tons per day.

CHAFF CUTTERS.

The trial of the chaff cutters seemed to excite the attention of visitors just as keenly as it did that of the exhibitors. These machines were divided into two classes, one worked by hand and the other by steam. There were 12 chaff cutters tried by steam, and seven by hand power, both classes being tested by the dynamometer. The conditions of the trial were that the chaff must be cut three-eighths of an inch in length, and the time for cutting was restricted to three minutes. The test of excellence was, therefore, which could cut the greatest weight within the time and in the best condition. The machines varied in a few minor respects, but most of them were slight deviations from that of Corne, so long and so well known by all chaff cutters. The following were the results of the machines worked by steam :—

	Revolutions.		lb.
Smith and Ashby made	181,050	and cut	107¾
Allcock made	105,140	"	68¾
Barrett, Exall and Co. made	137,600	"	99¼
Carson made	143,200	"	114¾
Walker made	75,550	"	28
Corne made	136,650	"	127¾
Samuelson made	164,090	"	134¼
Bentall made	162,430	"	63⅓
Ransome and Sims made	72,660	"	152
Garrett and Sons made	132,780	"	160
Richmond and Chandler made	79,733	"	173¾

Messrs. Page, Ferrabee, and Hill and Smith were disqualified, and Messrs. Turner's choked. The first prize of £5 was awarded to Mr. James Corne, who has been successful upon more occasions than any other maker at the Royal Agricultural Society's trials, and the general character of whose implement is so well known to our readers that it may suffice simply to allude to it. We do this, however, with the greater pleasure since it has received the society's award after a very severe test, from the circumstance of Mr. Carson having impugned our judgment, and condemned inferentially our want of fairness for presuming to question the decision of the Bath and West of England Society, who awarded a prize to his chaff cutter, in preference to that of Mr. Corne. We inserted Mr. Carson's letter *in extenso*, but made no comment upon it at the time, from the conviction that the charge against our want of fairness was simply untrue, and that of defect of judgment was merely inferred and not directly made. Time, however, has set the matter perfectly at rest, and the society, by awarding to Mr. Corne the first prize for his chaff cutter, has indirectly answered every charge made against us by Mr. Carson, touching our comments upon his machine.

HAND CHAFF CUTTERS.

The following chaff cutters, were tried by hand, and produced these results. The time allowed to each machine was five minutes, and the gauge of each was to be regulated to ⅜ of an inch:—

	Revolutions.		lb.
Richmond and Chandler made	18,500	and cut	24½
Turner made	20,500	"	22½
Smith and Ashby made	19,800	"	20¾
Page made	19,575	"	24½
Mellard made	18,420	"	15
Hill and Smith made	20,410	"	23½
Ransome and Sims made	16,960	"	25½
Barrett, Exall and Co. made	16,100	"	19½

The judges then caused steam power to be applied to the dynamometer, and the instruments to be tested. Considerable delay occurred in the adjustment of the machinery, and Messrs. Ransomes and Sims first came forward with two of their horizontal root cutters, but these from some cause or other speedily became choked. The manager was not, however, to be thwarted, having great confidence in his machines, and the principle upon which they were worked. He tried a third, and this in the time allotted to each machine (three minutes) produced 314¾ lb. with a power of 65,320 lb.

The same machine was then reversed for slicing with the following result: power 44,720 lb.; produce, 638¾ lb.

B. Samuelson.—A patent Gardner's double-action turnip-cutter. This machine has 54 knives to cut finger pieces for sheep, and four slicing knives for cattle. For finger pieces, the power used was 154,175 lb.; produce, 836¾ lb.

The same reversed for slicing: power. 142,720; produce 11 cwt. 1 qr. 17½ lb.

G. H. Bentall.—A patent prize root pulper; power, 164,490 lb.; produce, 490½ lb.

Barnard and Bishop.—A patent root pulper. No register could be kept of the power used by this machine; the produce was 429¼ lb.

James Woods and Sons.—A universal mill for grinding and crushing; power, 96,120; produce, 249¾ lb.

B. Samuelson.—An improved root pulper; power, 134,200; produce, 249½ lb.

TRIALS OF OILCAKE BREAKERS.

This class of instruments was also tried by the dynamometer.

The first trial was with a cake break, made entirely of iron, of Ransomes and Sims. The time allotted to each implement was (with two exceptions) three minutes; power, 5220 lb.; produce, 8½ lb. coarse, 1½ lb. fine.

E. H. Bentall.—An improved forge oilcake mill; power, 6830 lb.; produce, 30 lb. coarse, 5¼ lb. fine.

B. Samuelson.—A linseed cake breaking machine, regulated by an eccentric, for beasts or sheep; power, 11,380 lb.; produce, 51½ lb. the coarse, 3½ lb. the fine.

Smith and Ashby.—A registered oilcake mill, with double action for sheep and oxen. This, with the implement used in the next trial belonging to the same firm, was worked for five minutes, which will account for the great power used, and the larger produce resulting; power, 30,500 lb., produce, 106¼ lb. coarse, 22½ lb. fine.

A registered double action oilcake mill, similar to the last, but larger and fitted to work by power as well as by hand; power, 10,720 lb.; produce, 84¾ lb. coarse, 7½ lb. fine.

James Holland.—A cake breaking machine, regulated by an eccentric, for beasts and sheep; power, 9920 lb.; produce, 24½ lb.

An improved oilcake breaker for beasts, sheep, and lambs, capable of being altered to powers, different sizes; power, 6215 lb.; produce, 35 lb. coarse, 1½ lb. fine.

E. H. and T. Turner.—A roller mill for crushing linseed, &c., connection of a large and small roller acting in contact with each other; power, 30¾ lb.

Garrett and Sons.—An oilcake breaker for common cake; power, 12,650 lb.; produce, 56½ lb.

Arthur Jilcosh.—An oilcake crusher, composed of a cylinder formed of separate toothed rings or wheels, with toothed plates on either side, the one having fine and the other coarse teeth: power 37,930; produce 14 lb. coarse, 15½ lb. fine.

W. Newzam Nicholson.—A machine for breaking oilcake for beasts and sheep; power, 4530; produce 36 lb. coarse, 2¼ fine.

Messrs. Ransomes and Sims came on the ground again with the same Biddell's patent root cutter, as was tested in the second trial on Friday, being anxious to have the merits of the implement more completely ascertained. The time allowed was three minutes; power, 14,080; produce 48 lb.

B. Samuelson.—This machine had also been tried before (No. 9 on Friday), and was now again placed in competition with that of Messrs. Ransomes and Sims; the result was, power, 16,040; produce 53½ lb.

An arrangement was made by the stewards that the breakers should be subjected to three separate tests, three minutes being given for the fine quality; two minutes for the quality used for sheep; and one minute for that used for cattle.

Ransomes and Sims.—A cake breaker; power, 98,600 lb.; produce, 40¼ lb. Second trial; power, 20,820 lb.; produce, 72 lb. Third trial; machine broke down.

Barnard and Maynard.—An oilcake crusher for steam power. First trial as registered. Second best; power, 42,035 lb.; produce, 157⅛ lb. Third trial: power, 31,050 lb.; produce, 108 lb.

Arthur Silcock.—An oilcake crusher; machine broke down.

Richard Hornsby and Sons.—A double cake breaking machine. First trial:

power, 92,290 lb.; produce, 150 lb. Second trial; power, 32,100 lb.; produce, 101 lb. Third trial: power, 17,600 lb.; produce, 114½ lb.

Barrett, Exall, and Andrews.—First trial: power, 12,800; produce, 154½ lb. Second trial: power not registered, produce, 117 lb. Third trial: power, 16,575 lb.; produce, 59 lb.

W. L. Fisher.—First trial: power, 114,730; produce, 147½ lb. Second trial: power, 52,680; produce, 153 lb. Third trial: power, 18,140 lb.; produce, 61 lb.

W. R. Nicholson.—First trial: power, 14,300 lb.; produce, 129 lb. Second trial: power, 16,720; produce, 93 lb. Third trial: power, 6320; produce, 88½ lb.

E. H. Bentall.—First trial: power, 124,350; produce, 164¾. Second trial: power, 49,110; produce, 165½ lb. Third trial: power, 27,190; produce, 124½ lb.

TRIAL OF ROOT CUTTERS AND PULPERS.

Some rather interesting trials of the cutters and pulpers were made, in order to test their capabilities when worked by hand power. The instrument used for testing these implements was Amos' dynamometer, which calculated the force necessary to propel them, and the proportionate produce resulting in a given time. The dynamometer, when in operation, marks exactly 32½ revolutions per minute, and also gives the pounds weight which an implement is capable of raising one foot high. Of course, experiments like these were chiefly interesting to scientific men, and those experienced in, and practising the manufacture of the implements in question; and these gentlemen entered very warmly and spiritedly into the excitement of the scientific contest. Here, we may remark, is one amongst the many other proofs of the benefits conferred by this society, and the numerous kindred societies of which it is now the chief, if not the progenitor. In fact, here is the arena of the magi of the mechanical world—the stage on which men of genius meet to compare notes, and to reap the advantages of experience, and the reward of inventive talent. Here are to be seen the mechanical forces in all their applications and modifications—in the screw, the wheel, the lever, &c., utilised by the skill of the cunning craftsman, and easily overcoming what heretofore seemed insurmountable obstacles, and placing within the reach of all cultivators of our mother earth the means of enhancing her many rich and life-sustaining gifts.

The first implement subjected to trial was Biddell's patent root-cutter. It indicated, in two minutes, power to raise 22,500 lb. when cutting finger pieces for sheep, and cut 93½ lb. The gearing, on being reversed so as to cut slices for cattle, gave the following results :—

	Power.		Time.
Biddell's patent root-cutter....	16,030 lb.;	produce 145½ lb.	2 min.
Biddell's do. do. reversed.	22,195 lb.	do. 79 "	3 "
Warner's turnip-cutter.....	25,400 lb.	do. 167¾ "	2 "
Gardener's turnip-cutter.....	8,090 lb.	finger pieces for sheep. 101 "	2 "
Do. reversed (Samuelson's)..	9,220 lb.	slices for cattle. 116 "	2 "
Do. altered do. ..	5,790 lb.	small finger pieces, lambs 37¾ "	2 "

Mr. Ransome here objected that, theoretically, the cutting for sheep ought to take more power than for cattle. This had just happened the reverse way, the trial for cattle having taken more power than for sheep. A repetition of the 5th trial was, therefore, made with the following result:—Time, two minutes;

power, 10,700; produce, 98¾ lb. It will be observed that this shows just 15 per cent. more power, and 15 per cent. less in weight. This was accounted for by some difference in the style or rapidity of feeding, though some gentlemen seemed to think that so different a result somewhat compromised the validity and worth of the test.

B. Samuelson.—An improved root pulper. This instrument is used for mincing roots to mix with chaff for cattle and with meal for pigs. The operation is necessarily slower, and the power required greater, the finer the produce is comminuted. On being put to the test it was ascertained that a mistake had been mode, and an implement requiring steam power instead of to be worked by horse power had been brought on the ground.

T. Brewer's patent disc pulper.—Time, three minutes, power, 11,470 lb.; produce, 36¼ lb.

William Goulding and Co.—A root pulper. Time, three minutes; power, 30,420 lb.; produce, 100 lb.

E. H. Bentall.—A root pulper. Time, three minutes; power, 23,100 lb.; produce, 72 lb.

Carson.—Moody's patent turnip cutter. Time, two minutes; power, 14,700 lb.; produce, 138 lb.

B. Samuelson.—A patent disc root pulper invented by Thos. Brewer, of Banbury. Time, three minutes, power, 30,150 lb.; produce, 62 lb.

James Woods and Son.—A patent root mincer and pulper, invented by Fred. Philips, of Brandon. Time, three minutes; power, 24,300 lb.; produce, 52½ lb.

Barnard and Bsihop.—A patent root pulper. Time, three minutes; power, 31,945 lb.; produce, 89 lb.

Barnard and Bishop.—A root grater or turnip cutter. Time, two minutes; power, 11,520 lb.; produce, 142¾ lb.

Pickerley, Jones and Co.—An improved turnip slicer. Time, two minutes; power, 9300 lb.; produce, 97¼ lb.

James Woods and Son.—A patent root mincer and pulper, invented by Fred. Phillips, of Brandon. Time, three minutes; power, 26,310 lb.; produce, 52¾ lb.

Same machine, reversed.—Time, three minutes; power, 18,680 lb.; produce, 66 lb.

Albert and Theodore Fry.—A root grater, invented by Bushe and Barter, of Lixmore and Blarney. Time, three minutes; power, 38,400 lb.; produce, 89¾ lb.

THRASHING MACHINES.

The trial of the thrashing machines was as severe as could possibly be imposed, and excited unusual interest both amongst the exhibitors and the ordinary visitors. These trials lasted three days. About 100 machines, combined or otherwise, were entered for exhibition, the majority of them being based upon the same principles of construction, with variation of working details, and most of them aiming at both thrashing the corn and cleaning it ready for market. All the first-class manufacturers were efficiently represented, and each apparently did his best to be successful in the trials. Each machine had 150 sheaves of wheat served out to it, and many of them 60 of barley, and the time taken to thrash the quantities, and the relative cleanness of separation of the different qualities of the grain were the tests imposed upon the machines. The following results were obtained :—

	Sheaves of wheat.		Minutes.
Hayward's machines	—	....	Choked.
Ransoms and Sims	150	....	11
" " Barley.	60	....	5
Nalder	150	....	9
Roby and Co.	150	....	12
Savory	150	....	14
Holmes	150	....	9
Barrett, Exall, and Co	150	....	12½
" " Barley.	60	....	4
Cambridge	150	....	12½
Humphries	150	....	13
" Barley.	60	....	5
Clayton and Shuttleworth	150	....	13
" " Barley.	60	....	7
Fowler and M'Collin	150	....	11
Garrat and Sons	150	....	17½
Harts and Gibbon	150	....	13½
Hornsby and Sons	150	....	16¼
" " Barley.	60	....	6¼
Tuxford and Co.	150	....	14
" " Barley.	60	....	6¼
Gilbert	150	....	12¼
Foster	150	....	13

SINGLE BLAST MACHINES, PREPARING THE CORN FOR DRESSING.

	Sheaves.	m. s.
Ransomes and Co.	150	12.30
Barrett, Exall, and Co	150	11.20
Humphries	150	12.30
Smith	150	9.30
Clayton and Shuttleworth	150	15.45
Garrett and Co.	150	11.30
Hornsby and Co.	150	11.15

A subsequent trial took pla e of the following four engines, which produced these results. 800 sheaves of wheat were told out to each machine, 25 for setting it to work, and 775 to test its working capacity:—

	Sheaves.		Minutes.
Hornsby and Sons	775	....	43½
Clayton and Shuttleworth	775	....	43½
Ransomes and Sims	775	....	47
Humphries	775	....	61

THE WINE OF 1858—We have just received a letter from Segni, a remote interior town of the papal dominions, in which it is stated that for the first time in many years the vines show no traces of oidium, or grape disease, and that the vintage will be enormous. Indications of the same are to be found in The Independence Belge and the German foreign items for nearly all the continent. The traffic in cheap Hungarian wines, which has been very much stimulated of late years, and which draws its resources from a limitless supply of excellent varieties, rapidly becoming well known, will contribute to depress the price, so that there is a possibility of foreign wines again sinking to the old level.—*Philadelphia Bulletin.*

COST OF UNDERDRAINING.—On "the Premium Farm of the Empire State," there are sixty-one miles of underdrains, all laid by the present proprietor, R. J. Swan, of Rose Hill, near Geneva. The cost has been much less than usual, as drains from two and a-half to three feet deep have been laid complete at an expense of 28½ cents per rod. Digging, 12½ cents; laying the tiles and filling the drains with plows, 3 cents; average cost of tiles and cartage, 13 cents. The tiles alone frequently cost 25 cents per rod, freight included.

DISEASES OF THE SHEEP.

Continued from page 168.

Inflammation of the Brain is sometimes produced by excess of nourishment, particularly if the alteration from poor to rich food is sudden. The symptoms are of extreme violence: the motions of the animal sometimes assume a ridiculous form. The treatment should be prompt: the vein of the neck (the jugular) should be opened, and from half a pound to a pound of blood abstracted, and a purgative, such as two ounces of sulphate of magnesia, administered. In the lamb, the dose as well as the bleeding, will be less in proportion.

Louping-Ill.—A disease attacking sheep and lambs in the spring; rare in England, but common in Scotland, occurring when dry, frosty, and easterly winds prevail.—Symptoms.—Dulness, deadness of coat, loss of power of one or both sides, tremblings, contractions of the gullet, convulsive fits, disturbed breathing, gnashing of teeth and foaming of the mouth, and a sidelong motion of the body. Treatment.—Immediate and copious bleeding from the neck, followed by purgative medicines.

Turn-sick, Giddiness.—The sheep appears dull and moping, is unsteady in his motions, and, after some time, moves round in a circle. Treatment.—If any soft place can be felt on the surface of the skull, the hydatid may be penetrated by means of a common awl, and relief has in some instances been afforded. In others, the operation of trephining has been had recourse to with success. Unless a soft place can be felt on the surface, when the awl or trephine may be used, it is better to confine the sheep, and, by means of cut food and oil-cake, get it fit for the butcher.

Obstructions in the Gullet are less frequent in the sheep than in the ox. Treatment.—The probang, previously oiled, should be passed into the gullet over the root of the tongue—the head of the sheep being elevated, and held firmly between another man's knees.

Hoove, Hoven, Blasting, are terms given to the distention of the rumen with gas, caused by the fermentation of the food. The treatment must be prompt, in order to be successful. If the hollow probang is at hand, it may at once be passed into the rumen, and so allow the gases to escape through it; or, if nothing else is at hand, a dessert-spoonful of salt may be dissolved and poured into the throat; or, better still, a drachm or more of chloride of lime, dissolved in water. This is more particularly called for if the putrefactive process is commenced; whilst, in the early stage, two to four drachms of hartshorn in half a pint of warm water will often give relief. Sulphuric ether, in doses of two drachms, is also a very effectual remedy. In some cases there is no time to administer medicine, but it is necessary to plunge a trochar or a penknife into the rumen, through the flank. If the latter is employed, a small tube, such as a quill, should be kept in the wound, so as to admit the escape of the gas, which, when the trochar is employed, is effected by the canula, which accompanies it. After-treatment is often requisite, as indigestion sometimes succeeds, as well as sub-acute hoove. The following draught will be useful:—

Sulphate of magnesia	2 ounces.
Gentian	1 drachm.
Ginger	2 drachms.
Chloride of lime	1 scruple.

Dissolve in warm water or gruel.

Great caution should also be used with regard to the diet; and, by way of preventive, it will be an excellent plan to sprinkle any luxuriant herbage with salt previous to sheep being turned on it.

Poisons.—Great losses have sometimes occurred from sheep partaking largely of indigestible or deleterious matters. The treatment in these cases should be the administration, as soon as possible, of large doses of linseed oil, so as at once to sheathe the coats of the stomachs, and get rid of the offended objects by purgation.

Diarrhœa.—In some places a cure is effected by turning the sheep into a pasture abounding with common tormentil or septfoil. By way of medicine, the following will be found a very suitable mixture:—

Catechu, powdered	4 drachms.
Prepared chalk, powdered	1 ounce.
Ginger, powdered	2 drachms.
Opium, powdered	½ drachm.

To be mixed with half a pint of peppermint water, and given twice a-day; two or three table-spoonfuls being a dose for a sheep, and half this quantity for a lamb. Lambs are probably more subject to diarrhœa than sheep. If the looseness is moderate, it may pass off without injury, but if it continue, recourse should be had to treatment. It will sometimes be prudent to administer a little opening medicine, such as two drams of Epsom salts, to clear out the intestines previous to the cordial medicine above mentioned, which will generally succeed.—The *White Skit*, so called from the pale colour of the fæces, is a more dangerous disease, and its danger does not arise from looseness, but rather from constipation, being, in fact, owing to coagulation of the milk in the fourth stomach. The treatment must consist in the administration of alkalies, their property being to dissolve the hardened mass. Half an ounce of magnesia dissolved in water, or a quarter of an ounce of hartshorn diffused in water, or both these medicines combined in less quantities, should be given and repeated, and followed with Epsom salts, after which a little of the cordial medicine may be given. It will be desirable to give the above medicines in a large quantity of water.

Braxy is a much more serious disease than diarrhœa, being inflammation of the coats of the intestines. It is, however, often preceded by diarrhœa, and attended by fever and constitutional disturbance. A sudden change of pasturage, more particularly from a succulent to a dry and high pasture, is one of the most frequent causes, and to this may be added exposure to wet and cold after travelling. The dung is hard and scanty, though frequently discharged, and covered with mucus and blood, with an offensive smell. The fætor increases as the disease progresses, and often becomes fatal in the course of a few days; when the intestines, particularly the large, are found in a state of great inflammation, and even ulceration. Treatment.—Linseed gruel should be given several times a-day, so as to lubricate the intestines, as well as to afford some nourishment; and the following medicine should be administered:—

Linseed oil.....2 ounces.
Powdered opium.....2 grains.
With linseed tea.

The following day the opium may be repeated, with a scruple of powdered ginger and two scruples of gentian, and the oil may be again administered if required. In some instances the following treatment has been adopted with success:—Bleeding, in the first instance, from the neck or the fore-leg, after which an ounce of sulphate of magnesia, and the following day five grains of ipecacuanha, repeated two or three times, with intervals of two or three hours.

Spasmodic Colic sometime attacks lambs, but rarely sheep. The symptoms are those of severe pain—not continued, but in paroxysms. Treatment.—The following should be administered slowly and carefully:—

Tincture of opium.....1 drachm.
Powdered ginger.....1 "
Epsom salts.....4 drachms.
Dissolved in warm water or gruel.

Double this quantity may be given to a full-grown sheep. To be repeated without the salts, if required.

Redwater, in sheep, consists of an effusion of red serum or water in the abdomen, outside the bowels, produced by an increased action of the vessels of the peritoneum, or serous membrane, which lines the abdomen internally, and the bowels, &c., externally. It is very common with young lambs before they are weaned, as well as afterwards, and sheep are also sometimes affected. It will generally be advisable to kill the animal affected, if in any condition for the butcher; but where treatment is employed, the following will be a desirable medicine:—

Sulphate of magnesia.....1 pound.
Ginger, powdered.....1 *ounce.*
Gentian, powdered.....1 "
Opium, powdered.....½ drachm.
Dissolved in warm water or gruel.

This medicine will be sufficient for eight or ten sheep, or double the number of lambs. The flock attacked by this disease should, if possible, be removed from the turnip field, or only allowed to remain there during a portion of the day.

Catarrh.—Sheep are very liable to catarrh at the fall of the year, and particularly if the season is unduly wet. Every severe case should be met with more shelter and good nursing. This alone, with the assistance of a little gruel, will often effect a cure; but if the symptoms are more severe, half an ounce of Epsom salts, a drachm each of nitre and of ginger, and half a drachm of tartarized antimony may be given, dissolved in gruel. In still more severe cases, where any of the sheep have been lost, or inflammation of the lungs is threatened, bleeding from the neck should be practised.

Bronchitis.—Sheep are less liable to attacks of bronchitis than cattle, but should be treated when affected in a similar manner; and also when bronchitis or hoove is produced by the presence of worms in the windpipe. Half a pint of lime water, and a quarter of a pint for a lamb, should be given in the morning and in the evening; or two tea-spoonfuls of salt dissolved in water, continuing the treatment for a week.

Inflammation of the Lungs occasionally occurs, and seems peculiar to certain localities, such as low and damp situations. The treatment in these diseases should almost invariably commence with copious bleeding, which, however, is demanded more, and can be better borne, in pleurisy than in the other diseases of the lungs. In addition to bleeding from the neck, purgatives should be given, and followed by sedative medicine, such as nitrate of potash, tartarized antimony, and ipecacuanha; one drachm of the first, ten grains of the second, and five grains of the third, will be a daily dose for a sheep. Setons may also be inserted in the brisket.

Diseases of the Skin.—The *Scab* is analogous to the itch in man and the mange in horses; being, in fact, like these diseases, usually propagated by contagion, although poverty and filth will also produce it. It is essentially owing to the presence of minute insects called *acari*, which burrow under the skin, and produce excessive irritation, causing the animal to seek relief by rubbing against any hard object. This friction removes the wool, and the labor of rubbing and the irritation causes the animal to lose flesh, and thus it becomes a miserable object. The sheep begins to rub about twelve days after the infection has been received, and at this time hard pimples will be formed, and the skin feels rough. The pustules are usually broken by rubbing in the course of a few days, and the acrid fluid which escapes, dries and forms a scab, whence the disease receives its designation. If this scab is rubbed off, a sore is left, which spreads in time over a good portion of the body, the wool being of course denuded. The *acari* are of both sexes, and the females are extremely prolific, so that the least infection is very soon spread amongst a flock. It is therefore of much importance to attack the disease at the onset, and by destroying the insect, remove the disease itself. Treatment.—Various medicines have this effect; but the great difficulty is in applying them to the root of the evil. Sulphur and oil of tar form a good specific for the mange in horses; but it is very difficult to apply it to the woolly covering of the sheep. The following will be suitable forms, if it can be applied:—

Lard or palm oil	2 pounds
Oil of tar	½ pound.
Sulphur	1 "

The two latter ingredients being first mixed together, the former should be rubbed down with it. If the mixture is required to be in a more liquid state, linseed or fish oil can be used, instead of a portion of the lard. Tobacco-water is a very good application; but the high duty on the article renders it very expensive. Mercurial ointment has also been used with success; but it requires caution, and too much should not be used at one time. When used, it should be diluted with several proportions of lard, and should be rubbed into the skin in lines about four inches apart. The most convenient mode of treatment, though not the most effectual, is to dip the sheep in a solution of arsenic, which also contains some sulphur. The composition used to destroy ticks will answer the purpose. It is well to dip suspected sheep, even when the ointment is applied to decided cases. The following forms a very effectual and powerful application, but it should be used cautiously:—

White hellebore	12 ounces.
Bichloride of mercury	8 "
Rosin	1 pound.
Sulphur	1 "
Tallow	2 pounds.
Whale oil	6 gallons.

The two first ingredients should be mixed with a little oil, and the remainder being melted, the whole should be mixed together.

The Tick.—This well-known insect propagates rapidly, and would prove very irritating and injurious to sheep, were it not for the now almost invariable custom of dipping sheep and lambs every year—the ewes just after they are shorn, and the lambs at the same time, so as not to allow them to communicate the insect to the ewe again.

The Rot consists essentially in the presence of certain parasites, called *flukes*, which are found floating about the biliary ducts, apparently feeding on the bile, and preventing it from fulfilling its destined functions in the animal economy. The first symptoms of rot are not alarming, but a diminished appetite, loss of flesh, paleness of the membranes, flabby feeling of the limbs, and loss of wool, are sufficient indications of the existence of the malady. With regard to remedial measures, the most useful are those of a preventive kind; for when the disease is established, all we can do is to hurry on the fatting process, by means of the most nutritious food, such as oil-cake and linseed, with the daily addition of salt. The latter medicament, indeed, has to a certain extent, a remedial effect; for sheep have been found to improve so much whilst under its influence, that hopes have been entertained that it would prove a specific altogether.

Foot-rot is owing to the exposure of the hoof to a greater amount of moisture, and for a longer period, than the nature or structure of the foot of the sheep is adapted.—The treatment indicated is to protect the feet from moisture; to pare away the rugged parts of the foot, carefully removing any portion partially detached, and then to apply a stimulant, or even a caustic, to the denuded part, so as to induce healthy action. If matter has formed, an exit should be afforded for its escape, but the quick should not be unnecessarily exposed. The following will be found a very useful and successful application to the foot, after it has been pared; and it has this advantage over many other applications, that it not only represses diseased secretion, but promotes healthy action; and while it encourages the growth of horn, it protects the foot, for a certain time, from the access of moisture:—

Tar	8 ounces.
Lard	4 "

To be melted together; then add, slowly and carefully—

Oil of turpentine	½ ounce.
Sulphuric acid, by measure	½ "

When a caustic is required (and sometimes a single application, at first, is very good treatment), the muriate of antimony is a convenient and suitable application, when applied with a feather, and the foot afterwards anointed with tar, combined with grease. Equal parts of hydrochloric acid and tincture of myrrh and aloes have also been used with success. In order to protect the feet from undue moisture, and even after the disease has appeared, it is a very good plan to cause the sheep to walk every day over a dry and smooth surface, on which lime has been thickly strewed. Sheep are liable to injuries of the feet, which somewhat resemble the foot-rot; such as soreness from travelling, and irritation of the biflex canal between the claws. The treatment should be somewhat similar to that recommended as foot-rot.

Vitality of Garden Seeds.—As some inquiries have been made recently in regard to the vitality of garden seeds, we quote from a letter sent us several year since, by a curious and intelligent horticulturalist in Canada West:—"The vitality of seed I find of greater duration than is usually supposed; but then, it must be saved with some degree of care. To prevent any mistake, I always label the year in which the seed is gathered. On referring to my book, I observe that I sowed in 1851 double curled Parsley and Asparagus Beans, the produce of 1845; and on the 24th of May, 1850, yellow turnip Radish of 1839. On the 25th of August, 1851, I sowed black Spanish Radish seed gathered in 1838. On the 30th of the same month these Radishes appeared above ground, and there is this observation in the margin:—'The Radishes of 1838 grew very well.' This season was very dry but the radishes were watered."—*Rural New Yorker.*

THE PROGRESS OF ENGLISH AGRICULTURE.

(*Continued from Page* 163.)

A new system of fattening sheep, which has been attended with wonderful results, was commenced in 1824, on the suggestion of Mr. Coke's steward, Blaikie, by Mr. John Hudson, now known throughout England in connexion with his present farm of Castle Acre. He ventured to supply his young wethers with sliced turnips and purchased oil-cake. Such was the success of his experiment, 'that, to Mr. Coke's astonishment, when he asked to see the produce of his tup, he found they had been sent fat to market twelve months before the usual time.' Yet all John Hudson's neighbours, including his father, a man of agricultural progress, prophesied his ruin from his extravagance in buying food for sheep, which was regarded in much the same light in farming, as for a young spendthrift to go for money to the Jews. At the present day the purchase of linseed-cake, or meal, or foreign pulse, is one of the regular means by which an increased quantity of meat is manufactured. Wherever turnips are grown and sliced, there cake-troughs are to be seen, and the improved feeding, coupled with the natural tendency of the improved breeds to early maturity, has multiplied to an enormous extent the amount of mutton produced Mr. Morgan states that twenty years ago the majority of the sheep brought to Smithfield Market were three and four years old, and it was difficult to find a score under two. Now a three-year old sheep is scarcely to be met with, and fat sheep only a twelvemonth old are plentiful. Besides the vast increase in the numbers kept, we have thus three generations got ready for our tables in the same space of time as we had one in 1838. Bought food would have been wasted on the former slow-growing species; but applied to the improved stock bred on Bakewell's principles, it created a demand not only for tups from Sussex, steers from the Quantock hills, and oilcake from Germany, but for improved implements and machinery—the turnip-slicer, the cake-crusher, the chaff-cutter, and the bone-mill, as well as the drill, horse-hoe, heavy roller, and better-contrived ploughs and harrows.

The Leicester breed was for some time adopted by Mr. Coke. He afterwards substituted the Southdowns as superior; and the perfecting of these in the present generation by Mr. Jonas Webb, may be said to have been due to one of those trivial circumstances that are always influencing the events of the world. His grandfather was a breeder of Norfolk rams, and it was the amusement of the old gentleman at his annual sales, to set his grandsons to ride on his tups, holding fast by their huge horns. It was during the races on these sharp-backed animals that Jonas determined, as soon as he was a man, to breed sheep with "better *saddles* of mutton." A lean, hurdle-backed, black-faced Norfolk ram, and the beautiful firkin-bodied Southdown, for which Mr. Webb refused five hundred guineas at the Paris Exhibition of 1856, are the two extremes, the two mutton-marks between the boyhood and manhood of the same individual. Nothing but the Norfolk sheep could have found a living on the uncultivated Norfolk heaths; nothing but the "roots," artificial grasses, cake, and corn of modern days, could have raised the Babraham "Downs" to their marvellous perfection.

Another instance of a different kind, and one in which extremes meet, marks the contrast between the past and the present. Mr. Coke's first agricultural adviser was a Mr. Overman, of Dutch descent, whose sons are still tenant-farmers on the Holkham estate, and prize-winners at Royal Agricultural and Smithfield fat-stock shows. The heads of the covenants were drawn, at Mr. Coke's request, by Overman, and only restrained tenants, in obedience to the famous Norfolk

rotation, from growing two consecutive corn crops. Now, after a lapse of eighty years, the second Earl of Leicester wisely encourages his tenants to return to the once justly condemned system of two white crops in succession; because the soil that in 1770 was exhausted, has, by a long course of high-farming, been rendered almost too fertile.

A complete history of English agriculture from 1750, would comprize names worthy of record from almost every county, and the name of George III. would worthily appear at the head of the list. He had a considerable practical knowledge of the science, and contributed, under the denomination of Ralph Robinson, to Young's monthly periodical, 'The Annals of Agriculture.' His devotion to the pursuit did much to recommend it to others; and he is often fondly and proudly spoken of as 'Farmer George.' But no sketch can do justice to so extensive a subject, and, for the sake of brevity and simplicity, we have purposely confined ourselves to the tillage of Norfolk, which long led the van in agriculture improvement, and where nearly all the methods which stood the test of time were early adopted. The very labours seemed animated with the same spirit as their employers, for both Young and Marshall remarked that in no part of England did the workman display an equal activity. We now arrive at a period when Norfolk no longer occupies its old position, not because it has dropped behind in the race, but because other counties have pushed forward, and the course of events are tending to equalize the arts of cultivation throughout the kingdom. This last epoch is chiefly distinguished by the immense extension of drainage, by the discovery of artificial manures, by the increased purchase of food for cattle, by the improvement of implements, and still more by the improvement of those who use them. 'It is well known,' say Sir John Sinclair, 'that the best cultivated districts are those which possess the greatest facility of internal communication, without which, agriculture languishes in the most fruitful soil, and with it, the most ungrateful soil soon becomes fertile.' The effect which railroads have produced upon farming is a signal illustration of the justice of this remark, for without their aid the larger portion of the recent progress would have been impossible. They furnish cheap and rapid conveyance for goods which were too bulky to admit of free interchange in the days of horse-power—for corn and cattle, coal, iron and timber, implements and machinery, oil-cake and artificial manures—all that a farmer has to sell or wants to buy—and, above all, for the farmer himself, who brings home with him new ideas as well as new inventions. The railways practically converted distant rural parishes into the suburbs of towns, and thus inoculate them with a spirit of inquiry and commercial enterprise which could never have existed under packhorse or waggon communication. Wesley, who had a wide experience of the different classes in England, thought the tenantry the most ignorant, stupid, and unfeeling part of the community. 'In general,' he added, 'their life is supremely dull, and it is usually unhappy, too; for of all people in the kingdom, they are the most discontented, seldom satisfied either with God or man.' Wilkes said that, reversing Pope's Maxim, they held that 'Whatever is, is *wrong*.' Wesley, however, was mistaken both in supposing that husbandry was a dull occupation, and in imagining that the grumbling of the husbandmen, which was chiefly designed to keep down rents, was the real measure of their discontent; but, taken as a body, they neither read nor thought, were sluggish in their minds, and the slaves of an antiquated routine. The suddenness with which the many have displayed the aptitude which formerly was the prerogative of a few, is without a parallel in the annals of farming.

The starting point of the new era may be dated from the years 1837 and 1838, which were signalized by the foundation of the Royal Agricultural Society of England. This now famous association was suggested in a pamphlet published

in 1837 by the late Henry Handley, M.P., a fine specimen of a Lincolnshire squire—a good sportsman, an excellent judge of stock, and cultivating his own estate with more intelligence and success than was usual at that time among his class. The first annual encampment of the society took place at Oxford in 1839, and its first Journal was published in 1840 under the admirable editorship of the late Philip Pusey, a lively and forcible writer, and a most zealous farmer, who to the day of his death in 1851 devoted his time, his talents and his fortune to promoting the improvement and recording the progress of his favourite science. He was an example of that delightful combination of scholarship and practical energy which is so common in England, and he exercised the double influence of an accomplished gentleman and an enlightened agriculturist.

In every institution which meets with distinguished success results are always produced which were not anticipated by its originators. Thus it happened that, when the Agricultural Society was founded, not one of the promoters forsaw the importance of the mechanical department. In the ten sections of the charter of incorporation defining the objects of the association, 'implements' are only incidentally referred to as one of the subjects to which men of science were to be encouraged to pay attention, in a miscellaneous paragraph, which includes 'the construction of farm-buildings,' 'the application of chemistry to the general purposes of agriculture,' 'the destruction of insects injurious to vegetable life,' 'and the eradication of weeds.' At Oxford a few manufacturers saw an opening for obtaining customers, and found their way to the show-yard in spite of the difficulties from the want of that cheap conveyance which is now common to the whole kingdom. One gold medal for a collection of implements, three silver medals and five pounds for a 'paddle-plough for raising potatoes,' were all the rewards distributed in 1839 for what was destined to be the most attractive, as well as the most useful feature of the Society's exhibitions. After the Cambridge meeting in 1840 the importance of the implements was acknowledged; and the number displayed, beginning with some 300 at Liverpool in 1841, increased at the rate of about 100 on every succeeding year, until, in 1853, at Gloucester, they reached their highest point in a total of 2000. The rise or fall of a few hundreds chiefly depends upon the importance and railway facilities of the town where the show is held, and the number of articles exhibited is less a test of the progress of mechanical invention than of the sales which are likely to be effected in any particular district. The annual show is only one of the numerous modes in which the makers advertise and display their productions. The true prize to the manufacturer is plenty of custom.

(*To be Continued.*)

ECONOMY IN SMOKING.—A correspondent of the *Manchester Examiner* has made a discovery which will greatly promote comfort and economy in smoking, the result being achieved by a simple plan of keeping the tobacco-pipe cool. His instructions are:—Take a piece of sponge three-quarters of an inch square (in a dry state), make a small hole through the centre, then steep it in water until it becomes distended. Squeeze the water out, and put the stem of the pipe through the hole until the bowl comes in contact with the centre of the sponge. Charge the pipe, and fill the sponge with cold water, then commence smoking, and it will be found that a saving of 25 per cent. in tobacco is effected, with an improvement in the flavor.

Public Sale of Short Horns.

ON TUESDAY, October 5th, 1858, at 1 P. M., I will offer my entire herd without Reserve. This will be the first day of the New York State Fair, to be held at Syracuse. Canastota (my Railroad Station), is only one hour from Syracuse Trains stop at this Station, going East, at 8.28 A.M., and 2.42 P.M.; going West at 8.23 A M. and 12.35, 3.27 and 8.10 P.M. A liberal credit will be given.

Catalogues, with full particulars, can be had at this office or of

S. P. CHAPMAN,
Clockville, Madison Co., N. Y.

J. R. PAGE, *Auctioneer*,
Lennett, Cauga Co., N. Y.

NOTICE.

THE Township of Nelson AGRICULTURAL SOCIETY will hold their ANNUAL SHOW in the Village of Wellington Square, on WEDNESDAY the 20th October next.

DAVID GHENT,
President.

Nelson, 14th Sept., 1858.

NOTICE.

THE FIRST EXHIBITION OF THE NORTH RIDING OF LEEDS AND GRENVILLE COUNTY AGRICULTURAL SOCIETY will be holden at FRANKVILLE, Township of Kitley, on the FIRST WEDNESDAY OF OCTOBER next.

GIDEON LEEHY,
President.
WM. SMITH,
Secretary & Treasurer

FRANKVILLE,
Aug. 12th, 1858.

FOR SALE.

FIFTEEN THOROUGH-BRED AYRSHIRE CATTLE: BULLS, COWS AND HEIFERS of various ages. Apply to Mr. Denison, at his residence, or at the office of the Board of Agriculture.

TORONTO, August 4th, 1858

University College, Toronto.

THE Lectures in this Institution on THE SCIENCE AND PRACTICE OF AGRICULTURE, will commence on MONDAY, NOVEMBER the 1st, and will be continued (five lectures a week), till the beginning of April, 1859. Agricultural students can attend other courses, such as Chemistry, Geology and Mineralogy, Natural History, including Botany, English Language and Literature, &c., as they may desire.

Particulars may be obtained by applying either personally or by letter to PROFESSOR BUCKLAND, University College, Toronto.

TORONTO, Augu t, 1858.