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THE NOVA SCOTIAN JOURNAL OF AGRICULTURE

Published under direction of the Board of Agriculture of Nova Scotia.

Omnium rerum, ex quibus aliquid adquiritur, nihil est agriculturâ melius, nihil uberius, nihil homine libero dignius.—Cicero: de Officiis, lib. I, cap. 42.

VOL. III. ***HALIFAX, N. S., AUGUST, 1878.*** ***No. 18.***

FARMERS' ENGAGEMENTS.

August 27—Last day for entry of exhibits at the Floricultural and Poultry Exhibition. Secretary, R. J. Wilson; P. O. Box, 590, Halifax.

Sept'r 1—Last day for entry of cattle, sheep, swine and poultry, at the Kentville Exhibition. H. Lovett, Secretary.

Sept'r 3-6—Floricultural and Poultry Exhibition at Halifax.

Sept'r 7—Last day for entry of horses, cattle, sheep, swine and poultry, at the Provincial Exhibition, Truro. W. D. Dimock, Secretary.

Sept'r 10—Agricultural Lecture at Upper Musquodoboit, by Secretary of Central Board of Agriculture.

Sept'r 17—Agricultural Lecture at Maitland by Secretary of Central Board of Agriculture.

Sept'r 21—Last day for entry of plants, flowers, fruit, grain, roots, vegetables, implements and manufactures, at the Provincial Exhibition, Truro.

Sept'r 28—Last day for entry of plants, fruits, flowers, grain, roots, vegetables, implements and manufactures, at Kentville Exhibition.

Sept'r 30-Oct'r 4—Provincial Agricultural and Industrial Exhibition at Truro.

Oct'r 4—Public Auction at Truro of thorough-bred cattle, sheep and pigs imported from England by the Central Board of Agriculture.

Oct'r 7-10—King's County Agricultural and Industrial Exhibition, Kentville.

Dec'r 3—Annual Meetings of all Agricultural Societies throughout the Province for election of officers and other business.

Dec'r 31—Last day for receiving Attested Returns from Agricultural Societies to qualify for Legislative Grant for 1878. Secretary, Prof. Lawson, Halifax.

ENTRY PAPERS for the Provincial Exhibition at Truro may be obtained on application to W. D. Dimock, Esq., Truro, Professor Lawson, Lucyfield, Bedford, or Mr. Venables, Province Library, Halifax.

OWING to press of matter this month, it has been found necessary to defer the publication of several pedigrees of thorough-bred stock recently registered. These will be included in next number, which is now in course of preparation for immediate issue, and will contain a list of all the thorough-bred cattle in the Province, for convenience of reference to Competitors and Judges.

THE ANNUAL CATALOGUE OF THOROUGH-BRED STOCK is now ready for publication in the *Journal of Agriculture*. Stock owners are requested to send to the Secretary of the Board of Agriculture, without a day's delay, notice of any changes of ownership, or necessary corrections. In writing out Pedigrees, the *numbers* as well as names of Sires and Dams should be given, as otherwise it is frequently impossible to identify them.

THE *Field*, in criticising the judging of SHORT-HORNS at the recent "Royal" Exhibition in England, remarks that the judges went for size, substance and flesh, more than for quality of form." The editor of the *Country Gentleman* comments by saying that "this is coming around toward what has been complained of as being too much the standard with breeders in America."

A NEW Agricultural Society has been formed at Falmouth, Co. Hants, of which Lewis W. Hill, Esq., is the active officer.

WE have received from Colonel Blair a specimen of *Senecio viscosus*, an imported plant, which has appeared at the Railway Station at Truro, and is so much like the Stinking Willie of Pictou, of abominable fame, as to have struck terror in the hearts of some Colchester farmers. "Truro is full of it." "The Depot grounds are covered with it." "It appears to flourish in the coal ashes about the Depot." Such are the reports. This plant need not be feared as a farm weed, as it is annual and does not take hold of grass fields and pastures; it grows only in rubbish heaps and by road sides. It is singular that the Pictou Stinking Willie (*Senecio Jacobæa*) and this Truro ash plant (*S. viscosus*), both of European origin, do not grow anywhere on the American Continent except in Nova Scotia. The first species is spreading from Pictou through Antigonish, and seems to favour the northern shore of the Province, for it has not been found on the Atlantic Coast, and a clump which we carefully tended in a flower-border in Halifax County for three years would not increase, but ultimately died out, root and shoot, leaving not a seed behind. The distribution of the S. viscosus is different. It follows the locomotive, being especially abundant on spots where the Iron Horse has fertilized the track, at such stopping places as Richmond, the Junction and Truro. It also grows on the shore in front of the residence of the Hon. Senator Macfarlane at Wallace, and in the streets of Annapolis Royal. Its clammy leaves (whence the specific name

viscosus) and yellow-rayed flowers enable it to be distinguished at a glance from all other Nova Scotian plants.

CENTRAL BOARD OF AGRICULTURE.

MEETING OF EXECUTIVE COMMITTEE.

PROVINCIAL LIBRARY HALIFAX, *25th July, 1878.*

Present: Colonel Laurie, President; Hon. Albert Gayton, Commissioner of Works; David Matheson, Esq., Pictou; Israel Longworth, Esq., Mayor of Truro; Colonel Starratt, Paradise; Professor Lawson, Secretary.

The President stated that the Committee had been called together specially for the purpose of making arrangements for an importation of thorough-bred stock. In order that the Committee might have the necessary information to guide them in making a selection, a circular had been addressed to the Secretary of every Agricultural Society in the Province, asking whether the Society wished to purchase, and if so the kinds, sex, age and price of stock that would be required this season. The replies received were laid before the Committee, read, and an analysis of them prepared. After full consideration the Committee resolved to import the following animals from England, viz.:

2 Short-horn bulls.
2 do heifers or cows.
2 Ayrshire bulls.
2 do heifers or cows.
2 Shropshire Down rams.
4 Shropshire Down ewes.
1 Ellesmere sow.

Also the following, either from the United States or England, viz.:

2 Jersey bulls.

A sub-committee consisting of the President, the Hon. A. Gayton and the Secretary, were empowered to make the necessary arrangements for the purchase of the animals. The sub-committee were further empowered to purchase, in addition to the above, about twenty Leicester sheep, provided suitable animals could be obtained on terms that would not entail too much loss to the Board,—previous importations of sheep not having usually realized prices commensurate with their original cost.

It was resolved to sell the imported stock at the Provincial Exhibition at Truro, during the first week of October.

With a view to lessen the expense of freight and care on the voyage, the Secretary was directed to correspond with J. J. Inches, Esq., Secretary of Agriculture, New Brunswick, with the view of arranging a joint importation. C. E. Brown, Esq., of Yarmouth, was requested to coöperate with the Committee in the purchase of two Jersey bulls, and four Jersey heifers, and to communicate with Messrs. Duffus and Anderson on the subject.

The applications of the following new Agricultural Societies were submitted and accepted:—

River Dennis Ag. Soc., Co. Inverness.
Earltown Ag. Soc., Co. Colchester.
Little Harbour Ag. Soc., Co. Pictou.
Pine Tree Ag. Soc., Co. Pictou.

THE Farmers' Clubs of Massachusetts are to hold their first Annual Fair on Columbus Avenue, Boston, from 2nd October to 2nd November. Space for exhibits, 80,000 feet, table room 42,500 feet. There will be a free Bureau for the sale of farms. The funds collected will be spent in Lectures to Clubs that have assisted by exhibiting. Grasses, grains, roots must consist of samples cured, also with the stalk and roots, method of culture, soil, yield per acre, and price at which orders will be filled for seed. Awards to cows are to be made on the best record of milkings for one year, with method of keep &c.

1st Premium	on	all kinds of Grasses of 3 acres, cured in bales 18 x 26 inches; also a sheaf 8 inches diameter with roots.
1st	"	Grass and Vegetable seed, 4 quarts, best selection.
1st	"	Grains, 4 quarts, with sheaf, including roots, 3 acres.
1st	"	Potatoes, 4 quarts, 5 acres.
1st	"	Corn, 4 quarts, and a trace of 12 ears and 6 stalks with roots, 5 acres.
1st	"	Beet Sugar, and produce from Sugar Beets, with roots.
1st	"	Roots, 10 cut, 6 with tops.
2nd	"	To consist of 1 acre, excepting in roots ½ acre.
1st	"	Butter, kegs of 40 pounds. Lump 10 pounds.
1st	"	Cheese, 20 pounds, home-made and factory-made.
1st	"	Fruit, 18 each and 12 varieties.
1st	"	Fruit, 18 each and 6 varieties.
1st	"	Best new variety of winter Apples.

For further information address, ALBERT L. MURDOCK, Jamaica Plain, Boston.

Mr. Murdock has kindly sent an invitation to Nova Scotian farmers to exhibit, and if awards are obtained, he will forward some of the best lecturers to the Clubs receiving the same.

IN an account of Mr. Bowditch's Millwood Farm, in the *Country Gentleman*, Mr. Philbrick remarks that Mr. B. considers the GUERNSEY BREED a great help to his butter trade, giving a deeper golden colour to the butter, especially in winter. They are also somewhat heavier than the Jersey breed, and the calves are consequently better for veal.

MACDONALD'S CAVE.—Our readers will find a description of this natural curiosity in another column.

MR. BURRELL of Yarmouth has sold six head of good Ayrshire Cattle this season.

ADDITIONS TO NOVA SCOTIA STOCK REGISTER.

AYRSHIRE BULL CALVES.

CCLXXXV.—ROB ROY. Bred by Henry Burrell, Esq., Yarmouth, N. S. The property of Peter Grant, Esq., Port Hastings. Calved April 1st, 1877. Color white and red.

Sire Lord Dufferin CXCIV. g s Lord Lisgar (693).
Dam Lilly 2nd, CXXX. by Eclipse (137).
gr d Scotch Lassie by Prince of Wales (305).
g gr d Spot by Rob Roy, imported, (135).
g g gr d White Lilly by Dundee 3rd, Quebec, imported by W. Simpson.

CCXCIV.—KING HUMBERT. Calved ——. Bred by and the property of Jas. Kitchin, River John, Pictou.

Sire Young Royalty CXXXVII.
Dam Park 4th CXXX. by Mars (398)
gr d Park 2nd (288) 1702. Bred by Lawrence Drew, Merryton, Scotland.

AYRSHIRE BULLS.

CCXCVIII.—PRINCE CHARLIE, C. R., 1220. Red, a little white on flanks. Calved 24th February, 1875. Bred by A. P. Ball, Esq., Stanstead, Quebec; the property of the Yarmouth County Agricultural Society, N. S.

Sire Pride of Geneva, C. R. 129.
Dam Dutchie, C. R. 439.

CCCI.—TALBOT (605), 1492, American and Canadian Ayrshire Herd Record, page 87. Dark red and white. Calved March 28th, 1872. Bred and owned by N. S Whitney, Montreal, Que. Owned by Colonel John Saunders, Studholm, King's County, New Brunswick.

Sire George (117), gr s, Colin 2nd (131).
Dam Netty (106), 1689.

AYRSHIRE HEIFERS.

CCXCVI.—LADY MARY. Calved June 15th, 1878. Colour, white and brown, spotted. Bred by and the property of John A. McCurdy, Esq., Onslow.

Sire Bismarck.
Dam Pearl Drop, CXXVII., imported, by Yardabent.
gr d Rosy, winner of 3rd prize at Strathaven, 1877.

CCXCVII.—LILLY 5TH. Colour red and white. Calved March 27th, 1878. Bred by, and the property of Henry Burrel, Sr., Yarmouth, N. S.

Sire Wallace CCLXXIX (Guy Ontario).
Dam Lilly 2nd CXXXI by Eclipse (137).
gr d Scotch Lassie by Prince of Wales (305).
g gr d Spot by Rob Roy (imp.) (135).
g g gr d White Lilly by Dundee 3rd, Quebec, imported by W. Simpson.

CCXCV.—May Queen. Calved April 13th, 1876. Colour, brown and white, spotted. Bred by Henry Burrell, Esq., Yarmouth, N. S. The property of John A. McCurdy, Esq., Onslow.
Sire Wallace CCXXXIII., Guy, Ont.
g s Lord Lisgar, No. 692 Herd Book.
Dam Lilly 3rd CXXXII. by Lord Dufferin.
gr d Lilly 2nd CXXXI. by Eclipse CXCII.
g gr d Scotch Lassie by Prince of Wales (305).
g g gr d Spot by Rob Roy, imported, (135).
g g g gr d White Lilly by Dundee 3rd, Quebec, imported by W. Simpson.

CCCII.—Belle of Paradise. Calved September 8th, 1877. Color, red, with white spots on shoulders and sides, star in forehead. Bred by, and the property of, Colonel W. E. Starratt, Paradise, Annapolis County.
Sire Thrift out of Tilley (491).
Dam Dorcas.
gr d Drusilla (imp.), 1089, A. A. H. B.

AYRSHIRE COWS.

CCXIX. — Julienne, C.R., 1422. Brownish red and white. Calved 15th June, 1876. Bred by A. P. Ball, Esq., Stanstead, Quebec. The property of Andrew Lovitt, Esq., Yarmouth.
Sire Stranger, C. R., 1226.
Dam Julia 4th.

CCC.—Julienne 2nd. Brownish red and white. Calved 15th, July, 1878. Bred by A. P. Ball, Esq., Stanstead, Quebec. The property of Andrew Lovitt, Esq., Yarmouth, N. S.
Sire Laird of Stanstead, C. R. 1227.
Dam Julienne CCXCIX by Stranger, C. R. 1226.
gr d Julia 4th.

SHORT-HORN HEIFER CALVES.

CCCLIII.—Duchess. Red and grey mixed, or roan. Calved Sept. 20th, '78. Bred and owned by J. Margeson.
Sire Bretwalda CCXLII.
Dam Red Rose CXXVI by Roland.
gr d Lily CIV by Charles, 9 N. B.
g gr d Second Duches, 28 N. B.
g g gr d Duchess 1st by Brunswick (831).
g g g gr d Peggy 2nd by Wallace.

CCCLV.—Princess Royal. Red and white. The property of Robert Bacon, Esq., Windsor, N. S.
Sire Royal George, 247.
Dam Princess Josephine 4th, 334, by Young Heir [3326], (31351).
gr d Princess Josephine 2nd by Duke of Cambridge (33586).
g gr d Princess Josephine by Grand Knight (26303).
g g gr d Josephine by Prince Alfred (22567).

SHORT-HORN HEIFER.

CCCLIV.—Maude. Red and white. Calved 20th Sept. '77. Bred and owned by J. Margeson, Esq.
Sire Rir Roger Tichborne CCXL.
Dam by Lobo Lad VIII.
gr d by Sir William XII.
g gr d by Brunswick CCXLV.

SHORT HORN BULL.

CCCLII.—Baron of Lee Farm. Red, white star, and white on belly. Calved 18th May, 1876. Bred by A. P. Ball, Esq., Stanstead, P. Q. The property of the Yarmouth County Agricultural Society.
Sire Topeka 18299.
Dam Mara 3rd CCXXXII. by Bell Duke of Oxford.

DEVON BULLS.

CCVIII.—General Crawford. Calved Aug. 2nd, 1878. Bred and owned by Colonel Laurie, Oakfield.
Sire Prince Alexander 122, gr s Napier 156.
Dam Maid of Miller Hill 104 by Wilmot 150.
gr d Lady Ann 101 by Lord Elgin 148.
g gr d Fanny by Don Juan.
g g gr d Roulette by the Duke.

CCIX.—Sir Hugh Rose. Calved July 19th, 1878. Bred and owned by Colonel Laurie, Oakfield.
Sire Prince Alexander 122, gr s Napier 156.
Dam Pansy 131 by Havelock 156.
gr d Maid of Miller Hill 104 by Wilmot 150.
g gr d Lady Anne 101 by Lord Elgin 148.
g g gr d Fanny 149 by Don Juan.
g g g gr d Roulette by the Duke.

JERSEY BULLS.

CXXXI.—Plantagenet, A. J. C. C. H. R. 2074. Brown, some white spots on feet. Calved 10th June, 1875. Bred by A. P. Ball, Esq., Stanstead, P. Q. The property of the Yarmouth County Agricultural Society.
Sire Topeka 13299.
Dam Bonnie 491.

CXXXII.—Aztinbar, A. J. C. C. H. R., 3221. Star, saddle across fore shoulders and hump, fore feet, hind legs, and belly. Calved 25th April, 1878. Bred and owned by C. E. Brown, Esq., Yarmouth, N. S.
Sire Darling, A. J. C. C. H. R., 1371.
Dam Branitza, A. J. C. C. H. R., 5388.
gr d Joliette CXL.

JERSEY HEIFER.

CXXXIII.—Zaidee. Light red and white. Calved July 22nd, 1878. Bred by James B. Duffus, Esq., Halifax. The property of Israel Longworth, Esq., Truro, Colchester County.
Sire Round Robin CI. (out of Fairy 137, Jersey Herd Book; gained first prise at Exhibition in Jersey, 1870).
Dam Seafield Belle CXXIV.
gr d Belle (imp.) CXVI.
g gr d Browney (in Jersey).

NATURAL CURIOSITIES.

A graft of last year—Siberian Crab—has not only blossomed, but is producing fruit, in the green house of J. W. McDonald, M. D., Antigonish. The doctor who is fond of curiosities of this kind, *heard of the graft, and had it taken from* the nursery of Mr. McKenzie of this town. This same nursery, I am pleased to inform your readers in the country, contains 30,000 beautiful, healthy, choice apple tree grafts. Dr. Macdonald has also in his green-house a very flourishing lot of grapes, which, judging of their appearance for the second season, promise something remarkable. I had one of the leaves growing on a vine with over twenty fine clusters, measured on the 7th of July. Its dimensions were 11¼ inches wide, and and 12⅛ inches long. Let us not be told after this that fruit cannot be grown in Antigonish.

In a somewhat romantic spot, in the midst of huge boulders and projecting cliffs of plaster rocks, near the shore, about ten miles from Cape George, and on the land of Mrs. Augustus Ogden, is to be found one of those singular, and I believe rare, natural ice-houses, containing *inexhaustible quantities of this salmon*-curing commodity the summer through. Having heard of the ice-house I was anxious to examine it for myself, and with this object in view I wended my way hither with a couple of amateur geologists, a young lady being our pilot. Arriving at the mouth of the cavern, I eagerly descended, finding it easy to do so for the first 20 feet; but then the passage became tortuous, steep, and with daylight (it was a bright day in July with the sun only two hours beyond the meridian) fast disappearing, I had to *feel* my way cautiously for the further descent of three or four yards, until I came to the solid ice. I was so eager in getting down that I forgot to take with me any kind of tool to break off a piece of the firm and solid ice, but managed to detach a piece large enough to carry with me all the afternoon, after which I had it carried to Antigonish with the heel of my boot. Had I known *the danger I was in* when buried down in this fissure, I should have been more cautious in my movements. I only learned when I came to the surface that persons had more than once failed in finding a bottom to this wonderful house. Baskets of meat and other articles have been known to disappear here, and the conjecture was made by some *savant* that

there is a passage between the place and the waters of the ocean, some two thousand yards away. I am told that there are a number of these natural ice-houses to be found in the county, the only difference between them and this one being the subterranean passage.

The place may very probably become as well known hereafter to geologists and *curiosity hunters* as it is now to fisher men who carry off ice without leave or license.

MORE ANON.

DEAR SIR,—The Ellesmere pigs are taking the place of other breeds here. Feed on grass equal to Berkshire. Do well in ordinary pasture, are very quiet, not inclined to roam about or to root. They are excellent feeders; take on fat and grow remarkably well. Are thin in the skin, and when dressed have a fine white appearance. The farmers of Stewiacke have taken the hint from Dr. Lawson's lecture delivered last autumn, and are determined to make grass hay instead of straw hay. Yours, &c.

D. McG. JOHNSON.

Brookland Farm, July 16th, 1878.

THE AMERICAN BERKSHIRE RECORD.

To the Editor of the N. S. Journal of Agriculture:

BEL AIR, MARYLAND, 1878.

Allow me to call your attention to the advantages offered by the American Berkshire Record, two volumes of which have already been issed, and a third will soon be completed.

To show the right appreciation in which it is held by breeders of Berkshires, I have but to mention the fact, that though Vol. I. contained upwards of 300 pages, Vol. II. numbered over 500 pages, and contained more than fifteen hundred pedigrees. A careful inspection of either volume, but especially of Vol. II., will show the fact that it is used by the most reliable and extensive breeders in the country. The great care exercised in its compilation and the consequent accuracy of its information, make it an authority acknowledged by those who are best posted on such matters.

The question may very naturally present itself, "Is not a fine animal just as good, even if it be *not* entered in the Record?" Certainly it is. We do not claim that recording *makes* the animal *better;* but we do claim that thereby we preserve a permanent certificate of the good or bad qualities the animal may possess by inheritance. It is one of the most approved rules of breeding, that "like produces like, or the likeness of some ancestor." The object, therefore, of the Record is to preserve and put before the public the ancestral history of each animal registered therein, thus enabling the reader to see, at a glance, what qualities any particular individual is likely to transmit. It is surprising how soon a person taking interest in such matters becomes familiar with the history and peculiar characteristics of hundreds of animals; and, upon seeing their names in the Record, is enabled to form a very correct idea, based upon the maxim just quoted, what strain of animals would suit him.

I will, probably, most effectually direct your attention to this matter, and may induce you to take an active interest in it, by adverting to the great importance attached to the registration of the pedigrees of *other* kinds of stock, and to the advantages derived therefrom; for instance, as in thorough-bred horses and short-horn cattle.

On inspecting any list of winners on the turf, for many years past, it will be found that the greatest number in each year, tracing to any one sire, are the get of Lexington. It would not be sound reasoning to set this down to *chance*. It can be accounted for, only by the supposition that Lexington inherited, and *had the power of imparting to his descendants*, those qualities that go to make up a winner. The records of the turf prove this to have been a fact; *but*, unless there had been a *careful preservation of pedigrees*, the superiority of his get could not be shown.

Can any one suppose, that the high prices paid for Short-horns, at the New York Mills sale, (and I may say every day,) would have been paid for animals, that, we will grant, for the sake of the argument, *had the appearance* of being as good as those there sold, and for which no pedigrees or, at best, poor ones could be given? Certainly not; for the reason, that in the latter case, knowing the ancestors to have been mongrel stock, their apparently splendid descendants could be considered merely *accidentally* fine animals, almost certain *not* to produce their like; but, most probably, the likeness of their indifferent ancestors. In the case of the animal whose breeding is unknown, there remains in spite of his fine appearance, *the uncertainty*, which precludes any reliable calculation as to his prospects as a breeder of first-class stock. It, however, being a fact, *easily established by their recorded pedigrees* that the Short-horns in question, were descended from ancestors, possessed, like themselves, of the same excellent qualities, persons in search of animals for breeding purposes purchased at astonishingly high figures, giving to their former owner a rich reward for his care and judgment in breeding, *and his judicious foresight in preserving thoroughly authenticated published pedigrees of his stock.*

It cannot be doubted that those principles, which are recognized as correct in the breeding of horses and cattle, will apply with equal force to the breeding of Berkshire Swine. The same end is had in view, viz: the obtaining of those qualities, which, in each, are considered most desirable. This can be done only by careful selection, judicious breeding, *and the preservation of well authenticated pedigrees.* In no way can the latter be so well accomplished, as by the use of the AMERICAN BERKSHIRE RECORD, whose claims I now present to your careful consideration.

The cost of recording is but a *trifle* compared with the benefits to be derived from it in the near future. "Put money in thy purse," says Shakespeare, "put money in thy purse;" and I know of nothing that will, with greater certainty do this than the amount expended in the registration of really fine Berkshires; for the time is coming, yea, even now is, when the only stock that can be sold *at paying prices*, is such as have *good pedigrees properly recorded* in the AMERICAN BERKSHIRE RECORD.

On application to the Secretary, Mr. Phil M. Springer, Springfield, Ills., blank forms, and all necessary information will be promptly furnished.

ALEXANDER M. FULFORD,

Vice President American Berkshire Association for Maryland.

RELATIONS BETWEEN LABOR AND SCIENCE.

BY A. P. REID, M.D., ETC.,

Professor of Medicine in Halifax Medical College.

(Read before the Institute of Natural Science, April 8th, 1878.)

IN the greater number of occupations, the term *labor* conveys a very different idea now from that which obtained previous to this 19th century, for the discovery of the steam-engine, with its adaptations, made a new point of departure which bids fair in time to render obsolete the original meaning of the word *labor*, at least so far as the mechanical trades and agriculture are concerned.

This term did mean the muscular effort which was directly applied in order to obtain the products. But, since the steam-engine (the best type of work-producing apparatus) can or does accomplish all that muscular power can, and since it has associated with it all the valuable mechanical inventions of this century, it is not remarkable that the modern meaning of the term *labor* becomes restricted to what might be better described as

intelligent supervision, or the reasoning judgment which directs the unconscious operation of moving mechanical apparatus.

Labor and Science were at one time considered to have practically only such relations as we may now conceive to exist between the unconscious mechanism and the principles which govern its motion —that is none whatever. But the modern relation of Labor and Science is that of *pupil* and *teacher*, *the practice* and *the principles*, or rather the *servant* who should implicitly obey the directions of the *master*.

Formerly the man that could wield with most force the axe or the hammer was *chief*, but now a child has the strength to set in active motion or regulate at will *powers* so vast that the mind fails to conceive the number of horses the united energy of which would still be unequal to accomplish the same amount of work—the lately constructed steam-hammers and steam ships being illustrations. Or again, the deft fingers whose accuracy and activity with the spinning wheel measured the rank of the laborer, is now displaced by the *spinning-jenny*, where a child can with greater accuracy and speed, produce thousands of threads for one that his predecessor could. And so on throughout the fields of labor, even to the watchmaker, whose self-acting lathes can now produce continuously the most perfect specimens of workmanship, the raw material and motive power being supplied.

But since the most perfect machine gets very soon out of order (friction and wear or accident being always present), there must be a specially educated intelligence to exercise supervision over, and make such adjustment or repairs as may from time to time be rendered necessary, and such a specially trained mind is expected in the workman of to-day.

We can have no better illustration of the changed relations of Labor and Science than in the case of Agriculture; but the associations of the past, and the yet unchanged methods of many localities, have been most detrimental to its progress and to that just pride in the labor or manner skill of the farmer.

Until within the last 20 years the farmer meant the laborer who, during long hours, and by dint of hard labor, with bent back under the hot sun, held the plough, scattered the seed, harvested with the hand, sickle, or scyth, raked, made into sheaves, pitched into barns, threshed with the flail, winnowed, and even ground, by hand the grain upon which he depended for support. Or who, with the hand hoe made the drills, cultivated during the growth, and unearthed in the fall the roots so necessary to him; or with scythe or sickle, and rake and fork made his hay marketable. The dairy and household duties meant severe labor and long hours for the females of the family, with a low grade of products. His animals, like himself, had hard fare and little attention, and were of proportionately small value.

Under these conditions it might have been truly said—what relation had Science with Agriculture, and what social position could the farmer claim other than that of the most unskilled laborer? In what way could collegiate training be of advantage in tilling the soil? And what scope had the well-educated man to utilize his acquirements unless he chose some profession, the very antithesis of farming? But to-day how changed may all this be!

With his labor-saving machines the farmer can mount into a comfortable and cushioned seat, and direct a gang of ploughs, and into another and deposit the seed with accuracy and rapidity. Seated on the harvester he mows, and rakes and binds. Another machine can hoist and deposit the sheaves in the barn; and another threshes, winnows and assorts the grain—ready for sale or the flour-mill.

Or, seated on a machine, he can drill and sow, with another he cultivates during the growth, and another digs and assorts his roots ready for removal, and sale or use. Or, with the machine mower and rake and fork, his hay is rapidly cut, and gathered and stowed away.

The cheese and butter factories have revolutionized the dairy, and the carding, spinning, weaving and sewing machines have made easy the duties of his household. High grade stock and improved conveniences enable a minimum of work to produce the best quality and a larger quantity of animal products.

There is really no department of human labor that has been so largely relieved of toil, and proportionately benefited, as that of the farmer by the labor-saving machines that science and invention have produced within the past 30 years. Nor is there one that now demands so high a degree of special education and practical skill in so many departments of art and science as agriculture demands of its votary to-day. And since education and social status are (other things being equal) convertible phrases, no profession can claim a higher position than can agriculture, and no other is of so much benefit to the country as a whole, and to each individual unit of the population.

It has been truly said that the "book farmer" and the "amateur" are failures, and it is not difficult to understand why, —they do not know enough, and their education is only theoretical and very limited at that. Technical education must be practical as well as theoretical, and time and opportunity is necessary for proficiency in either.

Unless by rule or custom, the farmer, ignorant of *chemistry*, knows not how to prepare the soil, or choose manures,—ignorant of *botany*, how to favor the growth of his plants,—ignorant of *mechanics*, how to keep in order or repair his labor-saving implements,—ignorant of *design* and *construction*, how to lay out with taste and convenience his numerous buildings,—ignorant of *animal physiology* and *pathology*, how to provide for the health and comfort of his stock, or to relieve them when in suffering,—ignorant of *commercial education*, how to correctly keep an account of his outlay and income in so systematic a manner as to enable him to correct errors of management as soon as they occur,—and ignorant of *literature*, how to make known to others the results of his experience by tongue or pen at scientific meetings, or how to represent his class in the halls of legislation.

In fact, no human calling demands so varied a culture as that of the agriculturist, and there is no department of Science or Art that is not laid under contribution either to illustrate or to conduct his operations, and hence there is no profession that can occupy a higher social or political standing than that of agriculture —when its votaries devote to its study the requisite energy and ability.

Though I may have dwelt thus long on one department of *labor*, there is not another of which the same may not be said; there is a variation it is true, but it is in kind and not in degree. Hence it is not overstraining language to say that INTELLIGENCE is the *labor* expected of the farmer or workman of to-day, and, to be able to perform their duties, special mental training is requisite. They must not only be intimately acquainted with the processes they conduct, and the form of moving parts in their tools, but with the principles that regulate such processes, or demand such special construction. No amount of physical strength, or manual dexterity will reveal the cause of failure in a process, or an irregularity in motion, or indicate the arrangement or construction necessary to produce a desired result. The ever varying design that characterizes all kinds of manufactured products can only be evoked from mental labor that has been specially instructed, and the machinery necessary to produce these designs requires a greater exhibition of intellect.

The day has passed, and is not likely to return, that enabled the producer who had only learned the manipulative part of his profession to control the market for his wares. The apprentice system turned out good workmen only; the designers and inventors, often self-made, were the products of an additional and quite a different process of instruction.

To-day the apprenticeship system has

become almost obsolete, and Labor and Science, or even a good general education, are looked on as having but an indistinct relation to each other. Hence the youth too often consider that there is no preparation needed to enter a shop, and they only stay long enough to become familiar with the ordinary routine which they consider is all that is necessary, and it is a question whether workmen as a class are the equals of those who have gone before them. It is not likely that we will ever revert to the old apprentice system, nor, did we do so, would it supply the wants of the present. The modern system, now introduced into most European countries, and also in the United States, recognizes the direct association between *Labor* and *Science*—the practice and principles of technology—by establishing technical schools, where both are associated in the instruction given, and the competent agriculturist or workman is the result. Recognising the duties of the skilled mechanic from his own most extensive experience, Sir Joseph Whitworth established in England, some years ago, a series of scholarships in the engineering trades, which has been productive of the best results. At that time technical schools were very few (they have increased greatly of late), and the opportunities of the apprentice very limited, but by the Whitworth system it was possible for the ordinary apprentice to properly qualify himself. Sir Joseph laid down a curriculum extending over three years, with yearly examinations, in theory by written papers, and in practice by manipulation in the workshop. The apprentice can learn from the published curriculum what the subjects for examination are, and by attentive reading of text books at spare hours, and by attentive work in the shop he can prepare himself to pass the competitive examination which gives him the £100 scholarship and may obtain it during each of three years in succession, and get a certificate that will give him a commanding position in his walk in life.

In Nova Scotia there is no reason why a system similar to this may not obtain, with very satisfactory results. Let facilities be afforded to make candidates acquainted with what each calling demands, and in a very few years the people would be so educated that technical schools would be not only supported, but established in every county in the Province, in order that the population could receive the special education that was most suitable for their district. The Nova Scotian youth is not behind any other in abitity or energy, and a successful result can be depended on.

The farm will not be vacated for the precarious and, to many, the unsuccessful "life work" that attends the majority of the residents of cities, and the necessaries as well as the pleasures of life will be more freely accessible to all the members of our rural and civic populations.

BREEDING IN FAMILIES.

THE following article from the *Country Gentleman*, gives a very clear view of a subject on which information is much required by our farmers :—

While we shall not seek to disguise the fact that the breeding department of the National Live Stock Journal is conducted with much care and ability, one can scarcely fail to observe that an unreasonable prejudice is shown against the practice of in and-in breeding. In the breeding papers which appeared in the last volume of the *Country Gentleman*, I attempted to answer some of the objections which had been raised against line breeding, and to bring out the exact influence to be derived from it; and as this is a peculiarly interesting subject, and one that is not less important than interesting, I will point out what appears to be unsound argument in the journal above referred to.

THEORY OF LINE BREEDING.

It is evident that extravagant claims may be made for in-breeding just as they are made for crossing, and, if we consider only the absurdities of those who advocate a practice, it is not difficult to place any system of breeding in an unfavorable light; but when we remember that, in the formation of nearly all our best breeds of animals, long and close in-and-in breeding was practiced, there certainly appears ground for looking at the matter from a reasonable and unbiased standpoint. The great law that "like produces like," *i. e.*, that everything inherited by the offspring must have previously existed in the ancestors, covers the whole subject of breeding, and how it can be supposed that an animal can transmit that which it does not possess, whether by in-and-in breeding or crossing, is incomprehensible. If those who favor line breeding are willing to admit this, is it asking too much if we expect our opponents to do the same? What we claim for in and-in breeding is that it increases the *parental* power of reproducing *themselves* in their offspring, and in order to successfully dispute this, it is necessary to overthrow the whole theory that *like produces like*—that parents transmit that which they possess.

If we pair a thorough-bred with a Percheron, what can we expect? The offspring cannot be like both parents, because they are unlike; but long experience has demonstrated that it may closely resemble either parent; that it may vary all the way between the parental extremes; or, finally, that it may revert to a greater or less extent, to the form of some remote ancestor. That is to say, such a union does not admit of any certainty as to the form and character of the offspring. If, now, we pair two thorough-breds, or two Short-horns, the produce will inevitably be a thorough-bred or a Short-horn. Why? Because the parents are alike in in the characters which are peculiar to these breeds. But go a step farther: the members of one strain of Short-horns are good milkers, those of another are not. How shall we breed to perpetuate the milk-producing aptitude? Evidently by breeding within the milking strain; for if we go beyond, we have the same causes for variation—the same uncertainty of results—as in crossing the thorough-bred and Percheron. This much we think must be admitted, and, if so, it shows that a family may have the same "distinctive characters that are usually attributed to a breed or race;" and hence arises a necessity for line or family breeding.

Again, the simple fact that two animals have certain characteristics apparently in common, is no surety that if paired they will transmit them to their offspring; there are certain internal or physiological tendencies, of which we have little cognizance, except from their effects, which may be antagonistic and cause reversion. Thus two non-sitting varieties of fowls, though alike in this respect, when bred together often revert to the ancestral character of brooding; and so the union of different strains of the same breed often causes partial reversion, especially in color, as many of our breeders of show birds have found to their cost. But when bred within itself, a variety of everlasting layers will not produce broody offspring, nor will an established strain of any variety produce reversions of color. That is to say, the union of animals that are unlike, either anatomically or physiologically, whether they belong to different breeds, to different varieties of the same breed, or even to different strains of the same variety, produces variable offspring, and that which is peculiarly subject to reversion.

But how are we to know that animals are alike in characters or tendencies that are beyond our penetration? If two animals are descended from the same parents, the influence of the remote ancestors *must* be identical with each; and the immediate parental influence can only differ to the degree that any animal can change in physiological condition from one year to another; which, if they remain healthy, is a slight difference compared with that existing between different individuals. That this is true is shown by the class of

facts already mentioned; in the formation of the Manchamp breed of sheep two silky-wooled parents never failed to produce this characteristic in the offspring—because all were related and alike. On the other hand, two thorough-bred horses, not related, though carefully selected, very often produce the most variable progeny. It would seem, therefore, that the writer in question draws it rather strong when he says: "We insist that this claim is founded upon mere assumption—an assumption that is not only erroneous, but seriously prejudicial in practice. The claim rests upon the false assumption that the family has the distinctive characteristics usually attributed to a breed or race—that is, that all the members of the family are alike, and if interbred will produce this uniformity." What we contend, and what no amount of this kind of argument can overthrow, is that the members of a family, for the reasons given above, are much nearer alike and more apt to reproduce themselves in their offspring than are the different and unrelated members of the same breed; and that this resemblance and hereditary power will increase with the length of time they are in-bred.

It is, therefore, a settled conclusion among the more intelligent theorists and practical breeders, that *like parents produce similar offspring*, and that *unlike parents produce variable offspring;* also that we can never be certain that parents are *like*, unless they are related. Of course, where the characteristics which we desire have become the common attribute of a whole breed, and *are regularly transmitted* by it, it is folly to practice close in-breeding, because we will perpetuate individual defects without a chance of increasing the good qualities.

"Nothing of this sort has ever been attempted in breeding thorough bred horses," says the writer: "there is no record of Eclipse being bred to his own daughter or sister, or of any effort to establish a type by breeding the matchless Lexington to his daughters and grand daughters." But is it not true that "in the early pages of the stud-book we find constant instances of very close in-breeding, often carried to such an extent as to become incestuous?" Is it not true that Eclipse had nine distinct lines of White D'Arcy Turk in his veins? Is it not true that some of the most celebrated of these horses, from that day to this, have been the result of close in-breeding? So notorious are such facts, that Stonehenge considered the cause of a "hit" to be the *reunion* of lines that had been separated for a few generations, and believed that under other circumstances it would rarely occur. Again, Stonehenge says: "Let him ask what horses have been the most remarkable of late years as stallions, and, with very few exceptions, he will find they were considerably in-bred." And the same is true of some of our best trotters; "yet when all is told," says Hark Comstock, "its (*i. e.*, the Hambletonian family's) greatest results are seen where it has doubled upon its own parent strain from Abdallah, and the more this is tried the better it seems to work."

Now, all this shows just what the advocates of line breeding contend, viz.: that the members of a family are more alike than the members of different families of the same breed, and they will more surely transmit their excellent qualities when bred together than when paired with families to which they are not related.

In regard to the disastrous effects of in-breeding, we can only say in this place that they have not followed in the hands of the best breeders. Predisposition to disease, or disease itself, is as readily transmitted by line breeding as good qualities, and if breeders allow their stock to become unhealthy, and still breed from it, according to this system, there is no cause for wonder if it is destroyed. And so, while it is true that incestuous breeding with swine has proved disastrous where they were confined without exercise, and heavily fed—where the predominance of the fat-producing function diminished the power of the locomotive and circulatory apparatus, and of the nervous system, calming all instincts and desires except that for food—it is equally true that line breeding has been followed with these animals in France, from time immemorial, without producing such results.

But what surprised us above all else in the article we are considering (*National Live Stock Journal*, July), is the example given to show that "sometimes the experiment (*i.e.*, line breeding) proves a success. The reference is to the bull Favorite, bred by Mr. Colling, and there is a very evident attempt to show that he was not the result of very close in-breeding. But why stop just as the interesting point is reached? We may admit that the breeding of Favorite was not an extreme case, though his parents were more closely related than half brother and sister; but if we tell the rest of the story—how Favorite was coupled with *his own dam*, and produced the cow Young Phenix, and how he was then coupled with *his own daughter*, this same Young Phenix, and produced the world-famed Comet—we must admit that there was not only close in-breeding, but wonderful success.

We do not wish to be understood as recommending the practice of line-breeding to all farmers, or even to all professional breeders, but there are certain cases where it is indicated and where it will produce the most important results. Instead of crying down a practice that has been of such assistance in the formation of our best breeds, it should be the aim of a great journal to point out its uses, and to show why it has so often proved disastrous. In-and-in breeding has won its present position, as a valuable aid to the breeder, against one of the most deep-seated prejudices that has ever filled the human mind. We now understand why, and how, it has produced its effect, and, although it may not be possible for it to enable us to achieve as great progress in the future as in the past, the intelligent breeder will continue to look at it as indispensable in certain contingencies.

D. E. Salmon, D. V. M.

THE RHODODENDRON.

It has often been a source of wonder, that the idea that the most beautiful of all American ornamental plants—the Rhododendron—could not be grown in its native country could ever prevail; yet so universal is this belief, that though persistent efforts have been made by enthusiastic nurserymen, like Parsons of Flushing, and Hovey of Boston, to introduce it to public notice, and to show that they can be as well grown as any other plant, only a few yet realize the fact; and thousands of our readers do not know what a Rhododendron is.

In the hope that we could render a service to horticulture, by making these grand things better known, we have from time to time given hints as to their culture; but shall go into the matter more fully here, in order to make the chapter complete.

First, in regard to the succesful culture of Rhododendrons. This is no longer a problem. The immense success of the plantations of Mrs. Harry Ingersoll, near Philadelphia, and Messrs. Hunewell, Rand and others, near Boston, besides numerous others in a small way in many other places in the Union, shows that nothing is wanting but the disposition to learn the peculiarities of culture required.

The great misfortune of our people is, that they believe that nature has placed everything in the best place; and thus, when they see Rhodendrons growing in the deep woods, imagine that *shade* is the first essential requisite in the culture of the Rhodendron. That nature has not placed things in the most favorable positions for their development, we showed so conclusively a few years ago, in a paper on the Red Maple, that no one has ventured a single objection against it. It is true she places them where there are the most favorable circumstances for existence, but not for ultimate vigor of growth. In the Red Maple, we find the tree generally in swamps; but yet the largest and best are always in high dry ground; but the

seed will not, except in rare instances, germinate in dry ground; and thus the poor thing, as we would say of it, if it were animal life, has to be satisfied to grow in places where only its seeds will sprout.

The Rhododendron is exactly in the same case. The seed is so minute, and slow in its germinating power, that out in the open places they would dry and burn up with the first warm sun. Only the deep shaded recesses of the forest, or amidst the continued moist but not wet moss, or bark of logs in open swamps, is it possible for it to exist. It grows there not because it likes to, or because it is best for it to be there, but by the inexorable law of necessity, which gives it no better chance.

All these things are very apparent to those who have observed these plants growing in woods, and in proper ground in the full sun. There is no comparison of the wood ones, with the health and beauty of those in the full light and air.

But the roots of the Rhododendron are finer than the finest hair, and grow thickly matted together, requiring a great amount of moisture for their subsistence. Hence, if placed in ground that will become hot in summer, or will speedily dry out in drouth, they will not do well there.

It is well known that our American Rhododendrons are the pride and glory of English gardens,—but even there, notwithstanding their humid atmosphere, which does not allow the soil ever to dry as it does here, the English have to prepare the soil to grow these plants to great success. This they do by digging out the natural soil, and filling in with soft spongy turfy peat or bog soil, which they often have to bring many miles for the purpose.

We must also make our soil for them here in most cases; but this is done with no more trouble than is required for any garden crop. One of the best plans is that first described by us in the "Gardener's Monthly," and which has been found after four years' trial, an admirable plan, proving effectual in the stiffest soil. That is, to dig out 20 inches or two feet, and fill in with a few inches of brush-wood, then soil, then brushwood, and so on, until the whole is finished. The mass will be a foot above the level of the ground or more; and in time will find its own level with the surface. On this mass they grow wonderfully well, and it takes very little trouble to make up. Those who have soil which naturally neither cakes nor dries, need do nothing with them further; but care must be taken not to plant on wet ground. The "Naturalist" may say that the Rhododendron grows in swamps and wet rocks; but pay no heed to this. The truth is, as we said, that though found there, they will thank those who put them in dryer but not dry places.

The seed of the Rhododendron is like fine dust, and requires some care to raise. They have to be sown on the surface of the soil, and the box which contains them placed somewhere in the open air, where the soil will hardly become dry, and where they will be protected from the drip of trees or heavy rains. The growth of plants from seed is very slow for two or three years; but after that their progress is more rapid, and in about six years they will, under favorable circumstances, flower.

Plants from the woods grow very well when cut back freely. New buds will break anywhere from the old stems, so that the ugliest looking stump will make a good plant.

Layering is often employed. The young, strong shoots are taken when half or two-thirds mature—about July—and tongued on the *upper surface*, and bent into rich soil. They will root the same year, but hardly well enough to separate from the mother plant before the second season. It is worthy of note, that the slitting of the layer on the upper surface, instead of the lower, as always recommended by writers, until the "Gardener's Monthly" first taught the contrary, was suggested to the writer of this while layering Rhododendrons. It is almost impossible to follow the regular book plan of layering by cutting underneath, in the case of the Rhododendron, as they will snap off when bent down. When cut on the upper surface they will not break.

Grafting is practised by those who would perpetuate the finer varieties, distinct by themselves. There are many ways of doing this: each propagator having his own idea of what is the best to be done. But a very good idea is to have a few three-year-old seedlings, in four or five inch pots, and when the growth is about two-thirds mature, whip-graft a scion of about the same degree of maturity, on this part. It is very essential to have the grafted plants in some very close, warm place for a few weeks, so as to check much of the evaporation from the leaves, otherwise the scions will dry up before the union takes place.

Grafted or layered plants are of course much more expensive than seedlings. They are valued by those who would have the very choicest collections; but the cheaper seedlings are good enough for all ornamental purposes.

The *Rhododendron* takes its name from two Greek words, which signifies "Rose tree;" and next to the Rose itself, there are few flowers more worthy of bearing its name than this. Our own *Rhododendron catawbiense*, has particular right to the name, for amongst its flowers are produced almost every shade of color, rivaling the Rose in abundance and beauty.

The *Catawba Rhododendron* grows dwarfer than the *R. maximum*, and has far more change of color. It abounds in South Carolina and Georgia; while the *R. maximum* is found chiefly in the Northern States. The most usual forms of *R. maximum* have the flowers of purple shades; but along the Alleganies, down to the Virginia line, is a dwarf form with white flowers, or more shaded with rose, which is particularly beautiful, but which we have not seen anywhere in cultivation.—*The Gardener's Monthly.*

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