THE FARMER'S ADVOCATE

AND HOME MAGAZINE.

FOUNDED 1866.

VOL. XXII. LONDON, ONT., JUNE, 1887. Whole No. 258.

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THE FARMER'S ADVOCATE & HOME MAGAZINE

WILLIAM WELD, EDITOR AND PROPRIETOR.

THE LEADING AGRICULTURAL JOURNAL PUBLISHED IN THE DOMINION.

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THE FARMER'S ADVOCATE,
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LONDON ONT., CANADA.

Our Monthly Prize Essays.

CONDITIONS OF COMPETITION.

1.—No award will be made unless one essay at least comes up to the standard for publication.

2.—The essays will be judged by the ideas, arguments, conciseness and conformity with the subject, and not by the grammar, punctuation or spelling, our object being to encourage farmers who have enjoyed few educational advantages.

3.—Should one or more essays, in addition to the one receiving the first prize, present a different view of the question, a second prize will be awarded, but the payment will be in agricultural books. First prize essayists may choose books or money, or part of both. Selections of books from our advertised list must be sent in not later than the 15th of the month in which the essays appear. Second prize essayists may order books for any amount not exceeding $3.00, but no balance will be remitted in cash. When first prize essayists mention nothing about books, we will remit the money.

Our prize of $5.00 for the best original essay on the *Management of the Orchard*. has been awarded to Kenneth Sutherland, Ingersoll, Ont. The essay appears in this issue.

A prize of $5 will be given for the best original essay on *Poultry Farming as an Occupation for Farmers' Wives and Daughters*. Essays to be handed in not later than June 15.

A prize of $5.00 will be given for the best original essay on *Country Life*. Essays to be handed in not later than July 15.

Subscription.

Subscribers, please notice the label on your paper, and if you have not paid your subscription for 1887, do not fail to do so at once. If the date on your label is Jan., '87, your subscription is only paid to the end of '86.

Editorial.

What is the Best Temperature for Raising Cream?

Of all the conditions recognized in dairy practice, that of temperature is of the most practical importance, and it has given rise to very exhaustive experiments and a great deal of controversy.

With reference to the range of temperatures, we are practically concerned with those between 32° and about 80°, the former being freezing point, at which cream cannot rise, and the latter being about the highest that is ordinarily attained in the milk room. There are three conditions involved in the temperatures at which the cream rises: (1) as affecting the volume of cream; (2) the percentage of fat in the cream; (3) the percentage of fat in the milk which finds its way into the cream. If one thing is better known than another it is this, that the lower the temperature, the thinner the cream; or, the higher the temperature, the denser the cream, and the thinner cream naturally has a greater volume and a less percentage of fat. Although these facts have been universally observed by the different systems of setting, yet they have been confirmed by accurately conducted experiments. The investigator Tifferand, for example, raised cream at the following temperatures, under the condition that the temperature remained exactly the same from first to last during the continuance of the experiment, and the following tables show the different temperatures and the percentage volume of cream obtained at each temperature:

Experiment No. 1. (After 12 hours setting.)		Experiment No. 2. (After 12 and 24 hrs. setting.)	
Tem. (Fahr.)	Percent'ge of Cream	Temp. (Fahr.)	Percentages of Cream.
37°	19.	35°	14.5——16.
46°	14.5	50°	9.8——11.3
52	12.8	72°	5.5——6.
61	11.		
86	8.		

It is thus plainly seen that the higher the temperature the lower the volume of cream. This is caused almost entirely by the greater evaporation of water under the high temperature. Practical creamerymen have come to the conclusion, and many still entertain the same opinion, that cool setting of the milk is the more profitable than setting under a warm temperature, because a greater bulk of cream is thereby obtained; but this observation by itself proves nothing that has any practical value. There are two other factors which must be found before a practical conclusion can be drawn, viz., (1) the percentage of butter or butter-fat in the cream, and (2) the percentage of fat which remains in the skim milk—that is, what temperature brings the largest percentage of the milk-fat into the cream? On these points also a large number of accurately conducted tests have been made, the most important of which were by the distinguished investigator, Kreusler. The following table shows the volume percentage of cream obtained at different temperatures, the temperature being kept constant during the continuance of the tests:

Temperature Fahr.	Length of time of setting expressed in hours.									
	8	16	28	40	52	64	76	88	112	136
35		10.43	10.31	11.36	11.89	11.89	12.42		12.51	12.32
39	7.86	10.58	10.55	10.39	11.59	11.71	11.85		11.82	11.59
43	7.30	9.41	10.03	11.00	11.02	11.20	11.21	11.34	11.18	10.82
46	8.48	9.65	10.15	10.45	10.69	10.80	10.66		10.10	9.94
50	8.83	9.20	9.92	10.41	10.17	10 28	9.89	9.89	9.82	
59	8.60	9.26	9.37	12.8						
68	8.93	8.70								
77	7.35									
86	6.31									

Here it is also shown that the higher the temperature at which the milk was set, continuing at the same temperature for the stated number of hours, the smaller is the bulk of cream—with very few trifling exceptions, which may be attributed to lack of exactness in making the observations.

Let us now take the same table, but instead of giving the percentage volume of cream, we will give the percentage of fat which was found in the cream, the cream having been analyzed for this purpose, and the results will also closely approximate the butter yield:

Temperature Fahr.	Length of time of setting expressed in hours.									
	8	16	28	40	52	64	76	88	112	136
35		12 28	13.97	15.21	15.13	16.65	16.29		18.64	20.36
39	11 57	11.92	14.35	15.43	16.16	17.57	18 36		20.18	22.00
43	11.94	14.31	1[illegible].07	17.41	17.37	18.29	19.65	20.09	21.26	23.22
46	12.88	13.24	16.27	17.07	18.51	19.78	21.3[illegible]		23.91	25.28
50	12.97	15.25	17.61	18.65	19.87	21.12	23.05	23.84	24.97	
59	14.97	17.31	20.45	16.13						
68	17.89	19.79								
77	20.27									
86	22.51									

These tables show that both the cream and the butter fat continued to increase for 136 hours (5 days and 16 hours); the blanks indicate that the setting cannot be continued long at high temperature. The last table shows that the higher the temperature the greater the percentage of butter fat in the cream. Although from these tables calculations can be made to prove the advantages of the higher temperatures, yet in order to make the experiment scientifically accurate, the third factor, viz., the percentage of the milk fat which finds its way into the cream should be ascertained; and this may be determined by

analyzing the whole milk and the skim-milk. The practical question becomes still more complicated from the fact that it is only necessary to know what is the most profitable temperature for setting the milk, but also the most profitable length of time.

Let us now utilize the first table again, both the whole milk and the skim-milk being analyzed, in order to show the percentage of the milk fat, at the stated temperature and times, which passed into the cream :

Temperature Fahr.	Length of time of setting expressed in hours.									
	8	16	28	40	52	64	76	88	112	136
35		42.3	48.0	56.9	58.7	63.9	66.7		76.1	81.1
39	30.3	42.1	50.4	52.5	62.0	67.4	71.7		78.2	83.6
43	28.6	43.8	50.3	63.3	63.3	67.4	73.2	74.8	78.9	82.2
46	36.3	42.6	53.9	58.7	65.5	70.3	75.0		79.9	83.2
50	38.3	46.3	57.2	64.4	67.0	72.6	75.6	78.9	81.6	
59	43.5	55.0	66 4	73.1						
68	55.0	61.1								
77	53.0									
86	53.3									

This table is the real practical one and proves beyond doubt that the higher the temperature the greater is the percentage of fat removed from the milk to the cream, the result also being accomplished in a much shorter time.

The cause of these effects is not far from reach. It lies in the condition of the casein of the milk, and connected therewith, the greater viscosity of the milk serum at low temperatures. In other words, the denser the liquid the greater is the resistance offered to the ascent of the fat globules, and the thinner the liquid the less is the resistance. The higher the temperature the thinner is the fluid through which the globules pass when rising. These conclusions, however, have reference to equal periods of time in setting ; we should add that the milk will keep longer at low temperatures, so that when time is a factor, more profitable results may perhaps be obtained sometimes by setting at low temperatures.

Such are the results of investigations made in Germany, but our Canadian dairy authorities are ruled largely by a set of dairy philosophers in the United States. Investigators on the continent of Europe draw their conclusions from practical tests, while it is the tendency of the American philosophers to lay down theories, make deductions therefrom, and then attempt to establish them by experiment. The danger in the latter method is, that when the dairyman once bears the reputation of being a philosopher, he finds himself strongly inclined to twist the experiment into conformity with his theory.

The Americans started their investigations on the theory that the temperature during cream rising must be constantly changing, because thereby the differences between the specific gravities of the butter fat and the liquid through which it passes becomes widened. It is true that the fat rises because it is specifically lighter than the water and the other constituents of the milk, the specific gravity of fat being 93, that of milk 1031, and that of the fat free solids 1.6. The American theory assumes that the fat, under the influences of heat and cold, expands and contracts more than the water or the other constituents of the milk, so that by lowering the temperature, thereby widening the differences between the specific gravities, the cream will rise more rapidly and perfectly. The German investigators take no cognizance of this theory, it being utterly lost in the fact that the resistance offered by the denser state of the fluid under low temperatures is too great for the adoption of the cool setting system. It is generally admitted that at high temperatures the milk should be set in shallow vessels ; but the American dairy philosophers also talk about deep setting at low temperatures, which is absurd according to the Kreusler experiments above quoted. There is probably nothing more scientific and practical than the old shallow pan system which our farmers' wives used many years ago, which many of them still use, and which all would still use were it not for the overbearing conduct of our dairy philosophers.

There is another noteworthy point connected with the changing temperature theory. The investigator Prandtl found that changes of temperatures during the setting of milk produced a retarding influence on the rising of the cream, owing to the presence of currents in the liquid. From the facts and principles already laid down, the conclusion may be drawn that the temperature of all parts of the milk should be kept as near the same temperature as possible ; and in the Kreusler tests this rule was strictly observed by immersing the vessels in water baths at the stated temperatures.

Another Word about the Soil Exhaustion Question.

A correspondent criticises us for insinuating, as he thinks, that the manure should not be credited to the stock in making statements of the debits and credits. In our editorial article (page 137), to which he refers, we were speaking entirely of summer conditions, when the grass eaten by the cows was not, and could not be, debited, and consequently it would not be fair to credit the manure. The subject is a vast one and volumes could be written on it, so the reader should stick closely to the conditions and not ask us to unduly lengthen our articles by repeatedly urging precaution against possible misapprehensions. Winter conditions are quite another question ; the food can then be charged against the stock, and then, of course, the manure should be credited. We thought all our readers could easily see this point.

Another correspondent does not believe that the value of the fertility sold from a grain farm amounts to $368.93 yearly, or $162.66 from a dairy farm, as stated in the same article. He concludes that science must be wrong in making such high estimates. All we have to say in reply is that science has nothing at all to do with these values ; it is the practical farmers who establish the prices of the constituents of soil fertility, and not the scientists. If farmers persistently pay 18 cents per lb. for nitrogen, 8 cents for phosphoric acid, and 4 or 5 cents for potash, scientists cannot prevent them, and when farmers agree to pay less, then of course the figures representing the loss of their soil fertility will also be less. These constituents have market prices just like other articles which farmers purchase. These points are worthy of profound study by all farmers who aim at excellence in their profession.

Prof. A J Cook says he has repeatedly proved the efficacy of a strong solution of soft soap for the apple-tree bark-louse, if applied in early June, and again three weeks later. The trees put on new vigor when cleaned of the insects. Prof. Cook usesa cloth and scrubs the trunk and main branches by hand; or a stiff brush may be used.

The Soil Exhaustion Controversy.

We publish in another column a letter from "Subscriber" in reply to Mr. Shaw. In justice to the latter gentleman, we feel it our duty to state that we have received two letters from him on the subject, and it is just that we should explain why we have not published them. While we are desirous that none of our readers or correspondents should be wronged in any particular, yet we must also, in justice to ourselves and our readers, guard against being imposed upon.

Mr. S. appeals to our sense of justice, and imploringly desires us to publish his communications in full. We struck a sentence out of his letter in which he named a certain Government publication wherein his paper on "Robbing the Land" is published in full. He insists that we should give "Subscriber" and our other readers an opportunity of studying his paper. While we have informed "Subscriber" of this fact, yet we refuse—and have always done so—to give free advertisements to the so-called agricultural literature of the Government, for two reasons, viz.: (1) that a great deal of the literature is falsely reported, and (2) even if it were correctly reported, it would contain a great deal of worthless and unreliable information which no farmer should read, except probably those who are involved in agricultural booms. We might even assign a third reason, viz., that we don't wish to encourage such publications on the ground that the expense is a burdensome tax upon our farmers. Why, if we named the said publication, many farmers might procure it and might even believe in the doctrines preached by Mr. S. and his confederates.

In the second place, he urges that the main issue is our proof of the charge that he is a confederate of the Government, while we contend that the vital question is, can the fertility of the soil be maintained or restored by returns from its own resources ? Nobody needs the said Government report to see that this is the issue, for he repeats the declaration in his article which we published in our last issue. If he had given his recipe for restoring fertility in the way he mentions, we would gladly publish it in the interests of our readers and of all mankind, and would freely advertise him as the greatest benefactor of humanity. With reference to his being a confederate of the Government, he stated (as published in our last issue) that if he were a confederate, he "would not be ashamed of the connection," and in a subsequent letter he says he has never been a confederate of the Ontario Government, "in any other sense than in the main being in sympathy with it."

Now these statements prove to our minds that this question is not one of great urgency, although we are willing to take it up in its natural order. His conduct in his writings indicates to us that his first desire is to get a free advertisement for his article, or for Government literature, as the case may be, and secondly that he wants to evade the main issue. If he is an agricultural authority, he must know that history, science, and practice are against his theories, and we suspect that he has recently had his eyes opened to this fact. If he is in sympathy with the Government, he should by all means confederate with it in the imposition of its theories upon the agricultural community. The fact of his paper on "Robbing the Land" now being a part of the Government literature, is surely ample proof that there was a confederacy existing between him and the Government on the land-robbing question ; the remaining articles of confederation is another issue. We are strongly inclined to the belief that this confederacy had its source in the interests of a pack of live-stock speculaters ; but if the perpetrators of the boom plead ignorance as the cause, then we will not feel disposed to get into a wrangle.

Farmers' Clubs.

Dominion Farmers' Council.

[This Council meets on the third Thursday of every month at 2 o'clock p. m. All communications should be addressed to the Secretary, W. A. Macdonald, London, Ont. The Council has now on hand pamphlets containing its Constitution and By-laws, with an account of its origin, also pamphlets containing a form of Constitution and By-laws suitable for Farmers' Clubs, which will, on application to the Secretary, be distributed *free* to all parties having in contemplation the organization of clubs. Lactoscopes sent free to amalgamated clubs.]

The regular monthly meeting of this Council was held on the 19th ult., President Leitch in the chair.

ROYAL RAILWAY COMMISSION.

Letters were read from Hon. John Carling, Minister of Agriculture, and from Mr. M. S. Lonergan, Secretary of the Royal Commission on Railways, stating that, pursuant to the request of the Dominion Farmers' Council, a meeting of the Royal Commission would be held in the city of London, on Saturday and Monday, May 21st and 23rd.

After some discussion, arrangements were made for gathering witnesses from the city and surrounding districts for the purpose of setting forth the grievances of farmers, shippers, etc., in matters pertaining to railways, and as to the desirability of establishing a permanent commission for regulating railway freights.

CAPITAL INVESTED IN A STOCK FARM.

A communication was received from Mr. W. J. Biggins, Secretary of the Granton Farmers' Club, stating that a committee of five members had been appointed, pursuant to a request of the Council, for the purpose of drawing up an estimate of the capital invested in a stock farm in the neighborhood of Granton, county of Huron. The estimate was read before the Council as follows:

Land (100 acres) $6,000; dwelling house, $1,000; barn and outbuildings, $1,000; 18 steers coming three years old, $630; 3 cows, $105; 3 yearlings, $60; 3 calves, $30; 2 working horses, $350; brood mare (Canadian draft), $250; colt or filly, $100; 2 pigs, $10; self-binder, $150; mower, $60; horse rake, $25; seeder combined, $70; plow and harrows, $25; gang plow, $18; roller, $25; scuffler, $12; wagon and rack, $75; fanning mill, $25; sleighs, $25; harness, $50; straw cutter and power, $100; horse fork and tackling, $25; incidentals, $25; total, $10,245. The farm is divided as follows: Orchard, 2 acres; yard, garden and roots, 3 acres; bush, 10 acres; hay, 10 acres; pasture, 45 acres; crop, 30 acres.

This estimate is published meanwhile as a guide to encourage other farmers' clubs to send in similar reports. The reports will all be gone over, and criticised by members of the Council and a general average struck, the object being to arrive, as near as possible, at the average capital invested in a stock farm, a dairy farm, and a mixed husbandry farm. This will form a basis of calculation for arriving at the cost of producing the various farm crops, stock, dairy products, etc. It is hoped that other readers of the proceedings of the Council, as well as amalgamated clubs, will also send in reports, for the larger the number of reports the more accurate will the estimates be as averages for the Province, or the Dominion, as the case may be. The figures will be published in book-keeping form, so that the cost of production can be concentrated into a small space. Those who have not time to send in full estimates would greatly oblige by sending criticisms of the estimates as published from time to time. The estimates of the cost of tillage operations may be sent in at any time during the summer or autumn months.

RENTING FARMS ON SHARES.

The programme of the day being called, the President read the following paper on the above subject from the pen of Mr. J. B. Freeman, M. P. P.:—

It has been said that the strength of nations is in proportion to their skilful cultivation of the soil. In the necessity for cultivating the earth for subsistence social order commenced. At an early date we find the master and his slaves, or serfs, engaged in husbandry; the slaves doing the labor, and—for their share of the products of their toil—getting the bare necessities of life. As civilization progresses the relation of master and slave changes, and we have landlord and tenant. Happily for this country of ours the relation between land-owners and tenants has been one of mutual good will, and we, as Canadians, can take a national pride in the knowledge that the heart-burnings, distress and crime that cast their dark shadows upon other lands are no part of our heritage.

No human arrangements are perfect, and no human laws can be formed which unscrupulous men, be they landlords or tenants, will not try to evade, and the closer together you bring the interests of the owner of the soil and the one that tills it, the better for each. Their interests should be mutual. The landlord has certain duties that he owes to his tenant, and the tenant is responsible for certain duties to his landlord. We have drifted past the days when the tiller of the soil paid for the use of the land in either a military or servile capacity. These arbitrary and vexatious tenures have been swept away, improvements have been made in the laws of the old countries to lessen the friction between the owners and the tillers of the soil. I do not wish, however, to give my advice to others for the speedy cure of this vexed problem, but to content myself with some of the methods for dealing with this question at home.

The fair rent of land is sometimes estimated at one-third of the value of its products, but there is no fixed rule other than that which prevails in all other business transactions, that each party makes the best possible bargain for himself. In some of the older counties in Ontario a "share and share alike" system prevails, and has been found to give general satisfaction to the contracting parties. The tenant buys one-half interest in all the stock and farm implements, arriving at their value either by mutual consent or through the services of competent parties in whom they have confidence. Then the tenant contracts to work the land in a good and husbandlike manner, to market the landlord's share of the grain, pay all expenses for hired labor employed in working the land, to keep fences and buildings in ordinary repair, the landlord to find the material. The landlord pays one-half of the taxes, and, in some instances, half of the road work, and half of the threshing. Then the receipts from all sources of produce and stock are equally divided between landlord and tenant. Any repairing to implements or new machinery is paid for jointly. These are the general terms; any minor details can be settled by the parties interested.

Now, as to results: First, it does away with the inability of the tenant to pay rent, as he pays in produce. If the season is an unprofitable one for farming, the landlord shares in the loss of crops, and no stock that is really needed by the tenant is forced to be sold to pay rent: neither does he have to ask his landlord to let the rent run into the next year and take all the surplus of the year, if a good one, and if a poor one, sometimes it means ruin. Then, it is cheaper for the tenant, as he has all the advantages of a well stocked farm for less outlay of capital than he could have in any other way. Then, it is better for both landlord and tenant that the farm should be well stocked, so that the fertility of the soil may not decrease for want of stock to convert all the straw, hay and coarse grains into manure. There are also many other reasons that might be given why this "share and share alike" system has much to recommend it. I regret that I have not had time to give you more than a general statement of how this method is being worked here in Norfolk county. Mr. John B. Carpenter, the proprietor of "Madde Farm," and also the winner of the gold medal, was one of the first to inaugurate this plan, and it has been satisfactory to him and his tenants, as far as I have any knowledge. As to the percent the owner realizes on his investment, that is governed by the quality and productiveness of the soil. From observation, I have no hesitation in saying that the percent would be quite as high under the "share and share alike" system as any other. It has this to recommend it, and that is: I have never known a tenant but who had enough at the end of the year to pay all expenses and leave him higher wages than he could get as an ordinary farm laborer, even in the years that crops were poor and prices low, and in good years he has quite a surplus above all expenses. The rent means just one-half of the year's crop, and this seems to divide the value of the land and the value of labor more justly than by any other method.

DISCUSSION.

The system of renting farms described in Mr. Freeman's paper being new to the members of the Council, little was said by way of criticism, but the members thought the system should work well, providing responsible tenants could be secured who were competent and reliable in making purchases and sales. The discussion was, more or less, of a side issue, in which the members related what they knew about tenants and renting farms, the main object seeming to be the ascertaining of the condition of tenants and their ability to pay rent.

JOHN WHEATON stated that a neighbor of his paid $500 a year as rent for 100 acres, 75 being cleared, but he did not think he was making a respectable living, although he (the tenant) seemed to be able to pay his rent.

JOHN KENNEDY stated that he had a tenant on 86 acres of his land—50 acres cleared—and he received $300 a year as rent. The tenant paid the rent regularly and seemed to be doing well. The tenant tapped 300 trees and made a good deal of money out of molasses, but otherwise he had no right to the bush beyond the timber he required for fire-wood, and there was no grass in the bush, the trees being too thick.

PRESIDENT LEITCH said a tenant or owner should make $100 out of molasses from 300 tapped trees. The syrup brought $1 per gallon in the London market. This sum did not include the labor, which would require two men for an average of about three weeks. Two hundred dollars was considered a high rent in his section for 100 acres, the soil being light and the market facilities not being extra. A good tenant could make money at that figure. If he (the President) wanted to rent a farm he would look out for a good sugar bush and good orchard of at least two or three acres, which he would calculate on for paying the rent, and there was also a great advantage in being near a creamery or cheese factory.

In answer to a question by a member, John Kennedy stated that it was also customary for the tenant to pay the taxes and perform the statute labor.

JOHN O'BRIEN stated that it required a first class tenant in his section to make money at present prices of farm products.

MR. HAWKSHAW, who lives half way between London and St. Thomas, stated that $300 was the average rent in his section for 100 acres, and he did not think that tenants were making money at that figure at present prices for farm products. Unimproved farms brought about $70 per acre, and improved land ranged between

$80 and $90, but investments at these figures did not pay good interest; the desire for having a home was the cause of these high prices.

OUR MORTGAGE DEBT.

The discussion drifted on the farm mortgage question, a member having stated that this topic was being voluminously written up in the political press.

PRESIDENT LEITCH said he had also read these discussions, but did not see much sense in them. It was all nonsense to contend that the country was going to the dogs simply because the files in the registry office were filled with farm mortgages. Farmers made money by purchasing land and giving mortgages until they could pay them off; both the borrower and the lender made money by these transactions, and what was good for these people was good for the country. He had bought farms himself in this way, and made money out of the transactions.

A member here suggested that the cry against our farm mortgage debt might have been raised to create a government office for somebody who thought he might gather statistics about farm mortgages in order to prove that Canadian farmers were becoming bankrupt.

MR. HAWKSHAW contended that where a tenant could pay rent an owner should be able to pay off his mortgages.

W. WELD said a good deal depended upon the section of the country referred to. They were speaking of favorite localities. In some places the farmers were badly off, owing to inferior soil and other drawbacks, and the farmers could not pay off their mortgages.

JOHN O'BRIEN said that was the fault of the farmers and not of the localities, for the land should be cheaper in the less favored localities, so that the profits in farming should be about the same. The farmers must be bad calculators where they could not pay off their mortgages. The trouble was that such farmers had a mania for speculating in novelties, etc., instead of attending to their legitimate business, which often brought them to grief.

The question was asked if many foreclosures of mortgages were personally known to the members, but very few of such misfortunes were related.

A vote of thanks was tendered to Mr. Freeman for his instructive paper.

CENTRAL FARMERS' INSTITUTE.

A MEMBER—I wish to ask our President if he attended the meeting of the Central Farmers' Institute held in Toronto, on the 28th of April, in accordance with a resolution passed by the Council.

PRESIDENT LEITCH—The resolution stated that I was to attend, providing the Council received an invitation. I am not aware that an invitation was received, and so I didn't go.

Some of the members spoke of having read the reports of the meeting of the Central Farmers' Institute, and a short discussion ensued.

W. WELD—I was in Toronto on the day of the meeting of the Institute, and availed myself of the opportunity to attend it; but as I had no authority to speak or act for the Council, I said nothing, but only listened and took notes. There were between 100 and 200 people present, composed of intelligent farmers from different parts of the Province, including three M. P. P's. The name of Permanent Central Farmers' Institute was given to the organization. Mr. Valancey E. Fuller, Hamilton, was elected President, and Mr. Thos. Shaw, of the same place, Secretary. The meeting was called by Mr. Fuller, and he took the most active part in the work of organization. The Government granted $250 to defray the expenses of the representatives, and one of the M. P. P. speakers stated that the Government was ready to spend more money in the cause. I should like to present a few points to the Council and ask if this Institute proposes to do necessary work which this Council or other organizations is neglecting. It would also be well for you to inquire whether this Institute is a representative body so far as the farmers of the Province are concerned. It was decided at the meeting that the President and the Secretary with a third party should have the power to choose the executive committee, which virtually throws the control into the hands of the President and the Secretary. Would it not be well to inquire who these men are? The President is largely interested in the Jersey breed of cattle, and the Secretary is also largely concerned in stock. Do you think that these facts bear the impress of another live stock boom? The President is also a dairyman, and no doubt considers that every farmer should patronize his favorite breed. He spoke on dairy matters, but two dairymen from the east contradicted an assertion of his by stating that the milk which brought 10 cents for cheese in their locality only brought 8 cents for butter, and the farmers were therefore leaving the creamery and patronizing the cheese factory, to which the President answered that the lacking two cents were found in the manure. Would it not be well to inquire if these statements are true? A proposition was made to the effect that the proceedings of the Institute be published by the Government. How would it do to inquire into the value of the Government literature already published, and ask if further expenditures in this direction be judicious? Are not other Government organizations going over the same ground as that proposed by the Central Institute? It was also proposed to have a farmer appointed as Commissioner of Agriculture, and Mr. John Dryden was mentioned as the most suitable man for that position. Mr. D. is an extensive Shorthorn breeder, and is President of the Dominion Shorthorn Herd Book Association. After the meeting was over, an intelligent representative informed me that he regarded the concern as the germ of another Jersey boom. A letter from Mr. Erastus Wiman, of New York, which was published in the daily press of the same day, created quite a stir, and a farmer told me that the Institute was a put-up job by Messrs. Fuller and Wiman for the purpose of securing commercial union between Canada and the United States for the supposed benefit of the farmers. This is another question worthy of inquiry, and it would be well to know whether our farmers would derive the same advantages from commercial union as our stock speculators. I make these as mere suggestions, and I don't wish to influence your action in any way.

These questions were discussed in an amicable spirit, and the tendency seemed to be in favor of further inquiry. No member pronounced an emphatic opinion on the subject.

A member proposed to have a paper read before the Council on the subject of our commercial relation with the U. S. and other countries, and it was debated whether a popular authority should be asked to prepare a paper, or an intelligent independent farmer who could discuss the question from an agricultural standpoint. As many of the members of the Council had not given much consideration to the subject, it was decided that a farmer should be selected, and the Secretary was instructed to write to Mr. John Waters, M. P. P., for North Middlessex, asking him to prepare a paper to be read at the next regular monthly meeting of the Council. It was held that the subject was of immense importance to our farmers.

The Council adjourned until the third Thursday in June.

The Dairy.

Testing Milk and Cream.

[A Lecture delivered by W. A. Macdonald before the Dominion Farmers' Council.]

No. VI.

Whether the percentage of butter or butter fat should be adopted as the standard depends on the object aimed at. If the object is to breed cows that produce milk of high quality, the fat standard of the milk should be introduced. The percentage of fat in the cream is neither a guide to the quality of the milk nor the quantity or quality of the the butter obtained from the milk or cream. The percentage of butter is not a guide to the quality of the milk; for the percentage of water in the butter may vary from 8 to 18 per-cent, and is very liable to swing between 11 and 15 percent, so that the farmer who complains of a cow that produces watery milk should be the first to complain of watery butter. There is no greater justice in paying for watery butter than for watery milk, and when it is also considered, as I have shown, that there are easy and practical methods for ascertaining the percentage of fat—which cannot be said with reference to the butter yield—also the object in breeding can only have a practical basis in the percentage of fat in the milk, there can be no question as to the greater practicability of the fat standard, although it may be urged that absolute justice cannot be easily secured to producers and consumers by any known standard. The nearest approach to justice should be our aim.

The percentage of butter from the milk is dependent upon four factors, viz., (1) the percentage of fat in the whole milk; (2) the co-efficient of cream; (3) the co-efficient of butter; (4) the composition of the butter. When butter is made from the milk, instead of the cream, the second factor, of course, must be dismissed. What is meant by the cream co-efficient is the percentage of the fat in the milk which finds its way into the cream, and butter co-efficient means the percentage of fat in the cream which finds its way into the butter. For example, if the milk contains 4 percent of butter fat, 3 of which finds its way into the cream, the cream co-efficient would be 75 percent, three-fourths of the fat in the milk being in the cream. But if say 3.2 percent of the fat gets into the cream, the co-efficient will be 80, as will be found by the following statement in proportion:

4 : 3.2 : : 100 : 80

Let us now suppose that a given sample of milk contains 3.4 percent of fat, that the cream co-efficient is 80, the butter co-efficient 96, and that the worked but unsalted butter contains 82 percent of butter fat, then we get the following statement:

1. 100 lbs. milk with 3.4 % fat contains 3.40 lbs. fat
2. Cream co-efficient 80 " equal to.....2.72 "
3. Butter " 96 " " .....2.61 "
4. Fat in buttter....82 " " .....3.18 lbs. butter

By this statement it will be seen that milk which contains 3.4 percent of fat will produce 3.18 percent of butter, that it requires 31.44 pounds of milk to produce a pound of butter, and the price can, with equal justice to all the patrons of the creamery, be attached to the butter, the butter fat, or to the milk. In the above example, the percentage of butter is obtained by the following statement:

$$x = \frac{3.4 \times 80 \times 96}{82 \times 100} = 3.18 ;$$

or, for the sake of convenience, a formula may be employed. Let f represent the percentage of fat in the milk, c the cream co-efficient, b the butter co-efficient, and F the percent of fat in the butter; then all such questions may be worked out by the following formula:

$$x = \frac{fbc}{100F}$$

Let us now suppose that the market price of butter is 20 cents per pound, that the cost of manufacture and sale is 5 cents, and it will be evident that a corresponding price may be attached to the milk, which will be about 48 cents per 100 lbs., and justice can be approximated by simply making a test of the percentage of fat in the milk, and paying each patron accordingly, although the cream and butter co-efficients can be obtained by also testing the skim and butter-milk, and the percentage of water in the butter can be ascertained with little difficulty. But our farmers can hope for little progress or justice so long as our creamerymen have little or no interest in these tests, and the same remarks apply with equal force to our cheese-makers. Farmers, more than any other class of the community, are interested in having reliable tests made. The knowledge obtained by this system is necessary before breeding dairy herds can meet with appreciable success. A cheese or butter factory should be a sort of laboratory in which any patron can get the milk or butter, skim or butter-milk, of his cows tested at any time in order to ascertain their intrinsic merits for breeding or dairy purposes. As I pointed out before, the milk of some cows has a higher cream co-efficient than that of others, although the percentage of fat may be the same, and it is important that each cow should be tested separately for the purpose of ascertaining whether she is better adapted for butter or cheese production. The percentage of water or total solids in the milk does not properly decide this question under the test system, as is generally supposed.

Before I draw my lecture to a fair and just conclusion, it is necessary that I should notice at least one other method of testing the butter capacity of milk or cream. I have special reference to the oil test which recently originated in the United States, and which has been recommended so highly, even by some of our best dairy authorities.

(To be concluded in our next issue.)

Hoard's Dairyman says that it is computed that there would be as much nutrition per annum in the milk of fifteen million cows in the United States, if it was all used for human food, as in the eighteen thousand million pounds of boneless beef, and that the average good cow for a year is equal in feeding value to the meat of one and a half steers, weighing 1,500 pounds each. The whole calculation is based on the fact that three and one half pounds of milk are equal in feeding value to one pound of boneless beefsteak.

Butter Making.

The exercise of rigid cleanliness in all the operations of butter making has so often been enforced in our columns that we shall make no repetitions here. Not less important is it that the milk should come from healthy cows fed on clean, wholesome, sweet and nutritious foods, and the water drunk should not fail to be pure.

Revolutionary changes have recently been made in dairy practice, owing partly to the advancement of science and partly to a natural desire for change on the part of the consumers of butter. It is in place here to note a few of these changes, and say which of them are desirable and which are undesirable. When the butter is for sale, the maker should, by all means, consult the tastes of his consumers. It is not our place to educate the public as to what they should have in preference to what they too often desire; but a few hints in this respect may not be amiss to our readers. The farmer should endeavor to combine the wholesome with the luxurious, when manufacturing articles for his own consumption. For family use, we need not discuss the keeping qualities of butter made after the different fashions, for the farmer can always have it fresh; besides, with reference to the keeping qualities, it is our way of thinking to consider that sour cream butter possesses the better keeping qualities, while in Europe attempts have been made to prove that sour-cream butter has at least as good keeping qualities as that made from sweet cream. Authorities also do not agree as to the effects of salt on the keeping qualities, and this question is difficult to determine, for when butter begins to get rancid, salt hides the rancidity from the taste, so that the unsalted butter appears to have the worse flavor.

One of the latest novelties is the salting of butter with brine. We have encouraged this tendency, not because we believe in salting with brine, but because it is an important step in the direction of doing away with salting butter altogether. When butter is made as it should be, no system of salting can improve its flavor, but salt improves the flavor of average butter by disguising all the little sins perpetrated in the making. It is better to learn the science of making butter that needs no salt than the science of salting butter. Butter salted with brine is sufficiently tasty for a majority of consumers in the present state of the fashion, and we therefore recommend our farmers to adopt the practice, using unsalted butter for the family table, made entirely from sweet cream. Butter being a luxury, mostly devoid of nutritive properties, it is the creamy flavor that makes it a luxury; it cannot be the salt, which might as well be used on lard or oleomargarine—neither can it be the sharp flavor of sour cream butter, which can be obtained in pickles at a much less expense, and nobody can conscientiously contend that pickly flavors are wholesome or in any sense hygienic. Creamy flavors cannot be successfully imitated by the arts of the druggist; hence the necessity for pure, sweet, creamy flavors in the butter, if a real, natural, wholesome luxury is to be enjoyed. It is the tendency of experts to complicate the butter business as much as possible—it is their interest to do so; but the straightest road is almost invariably the best, and the fare the cheapest. The omission of salt saves working the butter, makes the grain and quality evener, saves the palate and saves money. Nobody has ever been able to give a sensible reason why butter should be salted.

Our dairy anthorities are very inconsistent in their talk about the keeping qualities of butter. They want a long keeping butter and they want everybody to go more extensively into winter dairying. When butter is made in direct conformity with the demands, it is not necessary that it should keep long; for if it is well made under any of the leading systems, it will keep long enough to reach the consumers. We prefer advocating a more extensive winter dairy—in fact, making butter at all seasons of the year—leaving the keeping qualities of the butter to look after themselves. What is really wanted is the best butter, fresh at all seasons of the year, and this alone should absorb all our present energies.

New Cure for Milk Fever.

The following experiences obtained in the application of a simple method of treatment for milk fever previously mentioned in the ADVOCATE, and taken from a German paper, are of considerable value:

Out of three cows that were attacked by the fever two were very seriously ill. In the treatment of one of those that fell sick in the afternoon, applications of ice on the head, frequent injections of cold water, four cathartic powders, and every two hours a decoction made of one oz. of camomile flowers, with the addition of two tablespoonfuls of ether, were employed during the night. The cow lay on her side for hours and looked very miserable. In the morning of the next day the loins were covered with blankets, and these rubbed, or rather ironed, with very hot irons. This process was continued for about three hours, after which the cow stood up and gave about 2½ quarts of milk. She was restored to health the next day.

One of the other cows was also very seriously ill. She was treated in the same way, with the exception that the ironing was continued from morning till noon, and again from 2 o'clock to 6 o'clock p. m. At 5 o'clock she was still on her side, but at 8 o'clock she got up without assistance and commenced eating straw.

The third cow was not so dangerously affected, but still was unable to stand. Her case was relieved after a few hours ironing.

Failures in Butter Making.

The main causes of the many failures which take place in the making of butter are the following:—

1. THE FODDER-FLAVORS. — These are too well known to require description; but the feed also exercises an influence on the composition of the butter, which influences the durability as well as the taste.

2. STABLE TAINTS.—Some people call it the "flavor of the cow's tail." This failure arises from a lack of cleanliness in milking, the neglect of cleaning the udder before milking, and imperfect straining of the milk. Without doubt, it is the effete matter from the body of the cow that gives the butter this peculiar flavor, which is intensified by allowing the milk to remain in the stable atmosphere for an unnecessary length of time.

3. SMOKY, MUSTY FLAVOR.—This condition has its origin in the setting of the milk or cream in an impure atmosphere, principally allowing the cream to sour in dwelling rooms, where all sorts

of necessary and unnecessary flavors are given off, and in erecting the milk or cream cellars in the neighborhood of stables or other places where all sorts of miasmatic or other obnoxious effluvia are given off, especially in summer.

4. OILY (SOUR-OILY) BUTTER.—According to all accurately conducted experiments, this mistake is entirely due to mismanagement in souring the cream. It is specially noticeable when, in order to sour the cream, old cream or sour buttermilk has been added. In all probability the decomposition of milk sugar into lactic acid, in such cases, takes place in an abnormal manner. Factories in which the above method of souring the cream had been employed produced a very oily butter, but this condition disappeared when the souring process was changed by using fresh soured whole milk.

5. GREASY BUTTER.—This condition takes place after the butter has been stored for some time, when it partakes of a tallowy or lardy flavor. At the same time the color changes white and tallow-like, particularly from the covering into the interior, which can also be observed when the butter is placed in the sun for some time. The cause of this failure probably lies in souring the cream too much, by which the decomposition of the casein and the butter fat is already far advanced only to be afterwards still farther increased. The white color is probably due to this advanced decomposition of free fatty acids, which, in their turn, produce a change in the butter fat. Careful observation of the souring process, and scrupulous cleanliness with all the milk vessels, are the means of preventing this undesirable result.

6. FISHY, BLUBBERY BUTTER is a failure observed in old samples. The fodder may play a part in the production of such butter, such, for example, as the feeding of large quantities of oil cake, which changes fine butter into that of a blubbery nature; but it is also very probable that this failure is caused chiefly by improper handling of the milk and cream, the former not being kept fully sweet while the cream is rising, or being too strongly soured; principally, however, on account of faulty methods of souring the cream. The same remarks apply here as in the case of tallowy butter.

7. BITTER BUTTER is partly caused by a bitter taste in the milk, which is particularly the case with the milk from cows a good while after calving; but it is also caused in part by certain substances in the fodder, such as sometimes found in lupine, also by spoiled foods, and by changes from stall to pasture feeding, or pasture to stall feeding. It is also highly probable that bitter butter can be produced by mismanagement of the milk and cream.

8. SPECKLED, STREAKY BUTTER.—In colored butter this is caused by the coloring not being evenly distributed, the butter being interspersed with lighter and darker shades; but the cause also lies in imperfect salting or working. When the salt is not worked evenly, the percentage of water varies in different parts of the butter, the salt drawing moisture from the surrounding parts in order to be dissolved. The parts having the greatest quantity of water have a darker appearance than those with a lesser quantity, which causes the appearance above mentioned.

9. MOULDY BUTTER.—This takes place soon after the butter is packed, and is caused by a fungus, which, however, can easily be removed, but a disagreeable taste is imparted to the rest of the butter. During the life of the fungus the butter undergoes decomposition, and sooner or later propagates itself over the contents of the firkin. Keeping the tub moist before and after packing is said to be the cause of the failure.

10. RANCID BUTTER.—This is the most commonly known of all the failures in butter making. The rancidity originates in the butter which is in contact with the wood of the tub, and spreads into the interior until the whole contents of the firkin is spoiled. The progress can easily be ascertained from time to time by the butter tester. It was at first supposed that the rancidity of butter was caused by its coming in contact with the staves of tubs, it being believed that the butter would absorb some substance from the wood that would give it this flavor. The spoiling was therefore attributed entirely to the mismanagement in the preparation of the tubs. Undoubtedly a bad tub may favor rancidity, but it is not the only cause, the quality of the butter having considerable to do with it. A good quality either never becomes rancid, or, at any rate, is much less liable to do so than an inferior article, and therefore here also care in the production is the best way to guard against this failure. The fact that the rancidity commences at the outside is due to air coming in contact with it there and decomposing it, or at any rate causing free butric acid to be formed. Carefully soaking and drying the tubs and thoroughly sprinkling the sides with salt before packing the butter, and then storing it in a dry cool place, are good safeguards against this failure.

Dr. Sturtevant, of the New York Experiment Station, relates the following piece of his experience: The constitutional character of cows differs greatly, and the practice of feeding which may be injudicious for the average cow may be apparently not productive of harm when applied to an animal of strong digestive powers. Thus in my own herd, in which a careful record was kept of the amount and character of the food for a series of years, it was found that while some cows could be fed eight quarts daily of cotton-seed meal for a long period without apparent injury therefrom, yet the average feeding of this material could not be in excess of two quarts daily, with other food, without the appearance in some animals of ill results, and the feeding of four quarts daily to the herd resulted in the death of two animals. The feeding of grain or of a highly nitrogenous food is always dangerous when carried to excess. Thus we all know that if a cow gets loose at night and obtains access to the grain bin, injurious effects are likely to follow, and we never think of calling the meal poisonous in these cases. In like manner the over-feeding of cotton-seed meal, one of the most valuable foods for the dairyman to use (not to abuse), is apt to be followed by injury.

A Pennsylvania farmer, in the Ohio Farmer, says: "We haul out in winter on sleds, spread as evenly as we can, the snow making it easier to do this. I would not advise spreading on hilly lands. Those having level or gently sloping fields will save valuable time in the spring by hauling on snow; it is easier to load and one can haul larger loads. There is practically no loss if hauled every few weeks or oftener, if carrying plenty of stock. One of our most successful farmers hauls manure every few days, spreading as fast as hauled. This saves extra work, and I believe gives better returns; I have had good results from this practice on clover sod for corn."

The Farm.

Couch Grass *(Triticum repens.)*

This hardy and troublesome weed is known under a large number of different names, such as Quack Grass, Quick Grass, Quitch Grass, Witch Grass and Welch Grass. The head of this plant somewhat represents that of rye grass. The main difference between the head of the rye grass and couch grass is that the former presents a flatter appearance than the latter. The couch grass may also be very readily detected by its roots. They are jointed or divided by nodes sharply pointed at the end; from each of the nodes or joints roots may grow, and, if broken, each one of them may grow and become a separate plant. The roots are creeping and are the underground stems of the plants. It spreads very rapidly, and, if not checked, will soon occupy whole fields and farms.

In some localities where it has taken firm root a large number of farmers have allowed it to grow, using the infested fields as permanent pastures. Some also cut this grass for hay. When it is cut early, it is said to be very nutritious and well liked by horses and cattle. It is, however, a bad plan to allow it to grow on the farm, as it will keep spreading continually, and will therefore require a continual warfare to keep it within its limits. A good method of destroying it is to smother it out with buckwheat or clover. In bad cases it may be necessary to grow two successive crops of buckwheat in one season, plowing them both under when in blossom, and continue with a hoe crop the next season. All crops that are intended to smother this grass should be sown thickly, and immediately after the land has been plowed and harrowed, in order to give them a good start before the grass appears. Hoe crops used alone have also been found very effectual in overcoming this weed. When this crop is to be used it is advisable to manure and plow the land in the fall, cross plow it in early spring, and again plow it once or twice, according to the nature of the crop to be sown later on, the last plowing always to be done just before the crop is sown. The grass has to be kept down perfectly, so that it never sees daylight, even if it would require cultivating once every week. The success depends largely upon the thoroughness with which the grass is kept down, but the season and soil have their influence. Bare fallow, or rather, bare cultivation, is also recommended. For this purpose, the soil is plowed early in spring, and cultivated as often as the grass appears, or about every week, the turned down sod to be torn as little as possible until about mid-summer, when, with a deep cultivation, it is brought to the surface. From here it has to be removed by raking it into a heap, or gathering it up. It is, however, better, if possible, to dispense with the bare fallow, as it may not do the work so thoroughly, and is more expensive.

The best medicine for horses in the spring of the year is thorough cleanliness, which keeps the skin active, aids perspiration, and thereby conduces to the health of the animal.

To get rid of warts on the cow's teats, cut the small ones off with the scissors, and tie a strong thread tight around the base of the others, and let them dry up and drop off.

Hay and Haying.

Accurate calculations made now may save a great deal of expense and trouble during the remaining months of the year. Nothing pays better than abundance of help in the hay field, especially in unpropitious seasons. There are always stock on the farm which require delicate bites of hay at some period during the winter or early spring months, and the early cut, well-cured hay should be set aside for them. It is better to err in cutting the bulk of the hay too early than too late. The early cut is more nutritious and digestible than the late cut, and therefore makes a daintier bite, as well as being a more profitable food for most purposes. When grain or other foods are scarce, stock will thrive on a minimum supply of concentrated foods, when early cut hay forms the bulky portion of the ration ; and when grain is plentiful, large quantities of straw can profitably be fed with hay of this quality.

It is a weak argument to contend that a greater bulk of hay is obtained by late cutting. What is really wanted is the maximum weight of digestible nutriment, which bulk has little to do with. A large percentage of the food in late cut hay is in the form of indigestible woody fibre, which has little value either as food or manure. The stock's time should be more profitably employed than to allow them to waste their energies with such indigestible material.

The proper curing of the hay is of about as much importance as the early cutting ; for if hay is allowed to wash, it loses nutriment, especially if this washing takes place when the crop is nearly dry. If on the other hand, the hay, particularly clover, is exposed to the burning sun without being turned or cocked, the leaves will become brittle before the stems are dry enough to be preserved. When such hay is handled the leaves break off and are left on the fields, and with them the most nutritive portion of the plant. The aim in curing hay should be to dry it as evenly as possible, and to preserve it from the washing of rain. In the preservation of clover, it is necessary to gather it into heaps after the leaves have become dry, but before they are brittle ; by doing this the dry leaves and outside of the stems will draw out the moisture from the inside and the whole will then have an even percentage of moisture. This is especially necessary for clovers, yet grasses will also be greatly benefited by such treatment. Do not cut too large a piece at once, that is to say, so large that it cannot be properly attended to. If the crop is heavy, it is beneficial to turn it several times to aid evenness of drying.

Another advantage in early cutting relates to the aftermath. If the hay field is to be plowed, the second growth, particularly if the soil is deficient in vegetable matter, will be of immense advantage as green manuring ; and even as food, it will make up for the lesser bulk of the first crop.

Our system of farming must undergo rapid changes in the near future ; so be prepared to get out of the old ruts.

Corny on the Agricultural Situation.

DEAR ADVOCATE—I regret that my last letter to you, which I wrote confidentially and as a great secret, must have got abroad somehow. At any rate, I have received circulars from doctors or quacks from all over—in fact, from "Dan to Beersheba," and from "Greenland's icy mountain to India's coral strand," so to speak, as it were ; also private letters giving remedies for my Susie. Some of my humane correspondents offered to send prescriptions without money and without price, guaranteed to cure, without fail ; they were devoting their precious lives to the cause of Christianity and humanity, and would do nothing so sordid as to charge farmers, or other poor people, for saving the life of a fellow being. But when I got the prescriptions, one of the drugs mentioned in it could not be got in Canada, so I had to send all the way to California for it, and it cost me just $125.

Now, MR. ADVOCATE, I don't want you to put me to any more expense just now by telling what the matter is with my Susie ; I can't afford it at present, but I want to tell you again, privately and confidentially, as before, how she is getting along with the dreaming business. It struck me at first that the *free* drugs which I expected to receive from those Christian gentlemen would only be worth their cost, so I felt somewhat relieved when I found I had to pay $125, for I concluded that the nostrums would then surely stop Susie's dreaming, and I assure you that I felt a great relief on going to bed the evening which Susie took her first dose. The consciousness that I would enjoy one night's rest caused me to fall fast asleep as soon as, if not sooner than, I closed my eyelids. Midnight came—

"Oh ! *Oh!!* OH!!! O-O-O-OH!!!!—*Corny!!* C-O-R-N-Y!!!—A dream!! A dr-e-a-m!!!

Such imploring language falling upon my ears in the depth of the night, like a thunder racket, naturally woke me up, as usual ; but I quaked worse than ever, because the exclamations were louder than on any previous occasion, and because I had made up my mind to get a night's rest for once. After the shock had completely oozed out of my nervous system, and when Susie got able to contain herself, she mustered sufficient courage to relate her dream, and I was prepared for anything of the most sensational character, not knowing what breed of dreams drugs and nostrums might generate.

In a low and quivering voice, Susie related her dream as follows : "I saw a stout little man with a funny-looking instrument in his hand—."

"Did he wear spectacles and a big, stiff upper lip," interrupted I.

"Yes."

"O, that is the Honorable Attorney-General Mowat," said I. "What sort of an instrument had he in his hand ?"

"A very, very funny thing with a man in it, and a dial on the top, the finger pointing to "foul odors." A stout gentleman stood in the rear, and both men were looking at the dial indications. They were dressed like workingmen, for I was told that they were working in the farmers' interests. They held their noses with their fingers, for I saw clouds of bad odors issuing from cisterns a little way off. Occasionally I saw some men running over the cisterns and attempting to nail down the lids, but they would immediately burst open again, and I saw you, Corny dear, at a distance shouting to the men telling them that they could never get the lids down that way—that they should go down into the cisterns and clean them out, and then the lids would drop of their own accord ; but the men never heeded your shouting.

"Did the man in the instrument look like a dude ?" inquired I.

"Yes."

"O, that is the Honorable the Commissioner of Agriculture, whom we appoint to look after our agricultural interests, and he is supported by his lawyer chief whom we elect to look after him. Had the stout gentleman a red nose, and did he look like a fat stock show ?"

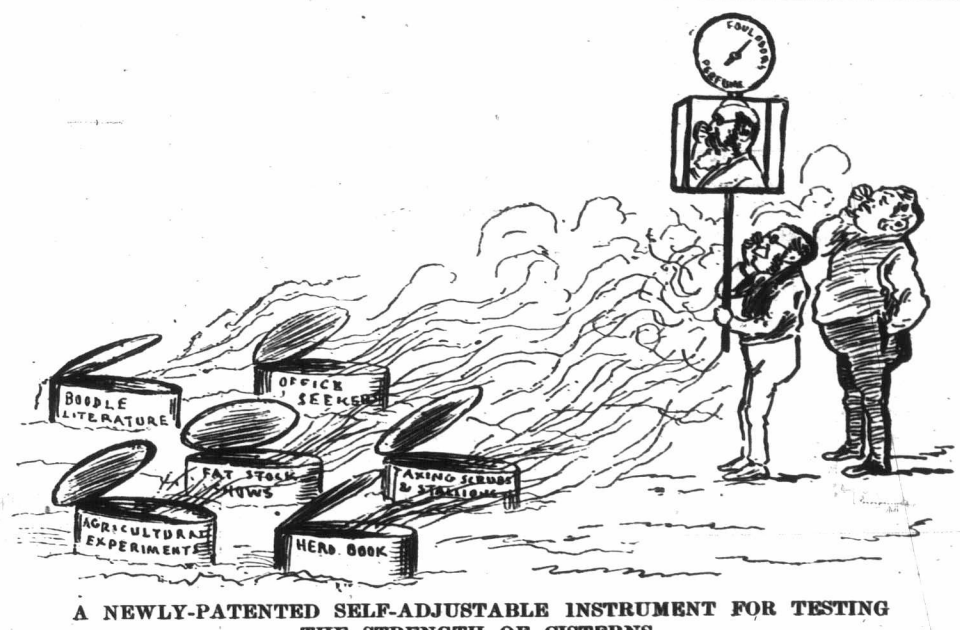
"He grasped his nose so tight that I could not see its color, but he looked like a fat stock show."

"O, that is the Honorable the Minister of Agriculture, whom our Federal Government sent as a Royal Commissioner to take a pattern of the instrument which you saw in the hands of the little fellow. You saw the instrument tested in your dream ; and, Oh, how lucky that it worked so well, else you would have had cause for alarm.

Yours confidentially,

CORNY SPARKINS,
Racktax Farm.

Boodleworth, Ont., May 24, 1887.



A NEWLY-PATENTED SELF-ADJUSTABLE INSTRUMENT FOR TESTING THE STRENGTH OF CISTERNS.

Weeds.

When we consider the productiveness of some weeds, the vitality of their seeds, the many ways in which they are conveyed from place to place, the negligence of the authorities to enforce the laws bearing on noxious weeds, and the indifference of a large number of farmers, it is no wonder that the weeds are making rapid progress.

One of the most important points to guard against in the successful battling against weeds is to prevent the introduction of new seeds into the soil. To avoid this, care should be taken to sow only seeds that are perfectly clean. A sample of all seeds sown should be carefully examined on a piece of paper, where all impurities may be easily detected. Care should also be taken not to allow weed seeds to come on the farm by threshing machines, bought manures, etc. But above all, weeds should be prevented from going to seed, either in the fields, fence-corners, roadsides, or any other place where they may chance to grow. This is necessary, as well for the destruction of the plant itself as it is for preventing fresh seeds to be formed. If, however, it should chance that weeds mature their seeds, care should be taken, first, not to bury these seeds deeply, as would be the case if they were plowed under, and secondly, to prevent them from entering the manure pile. In the first case, when buried deeply, they would remain there ready to germinate whenever, by subse-

quent cultivation, they would be brought nearer the surface. Thus the troublesome effect would be spread over a number of years. However, if they germinate before the close of the season, they may be destroyed by cultivation late in the fall, or, in some cases, by the winter's frost. The germination of these seeds would be best aided by harrowing, cultivating, or a very shallow gang plowing immediately after the crop is taken off, and a subsequent fall plowing after the weeds have sprouted would destroy them.

The weed seeds may be returned to the soil by the manure, into which they may enter either by being in the bedding given the animal, or by seeds that have passed through the animal system. The vitality of these seeds is rarely if ever destroyed by passing through the animal, if their covering is not broken either by the animal's teeth or by some machinery before it enters the stomach. The heat in the manure pile, if not overheated, which will deteriorate the value of the manure very materially, is insufficient to destroy the vitality of most weed seeds. This clearly shows that weed seeds in the manure heap may be as vital as those left in the fields the previous autumn, and will germinate whenever conditions are favorable.

The destruction of most weeds is an easy matter if the growth of new plants is prevented, and is generally most effectually accomplished by thorough cultivation. If the weeds are in the hay field, it is better to cut the hay when the weeds are in blossom, or before going to seed, if there are many in the field, otherwise they should be spudded.

With respect to thistles, when grown in dense patches, they are frequently destroyed most economically by cutting when in bloom. If not entirely destroyed, they will be materially lessened —all depending upon the soil and season. By this method of destruction, the advantage of a green manuring crop is obtained. No inflexible rule can be given for their destruction in all cases, for much depends upon the character of the soil, so that each farmer should study the question for himself.

Rooting Habits of Plants.

A knowledge of this subject aids us very considerably in the profitable tillage of land. Thereby we can be guided to determine the depth of cultivation most suitable for each particular plant, the distance that should be left between each plant or rows of plants, the condition in which, and the depth of which to apply manures or fertilizers. We do not intend to convey the impression that all these operations are solely dependent upon the rooting properties of plants, for besides this, numerous other factors have to be taken into consideration, such as the condition, kind and texture of the soil, the kind and solubility of the fertilizer, etc. But the rooting properties of plants is one important factor, for if a plant is a deep-rooted one, or one that has the majority of its fibrous roots extending to a distance of 8 or 10 inches below the surface of the soil, as in the case of the onion and pea, it is evident that a cultivation to that depth would be desirable for the thorough preparation of the soil. If, however, a large number of the main roots are within a short distance of the surface, say 2 to 4 inches, as in the case of the squash, it shows that when hoeing or cultivating this crop it should never be to this depth. The distance to which the roots extend latterly aids us in determining the space that should be left between the plants or rows.

The New York Agricultural Experimental Station has made a large number of very valuable experiments as to the rooting habits of plants, some of which we present herewith. The soil was a fertile clay loam 6 to 10 inches deep, resting on a tenacious subsoil of gravelly clay.

THE PEA.—The plant examined was a British Queen, about 4½ feet high. The tap root extended nearly perpendicularly downwards to the depth of 39 inches, branches separating from it through its whole length. These branches were most numerous between 4 and 8 inches in depth where they seemed to nearly fill the soil for a distance of about 8 inches on either side, some extending as far as 18 inches from the tap root. They gradually became shorter as the depth increased, but were still 4 in. to 6 in. long at a depth of 2½ feet. An American Wonder Pea, the stem of which was only 6 in. high, had nearly the same extent of root. The deep rooting character of the pea may explain the slight influence that fertilizers seem to have upon it, as seen in some experiments.

THE BEAN.—In a plant of the Scarlet Runner bean in full bloom the vertical roots extended to the depth of 2½ feet, and the horizontal ones were as least 4 feet long. Some roots were within 1 in. of the surface, but the great majority of them where between 2 and 8 in. deep. A Boston Dwarf Bean was found to have roots at 2 feet depth. The lateral ones extended to the same distance on both sides.

THE TURNIP.—The roots of a Purple-Top Globe Turnip, weighing 3 pounds, extended to a depth of 18 inches, and the horizontals reached no farther. The plant on the whole had very few roots, and even these did not divide as much as those in other plants.

THE BEET.—The main root of the Extra Dark Blood Beet divided, at about a depth of 8 inches, into several branches, some of which extended 2 feet downward. The horizontal branches, which were mostly shallow in the soil, extended a distance of 2½ feet.

THE CARROT.—The tap root of the Long Red Altfrichan variety was traced to the depth of 16 inches. The horizontal roots extended about a foot, and were found throughout the whole length of the tap root, some coming nearly to the surface.

THE CABBAGE.—The tap root of the Very Early Etampes Cabbage was found to extend 20 inches deep, and the horizontal roots reached a distance of about 18 in. from the stem. The fibrous roots were chiefly found in the upper layers of soil.

THE ONION.—The roots of a Large Red Onion were found to grow to the depth of 16 to 18 inches, while the horizontals were traced further than one foot. The roots grew from the base of the onion in all directions. The laterals were short and never subdivided. Some roots grew within an inch of the surface. A bulb of this onion planted out the second year was found to have made, as far as ascertainable, about 400 feet of roots in 40 days. The roots of a young plant, the leaves of which were only 8 in. long, and the bulb only the size of a cherry pit, had roots of the same length as the mature plant.

THE SQUASH.—In a plant of the Yellow Scallop Bush Squash, examined Sept. 8, a horizontal root was traced for a distance of 8½ feet without reaching the end. This root grew almost its entire length within 3 in. of the surface. The runners of this plant were about 4 feet long. A root of the Hubbard Squash was traced 10 feet from the plant, where its diameter was about ⅓ of that it had at its starting point. Here the root was evidently broken. In this distance the root had 385 branches.

THE MUSK-MELON.—The tap root of the Montreal Nutmeg went down 4 inches, where it turned at right angles, running almost horizontal with the surface. The main horizontals lay 2 to 3 inches below the surface, some reaching the length of 5 feet. One of the horizontals grew in this direction for 15 in., then suddenly turned down and grew to a depth of fully 2 feet.

Strange to say, the reports have omitted to state whether the soil on which these vegetables grew was drained or not.

More about the Soil Exhaustion Question—"Subscriber" vs. Shaw.

The Editor Farmer's Advocate:

SIR,—I avail myself of the opportunity you give to write a few lines in reply to Mr. Shaw's letter in your May issue, in which he complains of my criticism of his paper on "Robbing the Land."

Mr. S. takes exception to the title given to my communication, but, as you point out, I am in no way responsible for that, neither am I responsible for the report of what Mr. S. said at the meeting referred to. I was not present at the meeting and never saw either Mr. Shaw or Prof. Robertson, nor do I know anything of them but from the public reports. I quoted from the report given in the newspaper mentioned, and the correctness of that report is confirmed by a report of the same meeting given in the April issue of the Journal of Agriculture by the associate editor, thus:

I lately attended a Dairymen's Convention at Huntingdon. The editor of an Ontario stock journal informed us that by dairying and stock raising, where manure was properly saved and employed, the land grew constantly richer and in no way needed additional fertilizers. A professor of dairying, also of Ontario, supported the fertilizing theory of the soil by dairying. Unfortunately such erroneous doctrines seemed to prevail with most, if not all, of the audience.

If, then, Mr. Shaw's lecture has been incorrectly reported, it must be from want of perspicuity on his part, a too common fault—in fact, the great fault of lecturers at farmers' meetings.

Mr. S. says he still believes that the fertility of a farm can be maintained from its own resources while selling beef only or dairy products, and that in that way he had doubled the *producing power* of his farm in eight years, and he believes that even an *exhausted* farm can be *restored* in this way, only it will require longer time, and challenges *any living man* to a discussion of the subject.

Mr. S. may have doubled the produce of his farm in eight years while feeding cattle and selling beef, but that cattle raising was *the means* by which it was done I do not believe. There are thousands of farms in Canada the produce of which could *for a time* be largely increased, if not quite doubled, by thorough cultivation, draining, etc., without the help which Mr. S. claims for cattle raising, but would that indicate increase of fertility? By no means. The reverse would be the case, as the larger the crops, or the more cattle raised and sold off, the quicker the exhaustion. If a farmer grows say 100 tons of hay and 500 bushels grain, etc., and sells that

off straight, every one will say his farm is so much poorer; but what difference would it make if he fed that hay and grain to cattle and sold the beef, or to milk cows and sold the produce? He would simply save the excrement of the cattle, and of that a considerable quantity would be lost even under the most careful management. A portion, then, of the hay and grain—in other words, so much of the fertility of the soil—would go off in the beef or dairy produce, and part would remain as manure, and this portion which goes back to the land as manure, will, according to his theory, not only make up for what went off in beef, milk or other products, but increase the fertility over what it originally was. Mr. Shaw's argument is that a part is not only as great as the whole, but very much greater. If by any means confined to the farm itself, and the cultivation of it, the quantity of produce sold is increased, the exhaustion is correspondingly increased, and if Mr. S. sells double the produce off his farm now that he did eight years ago, and has brought nothing to it from outside sources, as food or manure, he is simply "robbing the land" twice as fast as he did before.

Mr. S. says he believes that even an *exhausted* farm can be *restored* by dairying and cattle raising, only it would take a longer time. There are a great many farmers in our own and other countries who would like to be shown how this can be done, and if Mr. S. can instruct them he will rank as the greatest benefactor of mankind in modern times. But why did not Mr. S. explain how it could be done when the question was asked at the meeting in Huntingdon?

Mr. S. says he will discuss the question with any living man. Why then does he ignore Prof. Tanner, from whom I quoted in my former letter.

If Mr. Shaw's views on the restoration and fertility are correct, why is it that farmers in the old world and in the Eastern States find it necessary to import such large quantities of fertilizing materials, besides the immense quantities of food both for man and beast from all parts of the globe? The imports of wheat and flour alone into Britain are equal to over two hundred million bushels of wheat—seven times the whole average crop of Ontario! As every Canadian farmer knows, mostly all our cheese, surplus cattle, butter, linseed cake and oil, too, go there. Immense quantities of corn and cotton seed meal for cattle food go there from the States, and all kinds of food are got from mostly every country under the sun. Of this immense quantity of stuff, a great proportion is imported especially for cattle food, and the manure made is all carefully saved and put on the land, and from the material consumed as human food, a large quantity of manure is available for use on farms. Yet, notwithstanding this immense importation of fertility from other people's farms, the whole world has been ransacked for artificial fertilizers of every description. The importations for the year 1885-6 amounted to 514,000 tons, consisting of guano, nitrate of soda, fish guano, bones and phosphates of all kinds, besides which there were home supplies of phosphatic minerals and great quantities of sulphate of ammonia from iron and gas works. In the Eastern and older States the consumption of artificial fertilizers is estimated at some 500,000 tons a year. It is in the very districts where dairying is most practiced that the use o artificial fertilizers, and cotton seed meal, and corn from the western and southern regions, are specially used.

How is it that the experienced farmers of the old world have never thought of Mr. Shaw's theory? It would save them millions of money if they could get on without buying artificial manures, and I would like Mr. S. to show where they are in error. If he can explain that away he will go so far in establishing his theory.

Yours truly,

SUBSCRIBER.

How Plants Vary in Selecting Food.

The following article on this subject from the pen of Sir J. B. Lawes is worthy of attention, especially in connection with the article on the rooting habits of plants which we publish in another column. It should be closely studied by farmers who use salt upon their land, because, being a chloride of sodium, supplies soda to the plant, and, as Sir John shows, some plants take up soda instead of potash. His experiments explain the reason why salt is beneficial to mangels. The article reads thus:

I am quoted as saying that sodium supplies the place of potassium when the latter is deficient in the soil, but I certainly do not wish it to be understood that sodium can perform all the functions of potash. In some of our experiments soda has been used without potash, and in others potash without soda, for twenty years in succession, and yet soda is hardly to be found in either the grain or the straw. The ash of pasture grass shows, however, that when it is supplied with a sufficient amount of both potash and soda, it will always select the former; if it is supplied with soda alone, it will take up such a large amount of that substance that more soda than potash is found in the ash.

These facts may be thoroughly relied upon, as they are based upon the most exhaustive and complete series of ash analyses which have ever been carried out. Mangels supplied with soda will take up large amounts of that substance, while potatoes under similar circumstances do not take up any. The juice of potatoes—where we should expect to find any soluble salts taken up by the plant—contain hardly any soda, even when manured with nitrate of soda. The juice of mangels, on the other hand, under similar circumstances of manuring, contain almost as much soda as potash. It is these special properties of different classes of plants that make our attempts to give any exact explanation of the economy derived from a rotation of crops so exceedingly difficult.

There is another peculiar property of plants which requires to be thoroughly studied. I allude to the different capacity possessed by different plants for taking food out of a soil. Without at all arguing that red clover derives its nitrogen from nitric acid, I have pointed out that it has greater advantages than any of the other agricultural plants commonly grown for taking up a substance which is diffused so rapidly through the soil. It has a longer life, and the plant grows very close together on the soil; the roots penetrate deep into the subsoil, and the leaves are always green. If, however, red clover can obtain more nitrogen from the possession of these properties, it might be supposed that they would have enabled it also to collect more mineral food. I should certainly have imagined that such would have been the case.

Let us see, however, what experiment tells us. At Rothamstead, between 1850 and 1873, wheat, turnips, barley and beans were grown upon an unmanured soil. In 1874, red clover was sown and the plant was very good, although the crop was small. Between 1873, when the seed was sown, and June, 1874, when the crop was cut, all the phosphoric acid which it could pick up out of an acre of land only amounted to two and one-half pounds. It may be said that after the removal of so large an amount of crops the soil was exhausted of its phosphoric acid, but such was not the case, as the wheat which followed the clover took out more than seventeen pounds of that substance; while the turnips which followed the wheat fared even worse than the clover, for they could only obtain one and one-half pounds, but the barley which followed the turnips took out ten pounds, and in 1883—after thirty-six unmanured crops had been carried off—the wheat removed twenty pounds of phosphoric acid per acre.

We get in these results some clue to the conclusions derived from practical experience in all countries, that mineral manures are much more beneficial to some crops than they are to others. It is evident that the cereal crops possess a greater capacity for obtaining their food from poor soil than any other of the crops generally grown. It is fortunate for the human race that such is the case, as nations must have bread to eat without having to be dependent for it upon the aid of science.

According to Mr. T. B. Terry, the celebrated Ohio potato grower, who digs with the fork, a man can dig five-eights of an acre per day, or 180 bushels. One of his men dug 220 bushels in nine hours. He says the average potato crop in Ohio is 77 bushels per acre. He has ascertained that it takes 30 hours to cultivate six acres when the field is square, while the same area can be cultivated in 10 hours when the rows are 60 rods long.

The following estimate of waste from a hill-side barnyard is by Prof. Roberts, of Cornell University: At Cornell there were 32 inches of rainfall in the year. The barnyard is 100x100 feet, about one-quarter of an acre. Every inch of rain would make 100 tons for an acre, or 3,200 for the year to an acre, or 800 tons for the barnyard. If one-half was leached out, it would be 400 tons. Each ton of water leached out would carry off 60 cents worth of plant food, or $240 worth from the barnyard. 'Tis true, the inky streams running from the barnyard down the road, into the creek or on the neighbor's lot, is the best part of the manure. It is money running away.

Prof. Henry, in an article on cooking foods, says: "The softening, moistening and breaking up of the food by heat and water are really of no aid to digestion. If there is any advantage from all this it seems to be overcome by the better mastication necessitated by the dry food before it can be swallowed. Our experiments must be repeated again and again with all classes of food articles and pigs in all stages. Vegetables (potatoes for example) can hardly be fed without cooking, but here the cooking is essential to get the potato into edible condition. Many farmers think they cannot feed shorts, for example, dry, but must either wet or cook them. I would advise all such to try for a week or two feeding them dry, mixed or not with other feed, giving plenty of water to drink in a separate trough, or both in the same trough as that in which the feed was given."

There are differences of opinion as to whether manure or fertilizers should be placed in the drill or spread broadcast, either as a top-dressing or to be plowed under. When it is desired to manure the crop, drill manuring may sometimes do, but broadcasting manures the land and comes good for several successive crops. Quicker returns are to be expected from drill fertilizing; but, as a rule, for permanent cropping, broadcasting is the preferable method, although more manure may be required at the outset to produce the same results. However, for planting trees or small fruits, no plan can supercede a partial system, at least, of fertilizing in the hills or drills. Bone dust and ashes should be placed under the trees or bushes, but not near the surface, for this will cause some of the roots to grow upwards, where they will be lacerated by tillage and exposed to drouths. Top dressings of barnyard manure should also be given from time to time.

Garden and Orchard.

Rules for Pruning the Orchard.

1. Prune at or near the outside, to let in the light on the large thrifty leaves. 2. Do not prune in the interior, leaving the foliage thick on the outside. 3. Pruning may be done at almost any time of the year if sparingly performed. Heavy pruning, to make trees more vigorous, should be done early in spring. 4. But if the trees are quite hardy and the winters usually mild, it may be done in winter. 5. Heavy pruning of growing trees will check growth. 6. Large wounds at any time should be covered with paint, tar or grafting wax. 7. If done often and moderately, it is better than heavily and rarely. 8. It is better if done so often that no limbs need removal which may not be done with a pocket knife. 9. For pruning a large orchard and employing hired men, the owner should precede them and mark with chalk a line for every saw-cut, and allow no other. 10. If the heads of bearing trees have become too thick and brush-like, thin out at equal distances all over, and particularly toward the outside.—[Country Gentleman.

Grape Rot and Mildew.

The American and English Consuls in France, in recent reports, make it appear that there is reason to believe a partial remedy, at last, has been found for grape rot and mildew. Applications made last season on vines near Panulæ, the Commune of St. Julien and other districts of France, of sulphate of copper and lime in solution, were, it seems, attended with satisfactory results. M. Prilleux, Inspector-general of Instruction in Agriculture, after inspecting vineyards in the Medoc district, reports as follows:

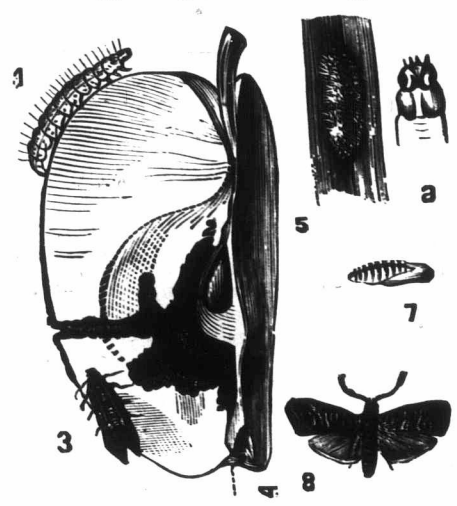
"It appears to me to be established by the facts that I have verified in the Medoc district that the sprinkling of vines with a liquid composed of about 8 per cent. sulphate of copper, mixed with slacked lime, arrests the progress of mildew and permits the complete maturity of the grapes on the affected vines. This treatment is simple and inexpensive, and it is to be hoped that next year all viticulturists will use it. The earlier the remedy is applied the better the results will be."

Prof. Millordet recommends that the remedy be applied as soon as mildew is discovered, as it is more efficacious than when used later, although beneficial at any stage of the disease.

The Codling Moth *(Carpocapsa pomonella.)*

This moth is represented in our cut at figure 3 in its natural size. It is a small, dark colored moth with a copper-color spot, somewhat representing the shape of a horse-shoe on its anterior or front pair of wings. The moth flies only at night, and, as it is not attracted much by light, it is but rarely seen.

The moth appears when the apple is in bloom, and lays her yellow eggs singly on the flower just when the young fruit is forming; sometimes, when too late for the flower, she deposits her eggs on the calyx or flower end of the apple, and very rarely on its side. About a week after the eggs are laid the young larvæ are hatched out, and immediately bore their way to the core of the apple. The castings are pushed out of the hole which the larva entered in at, and sometimes adhere to the apple; by this the presence of the enemy may be detected. The larva or worm has a fleshy color and is covered with minute hairs. It reaches full growth about three or four weeks after it has left the egg, and then leaves the apple to spin its cocoon, generally in some crevice or crack on the trunk of the tree. The apples generally fall prematurely to the ground, sometimes with the insect still harboring in them, and sometimes after it has left them. If the insect leaves the apple before it drops, it either climbs down the branches to the trunk, or descends to the ground by means of a silk thread which it is able to spin at will, and then climbs up the trunk again. The cocoon is constructed out of white silk, but is frequently covered with bits of bark or other foreign matter to conceal it. In this cocoon the larva is transformed into a pale brown pupa or chrysalis, from which the full grown moth emerges about two weeks later. This brood of moths again lay their eggs on the apple, which again produce the larvæ—a second brood—but these do not leave the apple until the fall or winter. Sometimes they leave it before it is harvested, and then spin their cocoons outside in some sheltered place; but more frequently they are carried with the apples into the storing rooms, and then their favorite spot to spin their cocoons is between the hoops and staves of the apple barrels. They pupate early in spring and the moth appears again the following season.



CODLING MOTH.

1, larva; 2, section of infested apple; 3, moth at repose; 4, hole where worm enters; 5, cocoon; 6, magnified head of larva; 7, pupa; 8, moth with wings expanded.

REMEDIES.—A very effectual remedy is to bind strips of old cloth, four to six inches wide, or even paper or straw, tightly around the trunks or stems of the trees. The larvæ seeking for a sheltered and concealed spot to spin their cocoons in, will find what they look for under these strips. They should be put on about the commencement of June, and examined about every week, care being taken to remove all larvæ and cocoons. The bandages should be left on the trees until all the apples have been harvested. It is not necessary, however, to examine them after the end of August, for all the larvæ concealing themselves after that time remain there during the winter months, and may be destroyed any time in the late fall.

Pasturing the orchards with sheep or swine is also a good plan, for these animals will consume all the apples that they can find, and with them destroy the larvæ they may contain. The best remedy for large orchards is, however, the spraying with Paris green or London purple, and the best manner of application is by the means of a force pump. For this purpose place a barrel of water, to which half a lb. of Paris green has been added and thoroughly mixed, on a light wagon or cart, and to it attach a force pump with hose and nozzle. The spraying should be done just after the apple has commenced to set, and should be applied with considerable force, so that the poison reaches the fruit which is more or less protected by foliage. It is very important to mix the poison thoroughly with the water, so that every drop of it is poisonous. No fear of poisoning anything but the insects need be entertained, if care is taken not to come in direct contact with it, and if animals are kept out of the orchard until a rain has washed off all the poison.

The Tent Caterpillar *(Clisiocampa Americana).*

The moth of this caterpillar deposits her eggs during the first half of July on the small twigs of the apple tree, and with them completely encircles the branch. But the young larvæ do not make their appearance before the next spring. They are voracious eaters, and a mature caterpillar is said to consume two leaves a day. Their peculiarity is to spin a web to which they always return after feeding; generally they leave it all at the same time, once in the morning and once in the afternoon.

REMEDIES.—The best remedy is to destroy the nest early in the morning or late at night, before they have left or after they have returned to it. This is easiest accomplished by pulling it down with the hand and trampling upon it. Spraying, as recommended for the codling moth, will also destroy the tent caterpillar.

The White Grub *(Lachnosterna fusca).*

The white grub is the larval form of the May beetle, a chestnut-brown, thick beetle, about three-quarters of an inch in length. The larva, the white grub, is of various sizes, sometimes growing to an inch and a half in length. It has three pair of legs and a soft white body, the posterior end of which is enlarged and usually curved under. It feeds on nearly all tender roots that come within its reach, but is especially fond of those of the grass and strawberry.

REMEDIES.—Swine and insectivorous birds are especially fond of them, and will consume them when within their reach. Another remedy, lately been tested with the strawberry plants that are attacked by the white grub, was a decoction prepared by cutting burdocks into small pieces, pounding them and soaking them over night. The roots of plants to which this liquid has been applied are said to be "white grub proof." This is also supposed to be an excellent remedy for the onion and cabbage root maggot.

The Flat-headed Apple-tree Borer *(Chrysobothris femorata).*

This insect is the larva of a shining greenish-black beetle, which may be seen running about on the trees on a sunny day in June or July. The beetle is about half an inch in length and marked on the wings with two raised lines. The female lays her eggs, which are very small and yellow, in crevices or under loose pieces of bark. These eggs soon hatch, and the larva or borer bores into the sap wood of the tree. The borer has an enormously large and flat head, and is a pale yellow footless grub, having the appearance of being half starved. Sickly trees suffer most from it,

especially when they have been newly transplanted. The presence of the insect may be detected by small heaps of sawdust at the base of the tree, thrown out by the burrowing worm; secondly, by the bark covering the borer being soft or yielding to the touch; thirdly, the bark becomes discolored and dried in places; fourthly, the tree appears to be unhealthy.

REMEDIES.—Wherever a borer is suspected, cut into the bark and kill him. As a preventative apply to the trunk and larger branches of the tree soft soap made to the consistency of thick paint by the addition of a strong solution of washing soda. Apply this mixture with a paint brush on a sunny morning early in June, and repeat it about the first of July. Keep the ground clean for about two feet around the base of the tree.

The Apple tree Bark Louse *(Mytilaspis pomorum).*

This insect is protected the greater part of its life by a scale. It only leaves this covering when hatched out, to seek a new place to become fastened to the tree. This usually occurs towards the end of May or commencement of June, and this is the best time to destroy them.

REMEDIES.—When the young lice have left their scales, brush the trees with soft soap, or spray with strong soft soap suds. A solution of kerosene and soap may be applied with good results at any time during spring or summer. It has also been recommended to scrape off the scales and collect them on a sheet placed below, and then burn them. But the best remedy is to examine the young trees before planting them, and to remove all scales then if any should be found. As the female is wingless, and can only travel a short distance, there is little danger of an orchard becoming infested if the above precaution has been taken.

PRIZE ESSAY.

Management of the Orchard.

BY KENNETH SUTHERLAND, INGERSOLL, ONT.

There is no department of the farm the management of which is so little understood by the average farmer as the orchard; not that it does not receive as much attention as the other branches, nor that the profits from it are less, as compared with the other departments, but the habits of the trees and the requisites for maintaining them in a healthy and fruit bearing condition, is a subject to which the majority of our farmers devote very little of their attention. The deplorable condition of many of our orchards on farms otherwise well and intelligently managed, is a proof of the truth of these statements. Why this is so it is rather difficult to say, unless the idea is prevalent at the beginning that an orchard when once planted will take care of itself without any care or assistance from its owner. But this I think an extreme deduction. The scientific knowledge necessary to rear and care for an orchard properly is not more than is required to raise a good crop of grain, or any other product of the farm, but the period of its growth extends over a much greater length of time, and, consequently, the care which it receives is not apt to be so constant and timely as would be given to a crop occupying but one short season. This, coupled with the fact that farmers think they must get a crop between the trees, I think, explains why our orchards do not flourish and bring forth fruit in abundance.

So much of the success in after years depends on the manner in which it is first planted, that I think I would be neglecting an important part did I not give a few directions for setting the orchard.

Select a site, if possible, sloping to the south, although perhaps the advantage of one slope over another, everything being taken into consideration, is very slight. For instance, although a southern slope will produce larger and earlier fruit than a slope to the north, fruit on the north side of a hill is less liable to be damaged by late frosts in spring. On the whole, I think the nature of the soil should be considered as of more importance than the slope.

In choosing a spot for the orchard, avoid a soil with a hard clay subsoil, for not even the best of cultivation and thorough drainage can render it fit for the reception of the far-reaching roots of the trees. A deep, dry, sandy loam should be selected to give the best results.

Having selected a site, the next thing will be to drain, manure and subsoil the land. The distance which trees should be planted apart will depend on the amount of land at your disposal, and the kind of trees to be planted, a spreading tree such as the Greening requiring more room than one of close growth, such as the Northern Spy. However, as the farmer will want to plant more than one variety, it is best to adopt a distance which will meet the requirements of all kinds. If the trees are given plenty of room they will reqtire less manure to sustain them in good condition. From thirty to forty feet is better than a shorter distance. Select trees of medium size, set in large round holes, carefully spreading the small fibres and reserving the top soil to be pressed firmly around the roots. Next, stake and prune the trees, leaving about four of the main branches evenly balanced on the trunk of the tree.

The future management of the orchard will consist in preserving a well shaped top, in clean cultivation, and in applying to the land, in the shape of manures, such elements of plant food as will at once increase and retain the fertility of the soil and supply to the trees the essentials for fruit and wood growth.

By carefully going over the orchard once a year, and removing the objectionable branches in the first stage of their growth, it will not be necessary to mutilate the tree when it has arrived at maturity by sawing off large limbs, and leaving large openings and half rotten stubs too often seen in the farmer's orchard. Of branches which cross one another, or have a tendency to grow too close together, the less vigorous should be cut off, taking care not to interfere with the natural spreading or upward tendency of the tree. In fact, the more we strive to conform to Nature's ways in the management of the orchard the greater the chance of success. If asked when is the best time to trim, I would say whenever you have time to do it well, giving the preference to the early spring.

But it is to the soil that the attention of the orchardist should be most assiduously directed, for however much we prune and trim the branches we cannot expect success if we do not feed the roots. As well might we expect to produce a brilliant light in our lamps by constantly trimming the wick while we neglected to keep up the supply of oil. If the orchard is cropped, the object should be not to utilize all the fertility of the soil for fear it will be wasted, for the trees will need it all, and more too, but to keep the land clean, and for the purpose of working in the manure applied. For this purpose nothing is better than low, hoed crops. A judicious rotation, however, should be practiced, as crops of the same nature taken from the land year after year would be apt to exhaust it of some of the elements necessary to the healthy growth of the tree, unless some stimulating artificial manure is applied to supply the deficiency. Whatever system is adopted, however, the land should receive every year a liberal dressing of well rotted manure.

But while the foregoing directions may be of benefit to those who have the care of the orchard from its infancy, with many others the case is different. Many of the present owners have probably but recently come into possession of their orchards, while but very few have had anything to do with their planting and early treatment, and they find their orchards a mass of brush twenty-five or thirty years old, dead limbs, barkless trunks and scanty foliage; fruit, if any, is borne small, scrubby and wormy, and the question is asked, what shall I do with my orchard? In this case there are three methods of procedure, and which of the three to choose must depend upon the particular state of the orchard and the purpose for which fruit is required:

1. To cut down the trees, grub out the stumps and plant a new orchard. 2. To graft the trees with scions from a vigorous stock. 3. To trim the trees and adopt a system of renovation.

If the case is an extreme one, as the one mentioned above, the fruit of an inferior kind, or the conditions of soil or location are unfavorable, probably the best plan to adopt would be the cutting down plan. But if the trees are young and vigorous, but with fruit of an inferior kind, and good fruit is wanted for market, I would adopt the grafting plan. If, however, the natural conditions for fine fruit are favorable, but the orchard, through neglect or improper treatment, has fallen into a state of unprofitableness, I would by all means endeavor to make the most of it by adopting the third plan.

We will suppose the time of year to be June, and the orchard in grass. First, remove all dead limbs, then scrape and wash the trees, then plow the land rather shallow and cultivate the surface at intervals during the season. Of manures it is doubtful if anything is better, if it can be had in sufficient quantities, than the refuse matter of the farm, such as decayed chips, yard scrapings, ashes, etc., not forgetting a good dressing of well rotted manure in the fall. The following summer cultivate some low hoed crops between the trees, after which seed down to grass to be used as a pasture for hogs, sheep, calves, etc. By pasturing the orchard the grass is kept short and the land kept in good condition by the droppings of the animals. The hogs especially are of great service in devouring the worms in the fallen fruit.

Until our farmers can be induced to inquire into the chemical constituents of their soil and become acquainted with the elements which enter into the composition of their different crops, noting the requirements of each and adapting the crop to the soil, or supply the deficiencies by artificial manures, then, and not till then, will the application of these manures be attended with benefit, and the profession of farming, instead of being a thing of uncertainty and variable gains, will be an occupation the pursuit of which will prove a field for the exercise of our intelligence, and will render the farmer what he ought to be, the happiest and most independent of mankind.

A correspondent of the *Homestead* gives a remedy for the onion maggot, which can be found abundantly about the homes of many farmers: Take green burdock leaves and stalks, run them through hay cutter, put them in a large kettle or tub, and mash them with an old axe or mall, adding water and pounding them to a pulp. Let it stand over night, have the decoction strong, and when you see the first sign of the maggot use this, and you will find it a dead shot for the maggot. Put it on all the onions as a preventive; I have used it for forty years on onions. I use a sprinkler, taking off the nose, and pour the solution along the rows; I seldom have to apply it the second time.

Trial of Insecticides.

The following conclusions have been arrived at by Prof. Riley, Entomologist of the Department of Agriculture at Washington, after repeated experiments :

THE CABBAGE WORM.—The only remedy which proved distinctly effectual was pyrethrum powder. a mixture of one part of the powder to three parts of flour dusted on the plants with Woodason's bellows, introducing the mixture thoroughly among leaves and eaten cavities. Fully three-fourths of the larvæ were killed. The strength of the pyrethrum had been preserved in a closely corked jar.

ANTS, which had excavated burrows, were repelled with a tablespoonful of 1 part of carbolic acid in 60 of water, but with a solution half as strong the remedy failed. Tar water partly succeeded ; copperas water and ammonia water produced no effect.

FOR POTATO BEETLES, tar lime appears to have been quite successful. It was composed of half an ounce of tar to one pound of powdered gas lime. It appears to have thoroughly cleaned the plants of the beetles. No Paris green had come near them. If this remedy proves always as effectual, it may be used by those who are afraid of Paris green on potatoes.

Seasonable Hints for Amateur Fruit Growers.

RASPBERRIES.—There are two important kinds of raspberries, one is the red and the other the black. The latter is frequently called Black Caps. The red raspberry is propagated by suckers or root cuttings, and the Black Caps are multiplied by the tops of the canes or branches turning down to the ground and taking root. The raspberry may be pruned either in fall or in summer. The summer pruning is, however, much the better method, and the fall pruning should only be done when the summer pruning, or pinching back, has been neglected. The fall pruning consists in cutting back the young canes to two or four feet, according to the strength of the cane, and removing the old canes that have borne fruit. In the summer pruning three or four canes are allowed to grow near the parent plant to bare fruit the next season. All the rest of the suckers have to be removed when quite young, as they weaken the plant more than weeds would do. Pinch back the tops of the reserved canes when they are about two to three feet high. This strengthens the plant and causes it to send out side shoots or branches. These are again pinched back when about a foot long. When the raspberry has been so pruned it requires no stakes or wires to support it.

STRAWBERRIES.—When strong plants are desired on a bed newly planted out, it is necessary to pinch out all the blossoms as soon as they appear. This is especially necessary when matted rows are intended to be grown, for all the energies of the plant are then required to produce strong plants to fill up the spaces.

CURRANTS AND GOOSEBERRIES.—The best method for pruning these bushes is very similar to that of the apple and pear. The stem of these bushes should be very short. Two or three inches from the surface of the soil it should divide into three or four branches, and these should again divide into two about three or four inches from the trunk or stem.

All the fruits should be kept free from weeds and should be thoroughly cultivated. This increases both the quality and quantity of the fruits.

Stock.

A Chatty Letter from the States.

[From our Chicago Correspondent.]

The railroads are making the Inter-State Commerce Bill as obnoxious as they can. As some one aptly puts it, "they are trying to make the new law commit suicide." Instead of reducing the short haul rates, they are raising the long haul rates to such an extent as to seriously interfere with business. One of the main provisions of the law is that all charges must be reasonable and just, and the commissioners have not had time to get to this clause yet.

Through the action of the Grand Trunk Railway, dressed mutton, from Chicago to New York, is now carried at 65c. per cwt., the same as beef, the old rate being 90c. No one could ever see the equity in charging more for hauling mutton than beef.

The latest scheme of some of the Colorado and Wyoming ranchmen is to form a gigantic combination by which they will slaughter and market their own cattle through their own agents. The plans of the concern are not yet fully known, but one of the largest slaughterers in Chicago is to devote his plant to the uses of this "American Cattle Trust," as it is called. The affair is looked upon as a gigantic monopoly, one on the plan of the notorious "Cotton Trust," and one that may become as dangerous as the oil monopoly.

Mr. T. Crawford was here recently and bought a boat load of cattle for England, at $4.60@$5. He was attracted hither by the abundance and comparatively low prices of good cattle.

Lately the prices for cattle in London have been about ¼c. per lb. lower than a year ago. Prices at Chicago are ½c. to ¾c. per lb. lower than last year.

Goldsmith, the live cattle exporter, recently bought, in Chicago, 90 head of 1,337-lb. cattle, at $4.25. They were rather light, but surely ought to make money at that price.

An Illinois feeder brought to market two cars of choice, high-grade, Shorthorn beeves, averaging 1,597 lbs., which sold at $4.75, while fat, little steers, averaging 300 to 500 lbs. less, sold within 20c. of that price. The feeder who has always taken a pride in making prime, heavy beeves, remarked that he guessed he'd go home and hereafter raise "little scrubs," as he called them.

Since the diminution of the live cattle export trade, and the bulk of the American cattle go to England in refrigerators, there is much less demand for heavy cattle than there used to be. When it used to cost no more to ship a 1,600-lb. steer than one which weighed 300 lbs. less, and there were but few feeders producing these ripe, heavy cattle, there was a high premium on all that came to market. Now, it is very common to see hundreds of big cattle here every day—cattle that would have been deemed fit for a fat stock show 8 or 10 years ago. Then tallow was worth considerable, and now it is not worth as much as the beef. There is more risk in handling big cattle than little ones, and so the big, heavy cattle are growing into disfavor more than ever.

A well informed cattleman, who for many years was a butcher in London, declares that the Londoners never did care for extremely heavy cattle, except at the Christmas holidays; that Americans came to think big cattle were wanted abroad simply because exporters had to pay freight by the head or stall room, and, of course, wanted to get as much weight as possible.

There has been an immense over-production of cattle in the States and Territories.

Notwithstanding the enormous losses of cattle in Montana last winter, it is said that Territory will turn off more beeves this year than last, as the winter losses were among cows and calves and bulls, and more beef cattle were held over from last year than usual, on account of low prices last fall.

Texas has lately been sending cattle into Chicago at a lively rate, selling partly corn-fed stock at $3.75@$4.50, and grasses at $3@$3.50. One big shipment of 300 to 400-lb. Texas yearling "runts" from the Gulf coast sold here at $5.40 per head, not enough to more than pay freight. They would have been fine for grazing, but as they were covered with ticks they probably would have communicated fever to other cattle.

During May hogs sold at $4.50@$5.50, or about 80c. higher than last year. The spring and summer crop of hogs is larger than expected, as prices have been good and the weather for fattening was never more favorable. It is astonishing how the farmers take care of the pigs when prices are good.

Owing to heavy losses of bulls on the range last winter and the somewhat more encouraging outlook for the business this spring, there is an improved demand for choice breeding stock at low prices. Many ranchmen, however, seem to think that it will pay them better to decrease than to increase production, and are not as anxious to buy bulls as they were five years ago. The spaying knife is being used very freely on the ranges among the heifers, while cows are being fattened and marketed at a rapid rate. Ranchmen seem to have become convinced of the error of the old theory that babies were coming faster than calves, and are evidently disposed to give the babies a chance to catch up.

Horses that should be Rejected.

Rules have been issued for the guidance of those who select horses for cavalry purposes in the Imperial army. There being an active demand for Canadian horses for the English army, these rules will be of great interest to our farmers, not only in the breeding of horses for such purposes, but also for various other demands. The following are the rules above mentioned :

1. Size.—Four-year-olds, i. e., three off after October 1st, should not be less than 15 hands 0½ inch nor exceed 15.1½ for light cavalry.

For medium they should not be less than 15.1 nor over 15.2.

For heavy cavalry not less than 15.2 nor over 15.3½.

N. B.—In measuring a horse or judging of his height and size by sight, take care that he stands on a level with yourself. Dealers generally stand a horse, if undersized, on higher ground, or if over size, on lower ground than the intending purchaser.

2. Want of a fair amount of breeding should be an absolute bar.

3. Reject a horse with a big coarse head.

4. Reject a horse with a small sunken eye. They are generally obstinate and sulky.

5. Reject a horse of a color light of the sort.

6. Reject a horse with a long slack back. It will not carry weight.

7. Reject a horse with a hollow back. The formation is weak.

8. Reject a horse with flat sides. They will not do work or look well.

9. Reject a horse with a slack loin, i. e., undue length between the last ribs and hind quar-

ters (sacrum). They are often bad feeders, and will run up light with work.

10. Reject a horse with a light loin, i. e., want of breadth over the loins. They run up light with work.

11. Reject a horse with scraggy hips. They never do credit to feeding, particularly if also slack in the loins.

12. Reject a horse with a bad girth, i. e., "light through the heart." This formation will always cause trouble in saddling.

13. Reject a horse with a thick or short neck.

14. Reject a horse unless it has a good rein. With a clumsy neck the head is in consequence badly set on. Without a good rein a horse will will never break well.

15. Reject a horse with very low withers. The saddle will be apt to work forwards, and the "rein" will probably be deficient, and the leverage for the muscles of the forehand is defective.

16. Reject a horse if very short. There is not room enough for the kit.

N. B.—To see the above points (1-16) stand on the side and form your opinion before the horse moves off.

17. Reject a horse with a narrow or shallow chest. There is not sufficient capacity for the lungs.

18. Reject a horse with fore legs very close together. This and the former defect generally go together. To see these points stand in front.

19. Reject a horse whose fore legs are not straight. They will not stand wear. Stand behind the horse as he walks away from you, and you will be able to notice these defects, if they exist.

20. Reject a horse which is light below the knee, especially if immediately below the knee. The conformation is essentially weak.

21. Reject a horse with long, or with short or with upright pasterns. Long pasterns are subject to sprains. Short or upright pasterns make a horse unpleasant to ride, and, on account of extra concussion, are apt to cause ossific deposits.

22. Reject a horse with toes turned in or out. The twist generally occurs at the fetlock. Toes turned "out" are more objectionable than toes turned "in." When toes are turned out, the fetlocks are generally turned in, and animals so formed are very apt to cut or brush. Both, however, are weak formations.

23. Reject a horse whose hind legs are too far behind. Good propelling power will be wanting, and disease as a result may be expected in the hocks.

24. Reject a horse which goes either very wide or very close behind.

25. Reject a horse with very straight or very bent hocks. The former cause undue concussion, the latter are apt to give way.

26. Reject a horse which is "split up"—i.e., shows much daylight between his thighs. Propelling power comes from behind, and must be deficient in horses without due muscular development between the thighs.

27. Reject a horse with flat feet or over-large feet, also with very small feet. Medium size are the best.

28. Reject a horse with one foot smaller than another.

Action must be light, easy, free, and straight. Reject a horse that crosses his legs in walking or trotting. He will be unsafe. Freedom, power to move easily along, is the great point in a young horse. Knee-action is not essential; it will come with the bit and breaking.

A good walk is absolutely essential. Reject a horse that does not walk well; he is never pleasant to ride. If a horse walks well, he will probably trot well; but a horse may trot well without walking well.

To ascertain whether the action is true and straight, stand behind the horse as he walks and trots away from you. You cannot ascertain this important point by standing on the side.

Never omit to stand behind a horse as he walks away.

A good sloping shoulder is an important item in a riding horse, but bad action may co-exist with a good; and, *vice versa*, good, free action may co-exist with a somewhat straight shoulder.

Reject a horse which is straight in the shoulder and long from the point of the shoulder to the upper part of the fore arm. This formation places the fore legs too much under the horse, and makes him unsafe to ride.

You may have a plain horse, even if all the above very apparent defects are absent, but you will, at least, have a serviceable one.

A horse should be rejected for any one really bad fault. The greatest strength of a horse is limited by his worst point. Horses are often bought because they possess one or more very good points. This is a wrong principle in buying. The selection of horses should begin by rejection for bad points. Bad points are, of course, in a great measure, a question of degree. Discretion is needed in rejecting as well as in buying.

Having first of all kept clear of all absolute defects such as the above, then select your horses for the presence of good, serviceable, and handsome points, and easy, free, graceful carriage.

Breeding Sex at Will.

Much has been said and written upon this subject, but little is as yet definitely known, some advancing one theory and others aonther; but one point agreed upon more than others is that the nourishment of the fœtus influences the sex of the progeny.

The Milch Zeitung, in summing up the concluding remarks of Prof. M. Wilkins, of Vienna, on this subject, says:

"The sex of the young is, in a general manner, influenced by the nutriment it receives in the womb; good nourishment favoring the development of a female offspring, while poorer foods favor that of the male. The age of the dam influences the sex of her young; first born and young dams generally producing females, while old dams generally produce males. This is, however, due to the fact that young mothers nourish their young better. The age of the sire has no influence over the sex of his offspring. The season of the year in which domestic animals are produced influences their sex, winter favoring the development of females and summer the development of males. This is due to the fact that the dam consumes more in the colder than the warmer seasons of the year. There must, however, besides the nourishment of the young, be other unknown circumstances influencing the sex; for, when a female produces twins, they are not always of the same sex, and the nutriment must have been the same for both."

French investigators have come to the same conclusions with regard to the nutriment supplied to the fœtus, but differ with respect to the age of the sire. They claim that a young sire produces females and an old sire males, and an English writer endorses this view.

Working Young Horses.

We take the following excellent article from a work on "The Breeding and Management of Draft Horses" by Dr. R. S. Reynolds, in which he gives the results of his personal observations:

Perhaps there is no element of successful horse-management that requires more careful attention than the arrangement of the work of a young horse just purchased from a farmer for town purposes. It must be conceded that the entire change of food, stabling, work, and general treatment and surroundings, renders this period one of the most critical of the animal's existence, and one when the greatest watchfulness and care are required from his attendant; he may be plump, gay, blooming, and in fair working condition, and perform a full day's work at once to his new master's entire satisfaction, but on the morrow he will most probably come out stiff, and sore, and dull. An indiscreet horse-keeper thinks all these conditions are of little importance, and that a continuance at the same labor will remove them; but this is rarely ever so. If an equally severe exertion is re-exacted for several succeeding days, the appetite diminishes, the horse loses flesh, and should no acute disease supervene, he will almost certainly gradually become unfitted for work, and have to be entirely rested or his labor eased, the probable result being that he will never regain his natural standard of vigor and strength. By gradually inuring him, on the other hand, to his new occupation, increasing it in severity from week to week, the horse will ultimately acquire greater capability for endurance and strength than he ever before possessed.

It is a matter of surprise how widely practical men differ in opinion upon the amount of work a horse of average strength is able to perform. Such diversity is probably attributable to several causes. 1st. No equally important subject appertaining to the management of draft horses seems to have engaged so little attention from farmers and team-owners. 2nd. Hastily formed and dogmatically expressed opinions are often based solely upon the quantity of work that can be accomplished under one set of conditions, no latitude being allowed for the numerous circumstances which may and do entirely alter results. 3rd. When the subject of horse work forms the theme of discussion, the general tendency is to relate instances of the possession of more than ordinary powers of endurance possessed by certain animals, the result of whose capabilities may be invariably taken as exceptions, rather than examples of what should constitute a fair day's work. 4th. Work is estimated sometimes by the number of hours employed, often by the distance traveled; and again by the weight transported, or the resistance overcome. The two latter items only should be considered, but they must be taken collectively when an estimate is made—the time occupied in the work, as will be subsequently shown, is to regarded as an influencing condition, and one of the utmost importance.

The circumstances which conduce to variations in the results of horse-work are so numerous that it is impracticable to deal with them in detail; they will, however, become evident to every experienced owner when his individual requirements are reviewed.

"It's the pace that kills," is the proverb of the hunting man, race-horse owner, and four-in-hand coachman, and although not generally so considered, the aphorism is equally applicable to farm and road teams. It may be accepted as a fact that in proportion as pace is increased, so must the hours of labor and the weight to be moved be decreased. From tables of calculation founded upon experiment, it has been ascertained that the greatest advantage in the employment of horse-power is obtained when the hours of labor are increased and the pace correspondingly diminished. My personal observations tend to prove the correctness of the above statement, and I am entirely opposed to the view expressed by an eminent railway authority (Tredgold), who considers that the amount of work ordinarily accomplished in eight hours may frequently be performed in six hours with advantage to the horses. Draft horses can work long hours, and draw very heavy loads, if they are not overpaced, but to demand from them quick movement, in order that a day's work may be completed at an early hour, will, if continued from day to day, materially shorten their periods of useful existence. In illustration I submit the following problem, with its solution in two different ways. It is required as the daily work of two pairs of horses, equal in every particular, to transport twenty-four tons of merchandise a distance of two miles from a given place. The one pair is occupied only six hours in drawing three four-ton loads, and returning with the lightened dray. The other pair, similarly loaded, is two or three hours longer doing the same distance. The effects of the two arrangements will become perceptible in a few months. Although the first pair will rest in the stable at least two hours of the twenty-four more than the second pair, the latter will exhibit less fatigue, maintain better condition, and wear the longest. I hold a strong opinion that the individual qualifications of each animal must be taken into account, and that if his natural pace is three miles an hour he may, if not overloaded, be permitted to cover his fourteen or sixteen miles in from five to six hours; but to force a horse whose natural pace is only two or two and a half miles an hour to accomplish the distance in the same time, is a certain means of very greatly abridging his life; while if allowed to work for ten hours if necessary, he will last as long and probably longer than his more active

companion, and be maintained in better condition upon a smaller allowance of food.

In the organization of team labor it is essential to appreciate the natural paces of the individual animals, and yoke them in accordance therewith. When such a course is impracticable, the working speed should be adjusted to the qualification of the slower horse.

Although of less important account than pace, the distance traveled for a day's work will materially affect condition. Assuming that the time occupied by two pairs of horses in transporting twenty-four tons two miles be equal, but that the teams differ in strength and activity, pair No. 1 taking four three-ton loads, would be more fatigued, less easily conserve condition, and be sooner worn out than the slower-moving but stronger No. 2, with their four-ton burdens, but diminished mileage.

In an equal degree with underfeeding, long-continued overwork, whether caused by excessively long hours, overloading or overpacing, is the reverse of true economy; it can not fail to be attended with deterioration of physical strength and health; at first slowly, gradually, but very surely it reduces the power and consequently the value of the animals, and when pushed beyond a certain limit it rapidly and irreparably shortens their lives of usefulness.

Horses employed upon any kind of work are benefited by periodical intervals of thirty minutes' duration in each four hours for rest, when they may partake of a little food from a nose-bag. To work them, and to hold their provender for a longer period than six hours, is inconsistent with a proper appreciation of the functions of their digestive organs.

If requested to furnish an example or type of a fair day's labor, suited to the powers of average farm horses, and one that could be continued daily throughout the year, without causing loss of condition, on a 16-lb. corn ration, I should instance the plowing of an acre of land of average strength in furrows of 9 inches width, the numerical strength of the team proportioned to the resistance opposed by the nature of the soil, the depth of the furrow, and the gradients of the field. The distance to be travelled would not exceed 12 miles, the pace slightly over 1½ miles per hour.

The urgency which exists for the prompt completion of many farming operations necessitates the exaction of more severe and continued labor from the teams at certain seasons than would be consistent with the maintenance of good condition, vigor, and health, if prosecuted daily throughout the year. When an excessive, but temporary, increase of team-work must be undertaken, the owner in arranging his operations will do well to fully appreciate the effects of pace, mileage, hours of service, and food supply.

At what Age should a Heifer Calve?

This question has been frequently asked and discussed on both sides of the Atlantic. Some advocates of early calving have advanced the theory that their method is favorable to the development of the milk secretory organs, and that thereby the flow of milk is increased. Actual experiments, however, tend to disprove this statement. In painstaking experiments conducted in Denmark in which heifers having calved when about two years old competed against some having first calved when nearly three, the three-year-olds gave the greater yearly average quantity of milk. The experiment was continued for more than eleven years, and an average of about 150 cows were tested annually. The two-year-olds were especially well taken care of when young, and their weight at entry nearly equalled that of the three-year-olds.

If a heifer calves when not mature, she is very liable to become stunted and deformed. It is therefore of importance to have her fully developed before she drops her first calf. This, however, does not say that it is not desirable to have her mature early, for early maturity is a great saving of food and expense.

The prevalent practice has been to let all calves drop in spring. Following this fashion, a heifer that is not quite mature at two years old must be kept over until she is three; whereas if she was made to calve when mature, she might drop her young in the fall and thus save half a year's food. The maturity of a heifer must be judged by her appearance when in a normal condition, together with the characteristics of her sire and dam, and not by her weight. High feeding does not promote maturity, but rather retards the perfect and harmonious development of all the parts. Feed liberally, neither stuffing nor starving. All conditions should be normal, so as to keep her in good health, causing her usefulness to extend over a longer period of years. The length of use is lost sight of by most breeders. If it is profitable to raise a cow at all, the longer her period of usefulness the cheaper she will be.

"Breaking" Colts.

"Educating" is a better word than "breaking" when applied to colts reared by intelligent and humane horseman. Though many a colt is really "broken" in training, there is seldom, if ever, any necessity for such a course. Take a "sucker" when he is too young to have any very pronounced opinions of his own, and there will be found but little trouble in making him understand that his master is really his best friend. When this has been accomplished no further trouble need be anticipated, so far as an intelligent colt is concerned. Unfortunately, occasionally it happens that a horse is met with that has been a fool, and of such an animal it is difficult if not impossible to make a horse hat can ever be handled with any degree of safety. It often happens that a really intelligent horse becomes possessed of a vice that is troublesome and dangerous, but such a case never presents the difficulties which characterize that of a horse that has been born a fool. As long as a horse has intelligence he can be educated, no matter how strongly unfounded prejudice may mislead him. More than 99 percent of the foals that are dropped have quite enough intelligence to enable them to get through the world pleasantly and satisfactorily, but the reason that so many horses are addicted to troublesome and dangerous vices is to be found in faulty education.

Too often the system of handling colts is something as follows:

The young thing is allowed to run with his dam and to make no human acquaintances. All he knows about boys and men is that whenever they can get near him they hit him with a whip or make some (to him) horrid noise that thoroughly terrifies him. He very quickly comes to look upon boys and men as the most dangerous and troublesome enemies of the equine race in general and of himself in particular. This state of affairs continues till he is two or three years old. Then some day he finds himself being chased about a paddock and worried till he is half dead with fright and fatigue, and finally from sheer exhaustion he is compelled to allow himself to be handled. He does not know what is wanted of him, and all that he learns about it comes in the shape of bitter experience. After trying every other course to escape punishment and fright, with disastrous results, he gives himself over in sheer desperation to a sort of sullen despair, and allows himself to be pushed about by his tormentors or hauled about by another horse that is harnessed with him, just because he has given up all hope of escaping the persecutions of his enemies. His spirit is broken and he is pronounced broken to harness. He is now obedient so far as he knows how to be, but he is so because he dare not be anything else, and not from any desire on his part to do what is right. Such a horse may do what is required of him, but he is liable to run away if suddenly frightened, to kick if anything touches his heels, and, in short, to do almost anything that is objectionable in the very emergency when his good behavior would be most highly prized by his master. That is what may properly be styled "breaking" a colt.

If a man wants an "educated" horse he should begin by winning his confidence during the foal's babyhood, the sooner the better. It does not much matter what the youngster is taught during his first summer, so long as he is thoroughly familiarized with the halter and accustomed to being handled freely (though always kindly and with gentleness). He soon learns to regard those who handle and feed him with the warmest friendship, and his highest ambition will be to merit their approval as evidenced by a kind word, a caress, or some little dainty of which he happens to be particularly fond. As he grows a little older he should be accustomed to the bit, to the harness, and to other appliances to be used when he shall have arrived at a proper age to go into business. In this way the youngster really grows into his work. He is taught to carry his head properly, to draw, to turn, to back, to be mounted, harnessed and unharnessed, all without any painful or unpleasant process. He grows up to be, not the cowed slave, but the trusted, well-tried friend of his master. All that he does he does cheerfully and pleasantly; in short, he is an "educated" and not a "broken" one.—[Farming World.

The Apiary.

Swarming.

Swarming is the natural method of increase. In this latitude bees usually swarm during the latter part of May or in June. During the hot weather of the above date the queen starts to lay drone eggs in drone cells, and should the colony be populous and crowd the inside of the hive, the bees will prepare for swarming by starting queen cells. Shortly afterwards they are supplied with eggs and royal jelly, with which the queen brood is fed. These cells are sometimes built to the number of a dozen or more, and sometimes only three or four. Good queen cells are something the shape of a large pea nut, and instead of being horizontal, are more inclined to the perpendicular. When these cells are nearly capped, if the weather is fine and warm and honey coming in freely, you can expect the swarm to leave the hive between 10 o'clock a.m. and 2 o'clock p.m., although bees have been known to leave at all hours. Cook's Manual of the Apiary tells of a swarm leaving by moonlight on one occasion. Before starting the bees fill themselves with honey, so that they will be prepared for any emergency. It is supposed that bees, when nearly ready to swarm, send out scouts to search for a home, so that they will not be long delayed and will not have to cluster longer than necessary. The old queen leaves with the swarm, but should the queen by any accident not be able to continue with the swarm, the bees will return to the hive again. In about a week after the swarm has issued, if the parent colony is strong, you can expect another swarm, should there be a number of queen cells and the weather favorable. Bees usually cluster soon after they issue from the hive, but sometimes

they fly direct to the place appointed for them by the scouts. On the morning when a colony is going to swarm, few bees leave the hive to gather honey, but cluster on the front of the hives, and some fly around as if waiting for the rest.

I would say, as I have said before, always provide a sufficient number of hives, so that when a swarm comes off you will be ready to hive it. In hiving a swarm it should be remembered that bees are usually peaceable, having filled themselves before starting, and are in that respect a great deal like the human family, better natured after being well filled.

Never put a swarm into a hive that has been standing in the sun, but, on the contrary, use a nice cool hive, sweet and clean. Hang a frame of brood in the hive before putting the bees in, and the bees will be very likely to stay. As soon as they have clustered, it is well to hive them, which you can then do without any great hurry or excitement. Take the hive to where they have clustered, and place a sheet on the ground in front of it. If the swarm has clustered on a small bough within easy reach, give the bough a quick jar and shake them into a basket or tin dish, carry them to the hive, and pour them in front of it on the sheet, right near the entrance; a few will then run in and give the rest notice by their joyful hum and soon they will all be in. The hive should then be placed on the stand where it is to remain for the season. Swarms sometimes issue when least expected, and for that reason one or more hives should always be kept in readiness.

Many bee-keepers practice artificial swarming or dividing, but as this requires a more extended knowledge of bee-culture than many have acquired, it would perhaps be better for this class of bee-keepers to practice natural swarming.

North Middlesex Bee-keepers' Association.

The above society held their 4th annual convention in the town hall, Parkhill, on March 31st. Proceedings opened at 2.30 p. m. with President Frank Atkinson in the chair. The attendance was large, there being 75 members and many others who were not members, but who take a great interest in bee culture. The President opened the meeting by reading his annual address. After routine business, papers were read by Mr. B. Gott on Bee-keeping and Fruit, and also by Mr. Henry Phippen, of Parkhill, on the Best Method of Strengthening a Colony for Early Honey Flow. Speeches were also given by Messrs. Holterman, of Brantford, J. B. Aches, Wm. Coleman and others, giving the different modes of handling and wintering bees. Much valuable information was imparted to all who were fortunate enough to be there, and great good feeling prevailed. Meeting adjourned to meet in Ailsa Craig at the call of the directors. The following officers were elected for the current term :—President, Frank Atkinson, Ailsa Craig; Vice-President, Jos. B. Aches; Secretary, A. W. Humphries; Directors—B. Gott, Arkona; W. Coleman, Devizes; H. Phippen, Parkhill; D. Stewart, Nairn.

A pound of bees in early spring, with a good queen and a liberal use of comb foundation in the brood chamber and sections, will rapidly build up into a good colony, and if the season is favorable, will store considerable honey during the summer.—[American Bee Journal.

Poultry.

Edited by J. W Bartlett.

"Good Enough."

This is the expression many farmers make use of in regard to their stock, and especially the nondescript motley group of fowls they keep, or rather that infest their barnyards. Now, in no case is anything but the very best good enough in the stock line, and when this is remarked they in many—I might say in most—cases, reply, "We only keep them for eggs and market fowls." A young farmer, or, properly speaking, a farmer's son, who has the management of the farm, told us some time ago that he did not take much interest in fowls, that they kept about three hundred, but they were kept only for profit. Now, this is all right, in all cases profit should be the consideration; but where there is little interest taken in any branch of agriculture the profits will be correspondingly small, and more particularly so in poultry, in which success depends so largely on looking after details. Many people who would think little of building a house and furnishing feed liberally, would think if the house was cleaned twice a year it was "good enough," and if the birds got plenty of snow to eat or a dirty pool of water to drink from, that it was "good enough," but very many more think almost any kind of a house is "good enough." The question is, Does it pay to keep fowls at all? Now, no person who has intelligently experimented in this line will say no. We know it *does*, and if it pays any one it must certainly pay the farmer. The very circumstances by which he is surrounded make it more profitable to him than any other, and if it pays to keep any fowls, it pays to get and keep the very best. Get the breed suited to your circumstances. If eggs are the object, get the Leghorn. If a quiet bird that will keep in good health and prove remunerative in confinement, get the Brahmas, either light or dark (we prefer the dark); and if meat, early maturity and eggs be the desideratum, Plymouth Rocks or Wyandottes are the best. Just here we might say we have been heretofore opposed to any such thing as a general purpose fowl, believing that it was impossible to combine in one fowl egg production and superior table birds, but with some years experience with the two last named breeds, the ground is going from under our feet, and more so since testing the latter, which has proved, with us, the best table bird we ever tried, and almost, if not quite, equal to the Leghorns as layers. But it is not necessary to take even these if they do not suit your fancy, as most any pure bred fowl is much more profitable than these "good enough mongrels."

Crossing Breeds.

Almost every agricultural paper we see has something to say in the matter of crossing fowls, and nine out of ten of them recommend the practice. Now, in reality, it is a complete failure after the first cross. Take for instance a yard of dunghill or barn-door fowls, and breed them to a P. Rock cock; the result is a much finer flock of chicks than the mothers, although inferior to the sire. The cause is evident—they are improved by the superior blood introduced, and just here is the only gain in crossing breeds, the offspring will be better than the poorest parent, but inferior to the best. But follow on in this line; mate the chicks above referred to, that is, from the P. Rock cockerel and barn-door hens (which, by the way, will be mostly of the P. Rock color) and there will be no uniformity in the product, either in shape, size or color, but will revert to the motley throng on the mother's side at once; and if those people who have had such grand results from crossing breeds would for a moment consider that by mating a hen of the same breed as the cock that improved their stock so much, with that cock, the result would have been much more satisfactory than the one attained. Or, if they will continue introducing pure bred males, year after year, of the same breed, they will find the result still more satisfactory than the first cross.

What is a Common Fowl?

In comparing thoroughbred and common fowls we must take this question into consideration. There is no such breed as the common fowls, and the term is indefinite. As it is generally used it is comprehensive enough to include all fowls not pure bred, and of some of the recognized varieties. Hence the vast difference of opinion of the merits of thoroughbreds in comparison with *common fowls*. If one farmer's fowls are made up of a cross or crosses of Leghorns, Hamburgs and Games, they will be very productive and great foragers, while for table fowls they will be too small; on the other hand, his neighbor may have a cross of Cochins and Brahmas and perhaps a dash of Plymouth Rock blood, which will produce a fine large table bird, quiet and peaceful, and producing a good supply of eggs in winter. So we have two vastly different varieties, both classed as common fowls. Thus it will be seen that when we have a paying flock of common fowls we are indebted to the breed preponderating in their make-up, and no better proof is necessary that pure bred fowls are the most profitable.

Again, in the pure bred varieties there is such a chance for a selection of the variety suited to our circumstances, that it would seem folly to keep any other, or to cross the breeds; as, for instance, if we want eggs in winter, Brahmas, Wyandottes and P. Rocks; if for spring and summer, Leghorns and Hamburgs; if for spring chickens for market, the P. Rocks and Wyandottes certainly take the lead, and for hunting their own living nothing equals the Games.

Scurvy Legs.

There is no disease (if such it may be termed) so universally prevalent as Scurvy Legs. It is known by the white and scurvy appearance of the legs, and is caused by myriads of parasites clinging tenaciously to the scales and even getting under them in part, in some cases so bad as to cause the scales to stand out almost straight from the leg. They seldom appear on birds kept on clean ground or in confinement, except on chicks raised by a scurvy-legged mother, in which case it is a miracle if the chicks are not all thus afflicted. There are many remedies recommended for it, but the simplest is to wash with kerosene oil—wash thoroughly, and one application will be sufficient. Should the fowl be a choice one, and be wanted for exhibition use, use a mixture of sulphur and lard, or sulphur and goose oil, as the kerosene injures the appearance of the scales. Fowls thus afflicted never get over it without an application of some kind, and in old fowls, or cases of long standing, have a very filthy and repulsive appearance, besides being very uncomfortable, as the parasite causes an intense itching, burning sensation, and there have been cases where the attendant has caught it from the fowls. There is scarcely a farm yard in the country where this nuisance does not exist, and there is no excuse for such negligence when the remedy is so cheap and simple.

Veterinary.

Laminitis.

[By Prof. Grange, V. S., Michigan Agricultural College.]

A disease of the foot of the horse, frequently occurring in the summer season.

Laminitis is a disease of the foot of the horse, which is often brought directly under the notice of owners of these animals, and which in many instances, from the want of knowledge of the causes of the complaint, unfortunate creatures are subjected to the most excruciating pain, and their owners to much pecuniary loss, as well as other inconvenience.

The disease has from time to time been the subject of much difference of opinion as to its location, consequently it is known under a variety of names, given according to the fancy of the observer, but the one which we oftenest hear applied to it, by laymen, is *chest-founder*, which term, however, is not altogether appropriate, but may perhaps be excused when we take into consideration the origin of it, and this can be traced to two sources. In the first place it may have arisen from the fact that inflammation of the lungs is sometimes thought to fly from the chest to the feet, but this is of exceedingly rare occurrence, as far as my observation has gone. Secondly, it may have arisen from the fact that *a large majority* of cases brought under our notice have shown that those large round muscles forming the front of the chest or bosom, and situated between the fore legs, have suddenly vanished, as it were, giving the chest a sunken or hollow appearance, which, to the casual observer, might naturally be thought the seat of the disease. This sunken condition of the chest may be explained though by the fact that animals, when suffering, generally stand up, but throw the weight of the body as much as possible upon hind feet (for obvious reasons), and the muscles forming the bosom become relaxed and appear wasted. To prove that removal of the weight of the body from the fore legs will produce this sunken appearance of the chest, we have only to take one fore foot of a healthy horse from the ground, and holding it in the hand, the muscles on the same side of the breast bone will apparently vanish, to however regain their round original form as soon as the foot is allowed to descend to the ground.

The simple term, *founder*, is often applied to this disease, the origin of which might be traced to several sources; a striking one is, in one of the meanings of the word, viz.: to fill, or to be filled with water, and as it has long been conceded that water given at improper times, or allowing an animal to fill itself too full, is liable to cause this disease, may not the term appear appropriate?

The disorder is called "Laminitis," because those delicate little plants surrounding the inside of the hoof, and called laminæ, are the parts most affected, although in bad cases other structures of the foot become involved; I have one specimen in my possession which shows that the disease was so deep seated as to attack the main bone of the foot. This complaint is one of the most painful that horse flesh is heir to, but this is little to be wondered at when we recognize the fact that so highly organized a structure as the internal part of the foot of the horse is suddenly thrown into an acute state of inflammation, and being enclosed in an unyielding box of horn, the hoof the constant pressure upon the nerves occasions much pain—to account for which pressure, I may say that it has been admitted from time immemorial that swelling to a greater or less extent is always present with inflammation. By way of illustrating how painful Laminitis must be, let us compare the parts involved with the parts involved in toothache in man, a disease no doubt familiar to many. Now in toothache we have a highly sensitive structure, *the pulp*, as it is called, and which may be compared to the internal or sensitive structure of the foot of the horse. And this *pulp* is enclosed in an unyielding case of bone, *the root* or *fang* of the tooth, which may be compared to the *hoof* of the horse, as both inclose their respective sensitive structures; well, when swelling occurs from inflammation of the *pulp*, the nerve is pressed upon, but being imprisoned in the *fang* it can not accommodate itself to circumstances, so the familiar throbbing pain of toothache is the result, but in the inflamed foot of the horse there are scores of nerve fibres pressed upon, and when we take into consideration that animals invariably stand while afflicted with this complaint, the weight of the body thus adding "fuel to the fire," we can form some idea what intense agony the unfortunate creature must endure.

NATURE OF THE DISEASE.

It may be defined to be inflammation of the sensitive laminæ of the foot, extending and involving neighboring structures in bad cases.

THE CAUSES

of the complaint are widespread and numerous. I have seen more cases of this disease caused by overdriving on a hard road than from any other cause, especially when the weather was hot, and the animal not accustomed to long journeys, or out of condition from a day or two's rest.

Driving an animal through cold water when it (the horse) is hot, will produce it at times.

Allowing an animal to drink immoderately of cold water while in a state of perspiration, is liable to bring on an attack. Overloading the stomach with certain kinds of grain, is a fertile source of this complaint. Some of the worst cases I have seen have been the result of animals getting loose at night, and getting to the corn or oat bin, as the case might be. I have seen it follow spontaneous diarrhœa; the injudicious use of purgative medicine will also cause it.

Keeping animals tied in the stall for too great a length of time, as is sometimes done during the winter, or the constrained position necessitated during a long sea voyage, occasionally provoke the disease.

That condition called metatasis, which is the flying of inflammation from one part to another, is thought to occur with, and produce this disease.

I have seen cases occur with metritis (inflammation of the womb), when the symptoms of the first disease and those of laminitis were plainly exhibited. The disease is sometimes produced in one foot by the careless driving of a nail in shoeing.

THE SYMPTOMS

of the disorder are peculiar and characteristic. In the first place, it may be said that in ninety-five cases out of a hundred the disease attacks the two front feet, though it sometimes invades the hind ones, when the symptoms will be very different in certain particulars.

When both front feet are affected, the animal will be generally found standing with its back arched, and hind feet carried forward towards the centre of the body, in order that the weight of it may be borne as much as possible by them, and removed from the fore feet. This peculiar attitude often leads the casual observer to think that the animal is strained across the loins.

If the animal is required to move, it will do so with more or less reluctance, stumbling as it goes ahead, or dragging its front feet in an awkward manner if required to back up. The pulse has a very plain throbbing feeling to the finger, is full and bounding, and somewhat quickened. Another peculiarity about the pulse is that it can be plainly felt upon the side of the leg near the fetlock, and I do not know of another disease where this peculiar condition of the circulation is so plainly exhibited. The breathing will be accelerated, often to such a degree as to lead one not familiar with the malady to suppose that some derangement of the organs of respiration is at work. The muscles in front of the breast appear wasted, from the attitude of the animal, though. The pain of the disease is sometimes so great as to cause tetanic convulsions, or twitching of many of the muscles beneath the skin. I have seen cases where animals were lying down when first visited, and pawing and groaning to such an extent as might easily lead one to suppose that they were suffering from colic, or some other enteric disease, hence the necessity for getting an animal upon its feet before forming an opinion as to the disease it is suffering from. I might add that the standing posture is the best one to examine a horse either in health or disease.

When the hind feet are the seat of the disease, the symptoms will be somewhat different; the horse will, to use a common expression, "stand all in a heap," the fore feet being extended backwards, and the hind feet carried forwards. If the animal is required to walk, it will do so in a peculiar, string-halty, automatic sort of a way. When the hind feet are affected animals often lie down, which attitude must afford them great relief. I have noticed that when animals assume the recumbent position while suffering from this disease, they invariably make a more rapid and thorough recovery, so of course this attitude should always be encouraged.

THE TREATMENT

of this disease materially depends upon the cause, and if it has been produced by spontaneous diarrhœa or the abuse of purgative medicine, anything which will tend to unduly increase the action of the bowels should be carefully avoided, and those remedies which are used to allay pain and reduce fever may be given with advantage. For these purposes I found great benefit from the use of tincture of aconite, given in doses of about ten to fifteen drops in a few ounces of water every two hours, until four or five doses have been given. The aconite may be followed by nitrate of potash in two drachm doses, dissolved in half a pint of water every four hours, for from two to four days. On the other hand, if the disease is the result of an overloaded condition of the bowels, the superfluous food may be gotton rid of by the aid of laxatives, say twenty-five fluid ounces of raw linseed oil will generally answer. The animal should not have anything in the shape of solid food, such as hay or straw, for at least twenty-four hours after the oil is given, but the diet ought to be of a laxative nature; warm bran mashes and the like have a good effect. When the laxative has done acting, the nitrate of potash may be given as above.

During the last two summers I have had occa-

sion to treat a number of cases, the result of over-driving on very hot days, and have found very great benefit from the free use of nitrate of potash. I gave 1½ ounces in a pint of water every four hours until three doses had been given, then stopped for eight hours, when the doses were to be repeated. I would repeat a second time if the patient was not doing well. Laxative food should be given and the animal allowed to drink somewhat sparingly.

The local treatment is of great importance and consists in the application of moisture, in the shape of water, to the feet, which may be applied in the manner most convenient, in moderate weather. I have found very beneficial effects from standing an animal in a stream of water for several hours a day, taking care, however, that their bodies were well protected from inclement weather, or hot sun.

When animals have a desire to lie down, apply wet swabs to their coronets. In other instances a puddle made with blue clay and water, about the consistence of fresh glazier's putty, to which a few handfuls of salt may be added, has proved useful. The puddle should be made so that the horse will sink into it for from about four to six inches.

Exercise should be given from the first, and should be repeated three times a day, being increased from say ten minutes to half an hour at a time, as the horse gets better. Animals that progress favorably from the beginning may be driven moderately in about two weeks.

Correspondence.

NOTICE TO CORRESPONDENTS.—1. Please write on one side of the paper only. 2. Give full name, Post Office and Province, not necessarily for publication, but as guarantee of good faith and to enable us to answer by mail when, for any reason, that course seems desirable. If an answer is specially requested by mail, a stamp must be enclosed. Unless of general interest, no questions will be answered through the ADVOCATE, as our space is very limited. 3. Do not expect anonymous communications to be noticed. 4. Matter for publication should be marked "Printers' MS." on the cover, the ends being open, in which case the postage will only be 1c per 4 ounces. 5. Non-subscribers should not expect their communications to be noticed. 6. No questions will be answered except those pertaining purely to agriculture or agricultural matters.

Correspondents wanting reliable information relating to diseases of stock must not only give the symptoms as fully as possible, but also how the animal has been fed and otherwise treated or managed. In case of suspicion of hereditary diseases, it is necessary also to state whether or not the ancestors of the affected animal have had the disease or any predisposition to it.

In asking questions relating to manures, it is necessary to describe the nature of the soil on which the intended manures are to be applied; also the nature of the crop.

We do not hold ourselves responsible for the views of correspondents.

Sprains—Milk Fever.—1. Have a mare that has been sprained in back sinews of hind leg for over six months, and have failed to find a cure; have consulted two veterinary surgeons, who have prescribed rest and blistering; have given her rest, and have applied a number of blisters, but to no effect. She seems to come weak out of the blisters. She does not seem to be very lame when walking. Soreness seems to be in back part of fetlock joint, in the bottom. 2. Will a cow that has had a very bad attack of milk fever, and having had a former attack, be safe to breed from again?—G. H. F., South Monaghan.

[1. Make a liniment as follows: Ammonia two drams, turpentine 4 drams, laudanum 4 drams, alcohol 1 ounce, olive oil 8 ounces. Apply same twice a day after bathing with cold water. If the liniment should irritate the skin too much, then apply it once a day. Put a bandage on the part every night. 2. She will be a little more liable to the same disease. If she is a favorite cow I would try her again, but be sure and not have her in high condition at time of calving.]

Feeding Brood Mares.—Please let me know how to feed a brood mare after having a foal. Is it best to give the colt some milk or any other kind of food?—J. A. S., Kemptville, Ont.

[The mare, after foaling, should receive a liberal supply of milk-producing food. If she is on grass, a feed of bran twice a day will increase the milk supply. Some mares, however, give more milk than is necessary for the foal, in which case they should not be fed so liberally, and oats are then better than bran, if any food is to be added to the grass; but a change in the ration is desirable. If the mare is gently worked, which she should be, the foal should not run with her, and should not suck when she is heated. Cow's milk, in small quantities, may be given to the foal if the supply from the dam is insufficient, and it should be taught to eat bran and oats from the hand as young as possible.]

Correcting a Slur on the Ayrshires—Government Expenditures.—Your correspondent N. H. is not the only one who likes your paper; but it does not follow that they are justified in using rude and very improper language when they write about Ayrshires, or other animals owned by other subscribers. Evidently that gentleman should travel to learn, particularly about Ayrshires. When he has three or four days to spare, I invite him to travel east, when if he favors me with a call, I will be pleased to meet him half way, and with him visit several fine herds of genuine Ayrshires that give from six to eight thousand pounds of milk each per annum, and others that give from ten to twelve thousand pounds each in the year, and fill the eye as well as the pails. About Government expenditures to improve and protect the farming interests, let me say that every other industry and educational enterprise of the people of Canada is in receipt of public money to encourage progress and improvement, which if left entirely to the people would proceed onward so very slowly in comparison with what is done in other countries. This Canada of ours would not receive the attention it now obtains, nor would it make the same progress; then when other industries get it, why not help the agricultural industries? While I say this let me add that I am not an advocate of unnecessary extravagance of officials; judicious and economical management of Governmental agricultural institutions can do good service in improving Canada.—W. R., Plantagenet, Ont.

Crib-biting.—Is there any cure for a "cribbing" horse? He lays hold of anything, wood or metal, he can get hold of with his mouth, and then presses down on it with his upper teeth, sometimes making a kind of groaning noise at such times. He is a valuable four-year-old colt.—S. G. M., Hopewell Cape, N. B.

[Place your animal in a stall where he will be unable to get hold of anything. If necessary feed him from the floor. A strap about three inches wide placed tightly around his neck is often followed by success. If a confirmed crib er he is incurable.]

Coughs in Horses.—What will cure a cough that one of our horses has had all winter? She coughs very hard afer being worked or driven.—E. L., Braemar, Ont.

[Give her night and morning one dram of iodide potassium and half a dram of pulverized digitalis in a bran mash. If there is any thickening in the throat apply any strong liniment.]

Concrete Walls.—1. I would like to know what material may be used for the construction of concrete walls, and in what proportions? 2. Would coarse broken brick be as suitable as stone? 3. The cost of water-lime and where procurable? 4. The thickness of the wall in proportion to the size of the building? 5. Directions for use, etc.—SUBSCRIBER.

[Information has been given, from time to time, in the ADVOCATE, and we will continue to do so as circumstances demand. 1. A good proportion is to mix 1 part of Akron cement, or Canadian water-lime, with 3 parts of gravel. 2. No. 3. Akron cement costs $2.50 per bbl. It may be had in almost any town or large village. 4. For a very large barn the walls should be two feet thick; 18 inches will support smaller buildings. 5. Set up, in a straight line, two inches from where the outside of the wall is to be, a row of studding 8 feet apart; the studding to be a foot longer than the wall is to be high. Set up also a row 2 inches from the inside of the wall to be built, the studding to be opposite to the outside row. Nail the two opposite studding together with a piece of board; have the studding the same distance apart at the top as they are at the bottom, and then nail them together in the same way. Set the studding plumb, and then stay them. Now place 16 feet planks between the studding and the future wall. This forms a mould into which the concrete is filled. Now, mix together in their dry state 3 parts of gravel and 1 of Akron cement, then wet it to the consistence of mortar, and fill it into the forms. Put on this bed of mortar some stones, but in such a way that they neither touch each other nor the plank; then put on some more mixed cement; keep on in this way till the top edge of the plank is reached. When dry, raise the plank so that it only laps 2 inches on the dried wall, and keep on in this way; the wider the plank the better it is.]

Green Manuring—Pine Sawdust for Bedding.—1. I have a twelve-acre field of light, sandy soil, which I intend sowing with some crop for green manure. What crop will be the cheapest and give the best results for barley and seeding down next spring? 2. Will pine sawdust which has been used for bedding pigs injure a heavy gravelly soil?—A. C. M., Princeton.

[1. Any fast growing crop, such as buckwheat, rye or oats, would answer your purpose. If your soil is very sandy buckwheat would be the best, but if rye or oats will make a vigorous growth we would prefer them, as they are easier plowed down. 2. No.]

Non-bearing Currant Bushes.—I have in my garden a very fine looking row of Black Naples currant bushes, which are six years old. They have borne nothing to speak of, although giving abundant promise every spring by being full of blossoms. As the berries form they drop off. The soil is gravel, and I have taken good care of them.—P. D., Romney, Ont.

[Drought or starvation, or even too stimulating manures, causing a diseased condition of the plant, may produce a tendency to this complaint. It is time your currants were removed to another place.]

Holsteins.—Kindly allow us a few words in explanation of an article published in your April issue, entitled, "The King of Holstein Bulls." We fail to comprehend the relation between the condition of Molly Stork, No. 1821, H. F. H. B., and the subject matter of the article; but we *do* understand the writer's allusion to ourselves when he says, "represented by them to be all right;" and in justice to ourselves, and our many friends and customers in the Dominion, will explain that sale. Though a daughter of the famous bull "Artis," No. 127, N. H. B., this heifer sold for $125, in a sale where all the other two-year-old heifers, except two, brought from $200 to $300 each, averaging over $250 each, simply because—though several times served—she was not with calf. Why she has not since been in season of course we are unable to tell; but evidently Mr. Leys preferred taking the chances, for, though otherwise all right, it was distinctly announced from the stand that she was not with calf, and a reference to our catalogue of this sale, No. 29, page 14, will show that Molly Stork is not there represented as being with calf. Without disparagement to this "King" of Holstein bulls, we wish to remind Mr. Leys of some other members of the royal family. "Sir Archibald," No. 344, H. H. B., now owned by M. Cook & Sons, of Aultsville, Ont., one of the best known Holstein bulls in Canada; "Barnton," No. 3257, H. H. B., owned by Messrs. Bollert, Cassel, Ont., and I might add many more if I had the space. At the Provincial Fair, at Guelph, 1886 (referred to in the article), where Mr. Leys' bull took first premium in the three-year-old class, Sir Archibald was not exhibited, and Mr. Leys fails to inform your readers that the sweepstakes prize for best Holstein bull of any age was won by T. C. & F. W. Bollert's two-year-old bull "Barnton," No. 3237, H. H. B., who also took first prize in his class. The Messrs. Bollert also took sweepstakes prize on cow "Sykje," No. 6247, H. H. B., and first prize in her class, and second prize on cow "Guillemette," No. 5124, H. H. B., while Mr. Leys carried off third prize on both cow and two-year-old heifer. It should be borne in mind that as Mr. Leys' cattle are *not* registered in the H. F. H. B. of America, neither their offspring nor any cross between them and other Holstein cattle already registered will be eligible to register in any herd book. Imported cattle can only be registered by the *importer*, who must first become a member of the association at an expense of $10, and afterwards submit his cattle to a rigid examination by an inspector of the association at an expense of $5 per head, and then, if accepted, register them at a further expense of $20 per head.—B. B. Lord & Son, Sinclairville, Ont.

[We publish your remarks in full in this particular instance, although it is not our practice to give free advertisements in this way. You surely cannot be unfamiliar with our practice in publishing cuts of first class stock. Mr. Leys sent us an original cut of his bull with a list of prizes taken by him, which we inserted free of charge, and we place all breeders on the same footing in this respect, so that none can complain or raise the cry of discrimination. Of course, you cannot expect that breeders who send

us cuts for publication will advertise other stock with which they come into competition, and it is not dignified for other breeders to take advantage of this, seeing that they have an opportunity of bringing forward their stock in the same way.]

Mushrooms.—As I intend to plant a bed of mushrooms, I thought I would write and ask you to give me some space in your valuable paper. 1. What kind of soil will they grow in best? 2. Where can I obtain the spawn? 3. When should they be planted? 4. Is there a good market for them? 5. What would spawn enough to plant a square rod of ground cost? 6. Will they grow in a shed where the sun cannot get at them? 7. How should they be planted? 8. Give a recipe for making them into catsup. 9. How often should they be watered? 10. How often should they be picked?—E. P., Granton, Ont.

[1. Horse manure mixed with ⅓ its volume of fresh loam, well mixed. 2. At most of the larger seed merchants. 3. This depends upon the time you desire the mushrooms; they are seeded and grown all the year round. 4. The limited demand is confined to large cities. 5. About $7; spawn costs 30 cents a lb., and a pound seeds about 12 square feet. 6. Yes; they grow in cellars, sheds or open air, in dark or light, provided there is a temperature never exceeding 80 or 90 degrees, and never lower than 40 degrees. The best temperature is between 50 and 60 degrees. 7. Mix partially fermented horse manure with ⅓ its bulk of loam; make this into a bed about 10 inches deep and not wider than 5 feet; break spawn into pieces about the size of walnuts; plant these about a foot apart on the bed; in about a week cover the bed with 1 to 2 inches good soil. 8. You will find different recipes in cookery books. 9. Never, unless the soil is very dry, and then only sparingly with warm water. 10. Depends upon the size you want them.]

Quarter-ill or Blackleg in Young Cattle.—A correspondent sends us the following from a British paper:—What is described as a tried remedy for this nasty disease was communicated to the directors of the Highland and Agricultural Society, at their meeting last week. It was sent by Mr. R. Buchannan, a tenant farmer of Fordoun, who described it as "a remedy or prophylactic." The treatment consists of a species of inoculation by which the young animal is freed from liability to the disease. A preparation of garlic and turpentine is inserted under the skin in each quarter, and so quickly does it permeate the system that, within a few minutes of its application, the smell of the ingredients is perceived in the breath of the animal. "The art of the operation," says its inventor, "is in the way of performing it so that the remedy shall remain inside the skin and not come out until the animal is killed and skinned, when it will be found as fresh and active as when first put in." Mr. Buchannan has long been under the impression that what is called braxy in young sheep is the same as quarter-ill in cattle, and so last September he inoculated 100 ewe lambs, with the result that not one of them died. They were sent to the low country for the winter along with another 300, and of these latter 21 died. The following are the full directions for treatment:—"Get from a seedsman ½lb. of finest French garlic bulbs, and remove the skin and break every section of the bulb one from the other these again all have to be skinned; after which take a jar or wide-necked bottle, put in the garlic as prepared (*i.e.*, the soft juice parts), and then put turpentine into the bottle sufficient to cover the garlic. Cork it up for 24 hours, when it will be ready for use. The animals are inoculated on all the four quarters, on the flat of the fore and hind legs, on the thigh—in the most convenient place. Take the skin between the finger and the thumb of the left hand, make sure and draw it well from the flesh, make a horizontal cut with a sharp knife, sufficient to admit of your little finger, which insert to remove the skin from the flesh in the direction of the animal's foot. Put the finger as far down as you can get it, making a hole exactly like a pocket. In this put one of the sections of the garlic and leave it there." This remedy ought to be tested by the society, for it appears that its cost is but little. For sixpence twenty head of cattle could be treated, while for half-a-crown sufficient of the remedy could be made for dealing with a hundred sheep.

Post Office Orders.

We have received numerous complaints of late regarding money sent by P. O. Order from Ontario and the Maritime Provinces, and, upon making inquiries, find that some people keep the order they get from the postmaster as a receipt instead of forwarding it to us. We have known instances where orders have been kept in this post office for over twelve months, after which they have been returned to the parties who procured them, when the mistake is explained. When remitting money care should be observed in writing the name and post office legibly. Please examine the label on your paper and see that it is marked '88.

The Household.

How to Grow Strong.

No one can grow strong, or preserve health, or even life very long, without an abundant supply of natural, regular sleep. We may go without solid food a long time with no very serious effects, if we have an abundance of water, milk, etc., and have plenty of pure air to breathe, and if we may spend our time in sleep or without much exercise.

But nothing is so wearing to the entire system as long continued want of sleep.

It is during sleep that the eliminatory organs are most active, and long continued wakefulness or disturbed sleep causes an accumulation of effete, poisonous matter that must generate disease, and frequently causes that most appalling of all diseases, insanity.

It is a sad fact, sleeplessness, or insomnia, as it is technically called, is becoming daily more and more prevalent among us, and insanity and nervousness are increasing on every hand to an alarming extent.

One great cause is the ceaseless rush and strain there is for more, more, making haste to be rich, making haste to be famous, making haste for place, for power, for all that this world has to offer to its votaries, in the way of fashion, art, science, social life and popular aggrandizement. Women who have no ambitions for themselves work and overwork for the supposed good of their families and friends, or perhaps in compassion for the miseries or wrongs of others. They are good women, excellent women, good wives and mothers, kind members of society, but perhaps they have not had the blessing in early life of obtaining a practical knowledge of physiology.

They may have studied long ago in Natural Philosophy that "action and reaction are equal," but they have little idea that it has any practical application to their every day life. They have an idea that they must not waste time, and so all day long and up to the last minute before retiring, the brain is busy working with all its might, revolving plans, comparing, choosing, refusing, selecting, remembering, thinking always of the right thing at the right time, never resting a moment, but working, working on, without intermission or repose, during all the waking hours. What is the result?

> "Long, long after the storm has ceased,
> Rolls the wave on the turbulent billow."

and so it is with the overtasked brain, it cannot be quiet.

"Action and reaction are equal," and the harder and longer the brain has been used, the more violent the rebound before calm can come which precedes sleep.

Resolutely set yourself to do something that shall pleasantly occupy your mind. If you once loved music go on with it now. How glad your children will be by and by that you have never forgotten your old songs. Keep up your knowledge of what is going on in the world, not the crimes, the slanders, and odious, sickening details that fill our daily papers. They are any thing but improving, and certainly not calculated to fill our minds with agreeable impressions just before we try to calm ourselves to sleep; but we may read of the great reforms that stir the hearts of men and women, or of new discoveries made. We may read some of the best thoughts of the best authors, if not too heavy or deep, and above all, let us have always on hand for the last half-hour or hour of the evening, some religious works, the bible and one other, that our last waking thoughts may be calmed with the thought of the most exalted subjects, the shortness of time, the certainty of death, the infinite love of our Heavenly Father in the plan of redemption, and kindred topics. Such thoughts are best for gaining quiet sleep with all its refreshing results.

But now about sleep. That is the first duty, for without that we can do nothing else well. During sleep the brain recedes to the back of the head, the flow of blood is less toward the head, and the respiration is slow and regular.

To induce sleep we must first see that the feet are warm. It is impossible to sleep soundly with cold feet. Next we must see that the air of the room is changed by opening the windows as long as is necessary for that purpose. A bath is likewise a good thing to promote sleep, especially a tepid bath. The supper should have been taken long enough to be perfectly digested. Of course, we must avoid taking at night what is apt to disagree with us. Neither must we go to bed hungry, for that will be almost sure to drive away sleep. Even a dog or a baby goes to sleep quickly and naturally after being fed, and this is a hint for us with wiser heads but similar stomachs and nervous systems. Hunger produces a nervous exhaustion and irritability that is opposed to sleep. Food digested and assimilated tends to that quiet and good nature and general hopefulness which is very favorable to sleep.

It is very important to go to bed early.

There are no truer adages than "One hour before midnight is worth two after," and good Dr. Franklin's maxim,

> "Early to bed, and early to rise,
> Will make you healthy, wealthy and wise."

Also, "Early sleep is beauty sleep," etc.

This reminds me of one of the stories that the late Dr. Dio Lewis used to enjoy telling. A young lady came into his office one day looking rather grave and troubled.

"Doctor," she said, "do you not think I am looking very old for twenty, and so thin, too—nothing but skin and bones?"

The doctor admitted that she was right, that she did look rather old for twenty.

"But, doctor, what can I do?" she asked. "Can you not give me some prescription?"

"Would you be willing to take something very bitter?" asked the doctor.

"Yes."

She would take any thing if it would only improve her looks. The doctor told her it was very bad indeed, and must be taken at night.

"I don't care how bad it is, what is it?"

"The technical name of it is Bedibus-nine-o'clockibus."

"Bedibus-nine-o'clockibus! Oh, doctor, what an awful name!"

"Yes, it means you must be in bed every night before nine o'clock."

"Oh, that is dreadful! I thought it was something to take."

"What time do you generally go to bed?"

"Generally about twelve o'clock."

"I thought so. Now, if you will go to bed every night for six months at nine o'clock without making any change in your habits, you will gain ten pounds in weight and look five years younger. Your skin will become fresh and your spirits improve wonderfully."

"I'll do it, though, of course, when I have company—"

"It is regularity that does the business. To sit up till twelve e'clock three nights in the week, and then go to bed four nights at nine, one might think would do very well. I don't think this every other night early and every other night late is much better than every night late. It is regularity that is vital in the case. Even sitting up one night in the week deranges the nervous system. Regularity in sleep is every bit as important as regularity in food."

The doctor's arguments prevailed. The lean patient suddenly exclaimed, "Doctor, I will go to bed every night for six months before nine o'clock if it kills me, or rather if it breaks the hearts of all my firiends."

She did it, gained twenty one pounds in five months, and found herself in very best possible health and spirits, fresh and young looking, and quite delighted with this new and simple remedy, which she recommended enthusiastically to all her friends.

The injurious effects of two or more persons occupying the same bed are well known. The cases are extremely rare where two persons can habitually occupy the same bed night after night for years without one or the other being decidedly the loser in vitality, and more often it injures both. Every member of the family should have a bed to himself or herself, and, if possible, a room where he or she may retire at will for quiet, uninterrupted study, meditation, devotion or sleep, for at least eight hours out of the twenty-four. Alone with God, in perfect quiet, and away from all disturbing influences, the most perfect rest and refreshment will be gained.—[ANNA H. HOWARD, in the Household.

Family Circle.

SADIE DANFORTH'S PHOTOGRAPH.

"I'm going to do it, Em."

"Oh, Sadie! don't. How dare you? What if you should get found out!"

"No danger of that; not a bit. I shan't give my own name,—only send the photograph with a fictitious address. Won't that fellow stare, though, when he sees my pretty face popping out from his letter! Oh! Em Danforth, its the richest joke I ever played. Uriah will think, sure, the Fates decree I am to be his sweetheart, and there he is, already engaged to Gertie Perkins. How the poor fellow will roll his round, white eyes at me, and sigh those oxy sighs of his, and fall to studying his tea grounds and magic cards still closer! Oh, I shall——"

"But Sadie," interrupted the younger and more cautious sister, "Uriah is sincere, only foolishly superstitious and terribly in earnest just now, trying to wrest from the Fates if this Gertie Perkins is to be his future wife and if she is the right one for him to marry. The fellow means well; why do you want to bother and befool him sill more, when you know he is already dreadfully worried over his matrimonial affairs?"

"Oh, Em! It's such fun! He is so easily fooled and ready to believe anything and everything that rusty old horse shoes or tea and coffee settings tell him, and always studying the dirty creases in his big, clumsy hands, trying to read his fortune; he deserves to be punished for being so superstitious in this enlightened age. When he has pledged himself to marry a girl, what an insult to her, his writing to a stranger, and a humbug, too, inquiring if she is the right wife for him! Wasn't it fortunate I read that advertisement this morning?"

The two girls, Emma and Sadie Danforth, had been set a task of picking and sorting several fleeces of washed wool, in the wide, open chamber on their farm home. In the centre of the floor was a great heap of wool, as light as down, from which the girls had picked every tangle and dirt speck for easier and cleaner carding into rolls.

To reach this work-room, the girls must need pass through the chamber of one of the farm hands, Uriah Stevens, and pausing a moment to glance over the flashy story paper that lay on his table, Sadie caught sight of this advertisement:

"MADEMOISELLE HORTENSE DE PAUL,

NECROMANCER.

The future unravelled for fifty cents. Send lock of hair, color of eyes, age, with photograph of self, and receive by return mail a correct likeness of your future husband or wife, with name, and date of marriage.

Lock Box, 1132."

The moment Sadie's quick eye had caught the address of this pretended sorceress, she remembered seeing the name on a fat envelope she had mailed that morning for Uriah.

"There! Emma," she exclaimed, carrying the paper with her into the work-room, "if that foolish, superstitious fellow, Uriah Stevens, hasn't answered this advertisement! It was his picture and fifty cents that made the letter so heavy which I mailed for him to-day. Now he will watch the mails as closely as a hawk a chicken till he hears from this Mademoiselle Hortense. What fun it would be to send her my photo with a request that she inclose it in the reply she mails him! The clairvoyants are always ready to seize upon any grain of information or truth that is thrown them, for they——"

"Girls, be sure and have those fleeces finished by noon," rang a clear voice up the stair-way. "Your father is going to the village after dinner and I want to send that wool to the carding mill."

"That means less talk and work, Sadie. Do stop studying that silly old fortune-teller's advertisement, and pick wool faster. Mother wants to commence spinning next week."

Sadie tossed the flashy picture sheet aside, and with quick snips and jerks loosened tangles and matted hay seeds and nettles till the wool rolled from her fingers in fluffy, white clouds.

"I'm going to do it, E'm!" was the exclamation that warned Emma her headstrong, fun-loving sister was still thinking of the matter. "I am going to mail Mademoiselle Hortense a letter, also, to-day, and it will reach here at the same time as Uriah's bulky envelope. I shall enclose one of my photos, sign myself—dear me, what name shall I give?—Sadie Perkins, that will be a cute one to mystify poor Uriah still more, and write her that although I do not doubt her powers of necromancy in the least, for the sake of a rich joke and a certain young man's peace of mind I beg she will return the enclosed picture to one Uriah Stevens, who has consulted her in regard to his future, stating that on the twelfth day of December next he will be united in the bonds of matrimony to Sadie Perkins, the original of the likeness."

"Oh, Sadie! How dare you send a photograph of yourself to a perfect stranger! This Hortense Du Paul may be some bad-hearted man for all you know, and who will——"

"Hush! Emma, mother is coming up-stairs. She must never hear a word about this. She would say it wasn't lady-like or proper. But there isn't a bit of harm in it, only fun for us and a good punishment on Uriah for being such a goose as to patronize fortune-tellers."

Before noon the great, white, wooly heap was sacked ready for the carding loom and a letter had slyly been penned to the clairvoyant of lock box 1132, containing a likeness of Sadie's bright face; a likeness so striking, with its arching brows and long, dark curls, and so true to life, that a stranger would have easily recognized the pretty, country girl by the picture.

Caleb Danforth little thought that among the budget of mail matter he carried to the office that day, that one letter of his daughter's was addressed to a vile den of a great city—a trio of black-hearted-men, who under the assumed, innocent sounding title of Mademoiselle Hortense, solicited correspondence from unsophisticated and innocent country boys and girls, by artful advertisements in newspapers most likely to reach them. Men who would not scruple to use any means to gain their ends; as evil-eyed and artful and with purposes as vile as Satan's servants can learn this side of Hades. Oh, what a den into which to send the fair face of a pure young girl! What advantage might they take of its possession? What clues, and deep, hateful schemes might this trio of bad men track and plot till they had this innocent, thoughtless girl netted within their toils or wrested from her parents their hard-earned dollars as "hush money," till they had brought them to poverty and shame!

The next few days were days of feverish impatience for Uriah and Sadie. Both eagerly watched every mail, but the great, awkward farm hand, who sat opposite Sadie at the table and parted his shock of dirty white hair exactly in the middle to gratify the taste of his affianced, Gertie Perkins, little suspected that Sadie had any interest in his expected letter.

The fifth day it came—an official looking document in a bulky blue envelope, which Uriah stealthily opened behind his plate, but not so slyly as he thought, for both Emma and Sadie caught sight of the latter's photograph before he sufficiently recovered his astounded senses to conceal the bit of card-board.

"Oh, Em! wasn't it fun watching his face when he opened that letter!" Sadie exclaimed, as soon as the girls were alone. "First he turned white, then red, then purple. He rolled those white eyes of his at me and kept slyly peeping at the picture of his supposed lady-love, between enormous mouthfuls of his dinner, till I nearly screamed with the fun of it. I wonder what he will tell Gertie when he next visits her. I expect he will keep his sweetest smiles now for me until the climax is reached, and then I shall tell him just what a big simpleton we think him; how our letter reached the prophetess as soon as his own, and we trust that in the future he will spend his half dollars more wisely.

"It would be a good lesson for Uriah, Sadie, and your picture has come back all right, but supposing Mademoiselle had copies of it taken to distribute among silly and wicked young men who write her for a likeness of their future wife?"

"I never thought of that, Emma," Sadie said, suddenly checking her merriment. "But the woman would have no right to copy my picture, and, of course, would not do so."

"I am afraid, Sadie, that people of her sort have very little principle. Anything is right to them that will coin them a dollar. But I do not want to frighten you. Perhaps the picture was not copied or your post-office address noted, and when Uriah has had his lesson and returned your photograph the matter will end."

But it didn't. Hardly a month had passed after Uriah's sentimental, worried, mystified heart had been set at rest by Sadie's laughing explanation, and Gertie and himself were placed on the same sweet terms as of old, a letter reached her from a dissipated, low-charactered fellow who lived in an adjoining town. He wrote with insulting freedom, claiming her as his future wife because the Fates had so decreed it—asserting that he had consulted a sorceress of wonderful clairvoyant powers, who in answer to his queries had sent him a perfect likeness of her own pretty face with the assurance that "Sadie, a farmer's daughter of Newton Center," would be his life companion.

"Oh! Emma, Emma! What shall I do? That wretched creature did copy my picture, for Oscar Trombly, that miserable saloon-keeper at the east village, declares he holds one which he received from a necromancer that he consulted. And, worse yet, Emma, he writes he shall drive over next Saturday to commence our acquaintance. Emma, what *shall* I do?"

"Tell mother."

Her sister's answer was very brief and decided.

"I can't, Emma. Oh! I can't! It will almost kill mother to know my photograph may be in the hands of a legion of bad men, and that Oscar Trombly dared write me. Whatever shall I do! Oh, I wish I had never meddled with Uriah's affairs."

"You must tell mother, Sadie, there is no other way. She will think of some plan to get rid of that fellow so he will not trouble you."

A very quiet, shamed-faced girl it was that closeted herself an hour with her mother that afternoon, wholly unlike the flippant, spirited Sadie of old. When she again met Emma there were traces of tears on her flushed face.

"Mother is a darling; mother is tried gold," was all she said as she hurried past to her own room, for her heart was too full, then, to tell of the long, tender talk she had with her mother; how she, Sadie, had promised to be more thoughtful, and not give way to her rash, venturing spirit, and that the mother had agreed to receive Mr. Trombly alone, if he should fulfil his word, and explain matters and secure the photograph, so that her likeness should not be bandied about the low fellows who haunted his saloon.

"And mother says," and here Sadie's voice trembled as though the title had suddenly grown very precious and sacred to her, "and mother says, father need never know a word about this, for it would only worry him, and it shall be a little secret between herself and you and me. She is quite sure Oscar will not call here to trouble me but once."

He did not. Mrs. Danforth received him alone with gracious, lady-like dignity, which roused all the chivalry there was in the man, and when explanations had been given and he drove away, the picture he had obtained of Sadie her mother held, and also the promise that he would wholly drop the subject.

One other insult Sadie suffered in consequence of her rash act. The western mails soon after brought her a letter from an ignorant backwoodsman in the Michigan forests, saying a "pardner" of his had once met her in her home, and that he was ready to "swear" the inclosed picture was a likeness of herself which he had obtained from a clairvoyant woman who had agreed to send him a picture of the girl he was to marry. If she thought well of it, he wanted her to come out to "Pitch Pine station, Michigan," where he would "join her" and they would "git married."

Sadie read the missive with scarlet cheeks, then crowded both letter and photograph under a blazing fire brand, thankful one more of those hateful pictures was safe and could do no further mischief.

The old post-master at Newton Center could have told her—only he knew not that she was the one to tell—that half-a-dozen missives directed to "Sadie Perkins," waited delivery at their allotted time at his office and were remailed to the Dead Letter Office.

Well was it for her peace of mind that she did not know, and that the father never received the threatening note that was inclosed him by one of Mademoiselle's confederates, demanding two hundred dollars, else the "copying and distribution of your daughter Sadie's photograph among men and houses of ill repute will be continued."

HELEN AYRE.

It is a fact that there has been from the first a confident persuasion of the reality of the future life, quite different from any belief elsewhere. This persuasion of immortality does not come from argument or reasoning. It has been transmitted through the church from the beginning as an inheritance, into which we are all born. We grow up from childhood with this implicit conviction. It has come down from father to son, from mother to daughter, as an unquestioned belief. The arguments of sceptics produce no effect upon us, for the roots of this conviction go down the region of argument—it is a part of our life.

Minnie May's Dep't.

MY DEAR NIECES.—If we do not possess a true appreciation for the beauties of nature, we lose half the pleasures of living. Let us go forth into the great world of delight, and enjoy the heavenly glory of one of June's perfect days. The lilacs nod, and the drooping willows wave in the perfumed air; the sweet briar is in blossom, and such roses—each one sweeter and more perfect (in our eyes) than those already gathered. What a snow of bloom has fallen on the late trees in the orchard! We close our eyes for a moment and listen. The air is vibrating with the humming of bees, ringing with the exultant song of birds, as they dart and skim and circle. Around us are green billows, their crests aflame with clover bloom, each nectar-scented blossom lovely as an amaranth. Yes,

"Earth is lying in thy summer,
Oh, great Sovereign of the spheres."

Passing down the meadow path, we catch the faint breath of the hawthorn, and pause to gather a few clusters of its creamy white buds. The pasture fields are ablaze with round, golden dandelions, as though a shower of stars had fallen on the grass. A little further and we reach the woods, and take off our hats to enjoy the delicious shade of its cool, solemn aisles. Not a leaf is stirring in the thick green roof high overhead. Here and there where patches of sunlight fall we find anemones and wood-sorrel. And hark—down in the hollow where so many lilies are to be found, a bird is singing plaintively.

"All day long, the manis joyous
His soft song in shadow weaves,
Where the mighty boughs are drooping,
Heavy with their summer leaves.

Laden with woodland treasures, we turn homewards. Overhead the sun is shining, not with the intense fervor of midsummer, but enfolding us with a mild radiance. Warm airs, "fitful and fresh, from the chambers on high," fan our cheeks. Soft clouds, like white-winged ships, are sailing away beyond our vision, as if bound for the land that is fairer than day—even a June day. And as we pass through the June wonderland, our eyes are opened as if in a rapturous awakening. If earth is so very fair, what must that other land be like for beauty? And imperceptibly our hearts are lifted in reverent gratitude to the Author of all goodness and beauty.

"Father, we desire to praise thee—
We, the children of this earth,—
For thy greatness and thy goodness,
Though our songs are nothing worth;
For the rich and fragrant summer,
For its music and its mirth."

If with appreciative, grateful hearts, we have enjoyed the "light and beauty, and joy and song" that have charmed our way, then we may write this down as one of the good days of our lives. And perhaps we may do more. Can we bring some of the outdoor breezes and sunshine to any soul deprived by age or illness from enjoying them abroad? Our offering of a few familiar wayside blossoms will remind the weary heart, in a language more cheering than ours, that Our Father has not forgotten to be gracious.

MINNIE MAY.

Our Work Basket.

CROCHETED TEA COSY.

One ounce each of four shades of olive, one ounce each of four shades of red, one ounce each of two shades of brown Berlin wool, and a medium bone crochet hook. With darkest red make a chain of sixty-four stitches, and join in a circle.

1. *One double into each of two stitches, three double into the next, *; repeat from * to * seventeen times more, one double into next ten stitches.

In all following rows work into back loop of stitch:—

2. With the second shade of red, one double into each of three stitches, three double into the next, * one double into each of four stitches, three double into the next, *; repeat from * to * sixteen times more, one double into each of ten stitches.

3. With the third shade of red, one double into each of four stitches, three double into the next, * one double into each of five stitches, three double into the next, *; repeat from * to * sixteen times more, one double into each of ten stitches.

4. With the fourth shade of red, one double into each of five stitches and three into the next *; one double into each of six stitches, three into the next, *; repeat from * to * sixteen times more, one double into each of ten stitches.

5. With the lightest brown, one double into each of six stitches, three double into the next, * one double into each of seven stitches, three double into the next, *; repeat from * to * sixteen times more, one double into each of ten stitches.

The work is now continued in rows over the vandykes, but the plain part of the bottom of the cosy is not worked upon.

6. With the darkest brown, one double into each of five stitches, three into the point of the vandyke, * one double into each of five stitches, pass over two stitches in the hollow between two of the vandykes, one double into each of the five next stitches, three into the point of the vandyke, *; repeat from * to * to the end of the row, finish the row with one double into each of five stitches.

All the following rows are worked like the sixth row, and the wool is broken off at the end of each row.

7. Lightest brown.
8 and 9. Darkest olive.
10 and 11. Second shade of olive.
12 and 13. Third shade of olive.
14 and 15. Lightest olive.
16. Darkest olive.
17. Second shade of olive.
18. Third shade of olive.
19. Fourth shade of olive.
20. Lightest brown.
21. Darkest brown.
22. Lightest brown.
23 and 24. Darkest shade of red.
25 and 26. Second shade of red.
27 and 28. Third shade of red.
29 and 30. Lightest shade of red.
31. Darkest red.
32. Second red.
33. Third red.
34. Lightest red.

To fill the hole made by the chain in the beginning:

1. With darkest olive one double into each alternate stitch of chain.

2. One treble into a stitch, miss two stitches, one treble into the next, two chain, pass over two stitches, one treble into the next; repeat all around.

3. One single into two chain, one single into next two chain, one chain; repeat all around.

4. One single into each chain all around.

The other side is made just the same.

Place the two sides together, wrong side in, sew firmly together, through and through, leaving the points to turn inside the work. Take a piece of brown paper six inches across and in the form of a half-circle. Put this over the part worked in darkest olive, sew the work down to the paper so it will set in nice flutes, turn the cosy, so the wrong side of the work will be the right side of the cosy. Line with wadded satin, place a bow over the olive circle, and finish the edge with a heavy cord with loops on top to pick it up by.

PANEL OF SNOW BALLS.—Take one sheet of white or very pale green tissue paper, cut in squares three inches by the same, fold four times, cut the edge in three scallops, open it; you will have a circular piece surrounded with long narrow scallops. Twist each one of these near the end, which will leave a round piece the size of a finger nail. Make ten circles, push fine wire through the centre of each, bunch all together. It will round up into a very natural snow-ball. Place three on a panel.

Recipes.

ANGEL CAKE.—Whites of eleven eggs, beaten to a stiff froth in the dish you intend to make the cake in, ½ pint of sifted flour and sift it four times, and then add one even teaspoonful of cream of tartar, and sift all twice more; ¾ of a pint of granulated sugar sifted; add two tablespoonfuls vanilla. Have flour and sugar all ready before beating the eggs, and then add lightly the flour and cream of tartar, then the sugar and vanilla; don't grease the pans. Bake forty minutes.

BANANA CAKE.—One whole egg and yolks of two, 1 cup sugar, piece of butter the size of an egg, 1 cup sweet milk, 2¼ cups of flour, 2 teaspoonfuls baking powder; bake in 2 large-sized jelly tins:—Filling—Beat the whites of the two eggs stiff with sugar, slice two bananas or enough to cover one layer of cake; put part of frosting over the bananas, put second layer on top and frost plain.

CHICKEN PIE.—Boil chickens in water barely to cover them 60 minutes; skim the water carefully; take them out in a dish, and cut them up as they should be carved if placed upon the table. If the skin is very thick remove it. Have ready, lined with a thick paste, a deep dish, of a size proportionate to the number of chickens you wish to use; put in the pieces with the hearts and livers in layers; sprinkle each layer with flour, salt and pepper, and put on each piece of chicken a thin layer of butter; do this until you have laid in all the pieces, and pour in as much of the liquor in which the chickens were boiled as you can without danger of its boiling over. Lay on the upper crust, and close the edges very carefully with flour and water; prick the top with a knife; cut leaves of crust, and ornament it. Bake two hours. The crust for chicken pie should be twice as thick as for fruit pies. Use mace and nutmeg if you wish. Be very careful to allow the steam to escape, otherwise it is poisonous.

What is it that makes most people sick? Eating too much and too fast; drinking too much; want of fresh air; want of sunlight; want of exercise; want of cleanliness. Few persons die of starvation—many do of gluttony. But you will say, "If I get sick I can't help it—it's only bad luck that brings fever and rheumatism." Not so, friend. There's no luck in cutting your fingers if you fool with edge tools. More than half the sickness in the world is preventable, as any doctor will tell you. A sick man is a rascal, some one has said, because he has no business to get sick.

PRIZE ESSAY.

Cheerfulness.

AWARDED TO MISS ALICE MCNAIR, NELSON, ONT.

Cheerfulness is a trait of character which is the outcome of true goodness within. A cheerful spirit is of necessity a happy spirit, and true happiness is true unselfishness.

It is an unselfishness that will make us enter into the plans proposed by others as heartily as if they were our own. Cheerfulness is not a pleasant manner put on with our best clothes for company. It is daily practising the law of kindness—not doing unto others as they do unto us, but as we *would* they should do unto us. It is not recklessly throwing our cares aside for a brief spell of gaiety; but it is the hope that bears us up while we recognize those cares and estimate them at their proper value.

There is no life so closely guarded but what some trouble, vexation or annoyance creeps in. When this is the case, those who look for happiness in their own plans or in the gratification of their own selfish desires, fail to find it.

Habitual cheerfulness is unfortunately too rare. We are too anxious about the future, and we foolishly worry over the mistakes of the past, when not one anxious thought can make that future brighter, nor one lamentation undo the past.

We may have severe trials to face in the present, and perhaps we think that we are so harrassed that to us cheerfulness is an impossibility. We may think that we are so tried that the character will become dwarfed and misshapen. There is no lot in life in which we have been providentially placed where we cannot develop a truly grand character.

Do we not know the fierce flame of affliction need not destroy the good in us? The pure gold of character will only be cleansed and softened into flexibility, to be more readily moulded by the Divine Hand. We make our very disappointments steps to higher things by meeting them cheerfully.

It is not on the smooth sea that a man learns to be a good sailor; but it is amid storm and darkness and danger that the the skill, prudence and courage of the voyager are brought out.

Knowing this, believing and trusting in an all-wise God with whom our best interests are safe, is it right to give way to despondency?

Cheerfulness is a great help to our success in life. Worry weakens and unfits us for duty where cheerfulness would strengthen and build us up.

We cannot hold ourselves aloof from our fellow-beings, for every life must come in contact with other lives. Should we not try to help them? They too have their burden to bear. Your kindness may cost you nothing but an effort to be self-forgetful. Even a pleasant greeting will sometimes lighten the load of some weary one.

A cheerful Christian is the Bible-Christian, which the irreligious will believe; they will think a Christianity genuine that gives the possessors more than they have obtained.

This spirit has a great influence for good in the home life. It is an oil which makes the domestic machinery run smoothly. A belief in the beautiful and good is a great safe-guard to the young. A home where "mother always scolds," and "you can't please father no matter how you do," drives the young people elsewhere, and too often to their ruin.

The best way to keep constantly cheerful is to live for to-day, with hope for the future; it is in doing our very best to-day, without being discouraged at our failures, that we take a great step toward making this desirable thing our own. We are disheartened when we think that our life may be long years of just such difficulties as those with which we now contend; but surely we can be kind and patient just one day at a time. Like the bee, we should sip the sweets from life's flowers while we leave the poison alone.

Cheerfulness is the complement of a truly beautiful character. Beauty is as ever the chiefest of attractions; but beauty of character ranks high above physical beauty.

Gossip.

Oh! could there in this world be found
Some little spot of happy ground,
Where village pleasures might go round,
  Without the village tattling.
How doubly blest the spot would be,
Where all might dwell at liberty,
Without the bitter misery
  Of Gossip's endless prattling.

If such a spot were really known,
Dame Peace might claim it as her own,
And in it she might fix her throne,
  Forever and forever.
There like a queen might reign and live,
While every one would soon forgive
The little slights they might receive,
  And be offended never.

'Tis mischief makers that remove
Far from our hearts the warmth of love,
And lead us all to disapprove
  What gives another pleasure.
They seem to take one's part—but when
They've heard our cares, unkindly then,
They soon retail them all again,
  Mixed with their poisoned measure.

And then the've such a cunning way
Of telling ill meant tales—they say,
"Don't mention what I've said, I pray,
  I would not tell it to another."
Straight to your neighbor's house they go,
Narrating everything they know,
And break the peace of high and low,
  Wife, husband, friend and brother.

Oh! that the mischief making crew
Were all reduced to one or two,
And they were painted red or blue,
  That every one might know them.
Then would our villagers forget
To rage and quarrel, fume and fret,
Or fall into an angry pet
  With things so much below them.

For 'tis a sad, degrading part
To make another's bosom smart,
And plant a dagger in the heart
  We ought to love and cherish.
Then let us evermore be found
In quietness with all around,
While friendship, joy and peace abound,
  And angry feelings perish.

Life's Longings.

A child ran laughing on the beach,
  The sun shone warm and bright
Upon he · waving golden hair,
  Her tiny form so slight.
"I wonder why the world's so fair,
  So full of sun and song;
I wonder why big folks don't laugh
  And play the whole day l ng."

A maid was walking on the strand,
  She gazed far out to sea;
Where o'er the sunlit waters rode
  A bark so gallantly.
"My love is coming over the waves,
  Is coming soon to me,
I wonder how, in this sweet world,
  Old folks such shadows see."

A woman stood upon the shore,
  Her eyes with weeping red,
Looked sadly on the cruel sea
  That ne'er gives up its dead.
"I wonder why the world was made
  So dark and full of care,
No wonder that life's burden seems
  Too great for one to bear."

Near by the window's ledge they saw
  A grandame, old and gray—
The window looking out to sea
  Where ships at anchor lay.
"I wonder when my eyes shall see
  Life's ship at anchor lie,
Within God's harbor peacefully
  For all eternity."

A Simple Baby-Basket.

Among the mysteries of preparation for a little new-comer, nothing is daintier than the baby-basket, with its contents, ready for the first toilette. Very little expense will serve to dress a common willow, reed or Shaker basket, so that it will be as beautiful as need be. The material of the basket is of very little, indeed, no importance, as it is entirely covered by a cambric of pale pink or blue, over which a sheer white muslin, dotted or plain, is drawn in folds or puffs on the inside, and let fall in a full ruffle on the outside, the upper edge of the basket being finished by a quilling of ribbon in color to match the cambric lining. Young mothers usually have their fancies about color, "blue for a girl" and "pink for a boy," and carry it into all this preparatory wardrobe. A basket lined with blue would have a small blue pincushion, a blue and white powder box, though a pretty white one is *babyish*. The basket being covered, and furnished with two inside pockets, should then be filled with all the articles necessary for the first dressing. A piece of narrow bobbin, a small bottle or box of vaseline, a number of small squares of soft linen, for the mouth cleansing, a piece of very soft sponge, a square of pure castile soap. These articles will all be required before the clothes, and should have a prominent place in the basket.

For the dressing on top is found a strip of soft flannel, torn from a piece, and turned over only on the edges, for the band; the little shirt of hand-knit wool, two diapers of old soft linen, the pinning blanket, flannel petticoat and the slip, and a square of flannel or a knit blanket to wrap around the little one when it is carried about.

The baby-basket will be found every morning with baby's toilette articles all ready, and there will not arise confusion in the search for baby's *own* soap, sponge, etc. For a baby powder, the scented rice powder is not as good as cornstarch to which a small quantity of pulverized orris root is added; this is the purest and best. In addition we should also suggest that a cotton flannel apron, furry side out, is a valuable possession for nurse and mother, as the little one can be taken from the bath on to the lap and rolled up in the apron, which answers at the same time the purpose of a soft towel. For wiping of head and face, an old white silk handkerchief is a good thing to use at the bath. A dainty wrapper, which is very inexpensive, can be made princess in shape, of cheese cloth and cotton wadding. A layer of wadding should be tacked between two of cheese cloth, and fastened at intervals of a few inches by knots of worsted, as in a comfortable, the worsted pale blue or pink. The princess pattern is then laid on and the wrapper cut out, the seams felled on the inside and the edges finished by a button-hole stitch of blue or pink worsted. These little wrappers can be worn after the bath during the morning, and add warmth as well as save the freshness of the slip for afternoon.

M. S. H.

George had proposed, and been accepted. "Well," she said, "I can sing, play on the piano and harp, can paint, and at the seminary I was up in the fine arts and political economy and logic: and I can crochet beautifully, and play lawn tennis, and, and—that's about all, I think. Now tell me what are some of *your* accomplishments, George?" "I haven't got any." "Not a single one?" "Well," he said with a sigh, "if the worst should come to the worst, I think I might be able to *cook*."

Modern Tea Parties.

In olden times a tea party was the occasion of a house cleaning as thorough as the spring and fall upheaval, and for that reason was an event of rare occurrence with our grandmothers.

Now-a-days we take the stranger within our gates with far less disturbance of the household machinery, the modern tea party enabling the conscientious housekeeper to take "company" a little easier, hence to exercise sociability and true hospitality more frequently. The young housekeeper, especially in small towns, is often too fearful of being criticised by her seniors, or perhaps by her contemporaries, if she attempts any form of hospitality which has not the old time lavishness, say prodigality, which made it impossible for housekeepers of moderate purses to entertain more than once a year.

To such the tea party about to be described will come like a boon, having the fashion to commend it, and no one will be disposed to quarrel with a fashion which had so much to commend it. This modern tea party tastefully and gracefully served achieves its end of bringing friends together quite as well as the old-time party with its lavish and costly display. I know a well-bred little lady, a clergyman's wife, who instituted in a small country town a successful series of afternoon teas, whereby she entertained the whole parish in the course of a few weeks for a sum of money which would have been barely sufficient to provide for an old time tea party of ten guests.

Nothing is easier than the giving of an afternoon tea, provided the hostess observes the simplicity which she should, in her bill of fare, and does not ask more guests than she can readily entertain, say ten, twelve or more ladies. The hours are from three until six, or from four until six.

A table is placed in the room where the hostess receives her guests, and on this a white tablecloth, a brass kettle for hot water, or a silver urn such as one finds on a breakfast table, a tea pot with plenty of fresh tea leaves, such a number of cups and saucers as the hostess may think necessary, a small pitcher of cream, a sugar bowl, a plate of thin ham sandwiches cut in three-cornered pieces without crust, on another similar plate sponge, lady fingers, sugar wafers or macaroons, any form of cake small and dainty to handle.

The hostess wears a simple afternoon dress, and her guests do not remove their bonnets or gloves; frequently this mistake occurs at a first party, and a lady is embarrassed by finding herself the only guest uncovered.

As it does not often happen when a number of ladies are invited for a movable hour that all arrive at once, the hostess has no difficulty in pouring the tea and handing the sandwiches and cake herself to the first arrivals, who should assist her by cordially adapting themselves to the circumstances. Toward the close of the afternoon the room may be quite full, and the hostess will need the aid of some deft hands. Usually in households where the maid of all work is not trained to wait, one or two little girls, children of the house or an intimate neighbor, can be of more real service in passing cups and cake, renewing the hot water, etc., than a clumsy adult.

In large cities where ladies have a number of such teas to attend in one afternoon, they remain only a short time; but in smaller towns, where the purpose is more to draw a number of pleasant people together for a few hours, the earliest guests often linger with the latest although the tea drinking is not observed by them more than once, sometimes twice.

Compensation.

Through our lives mysterious changes,
Through the sorrow haunted years
Runs a law of compensation
For our sufferings and our tears;
And the soul that reasons rightly,
All its sad complaining stills,
Till it gains that calm condition,
Where it wishes not, and wills.

Give Him a Lift.

Give him a lift! don't kneel in prayer,
Nor moralize with his despair;
The man is down, and his great need
Is ready help, not prayer and creed.

'Tis time when the wounds are washed and healed—
That the inward motive be revealed;
But now, whate'er the spirit be,
Mere words are but mockery.

One grain of aid just now is more
To him than tomes of saintly lore;
Pray, if you must in your heart,
But give him a lift, give him a start.

The world is full of good advice,
Of prayer, and praise, and preaching nice—
But the generous souls who aid mankind
Are scarce as gold and hard to find.

Give like a Christian—speak in deeds:
A noble life's the best of creeds;
And he shall wear a royal crown,
Who gives them a lift when they are down!

Helpful Hints.

The following hints are from two well-known authorities on hygiene:

Kiss the children good-night, and let them go to bed in a pleasant, happy frame of mind, as that condition conduces to refreshing slumber. Never scold or deliver lectures, or in any way wound a child's feelings, as it goes to bed.

Children should never wear the ordinary elastic garter, as it causes obstruction of the circulation. At the bend of the knee the superficial veins of the leg unite and pass up deeply in the under part of the thigh; thus a garter worn beneath the knee acts as a ligature, and prevents free circulation of the blood.

A warm bath early in the day followed by a simple douche of cold water, is far preferable to the cold bath for young children, or a warm bath at night for the sake of cleanliness, and none at all in the morning. It may be taken as a rule that, in the case of children, sudden changes of temperature are dangerous, and that fifty-eight to sixty degrees may be taken as the average temperature in which they should be constantly kept.

Parents should not allow their children to be waked up in the morning; let nature wake them; she will not do it prematurely. Have a care, however, that they go to bed at an early hour. Let the hour be earlier and earlier, until it is found that they wake naturally in full time to dress for breakfast. Being waked up suddenly and early, and allowed to engage in difficult or any study late before retiring, has given many a beautiful and promising child brain fever.

The Mother-in-Law.

Daisy Dean in the Detroit Free Press:—It is a mystery which no one has yet solved why so many sad jokes are constantly being perpetrated about a man's mother-in-law. What dreadful crime has the unfortunate woman committed in providing the man with his wife that he should bear such an undying grudge against her?

Now if it was a woman's mother-in-law who was made the butt of these jokes there might be a grain of sense in them; for it is the man's mother who has it in her power to make life a burden to the young wife and not half try.

As a matter of fact, a woman is usually proud and fond of her son-in-law if he only gives her the ghost of a chance.

When the young couple first go to housekeeping who is it that comes in and with her good sense and practical experience tides them over the rough places?

A man's mother-in-law.

It is the woman's mother-in-law who is most apt to criticise, and who exasperates the young wife by quoting, all too frequently:—"My son is used to having things thus and so." "My son must have this or that for his meals." "My son, with his small income, should have married a prudent, economical woman," etc.

When the first baby makes its appearance, as well as the successive ones, who is it that steps in and relieves the husband of his weary vigils and takes the load of care and worry off the wife's feeble shoulders and keeps the household machinery running smoothly?

The man's mother-in-law.

When he and his wife plan to take a little trip together, who is it comes in and takes charge of the house and the children, so that they can peacefully enjoy their holiday, with the restful thought, "Mother is there, and it will be all right"?

The man's mother-in-law.

When there is sickness or trouble in the house, who is the faithful nurse, the wise counselor, the sympathizing friend?

The man's mother-in-law.

And if, in the course of events, the wife dies, who is it that usually comes and takes care of the children and keeps up the home till the bereaved husband has time to look around and find another wife?

A man's mother-in-law.

And how does he reward her for all this devotion?

By making heartless jokes at her expense, and publishing them for other men to snicker over!

Ingratitude, thy name is Man!

An Ancient Cemetery on the Nile.

An ancient Egyptian necropolis has been discovered in the Lybian desert, opposite Assuan, on the left bank of the Nile. Among the tombs already opened are several which date apparently from the twelfth dynasty (B. C. 3000). They consist of two or more halls or chambers, connected by corridors, the roofs being supported by columns and the walls decorated with colored bas-reliefs in brilliant preservation. Several of the tombs appear to belong to members of a noble, if not royal, family. The cemetery is apparently of great extent. It was discovered by General Grenfell, who is busily clearing out the tombs with the help of English soldiers. The largest tomb, usurped by later comers, was found piled to the ceiling with mummies, mummy cases, and funeral furniture of Roman times.

The Black Bear.

Black bears are found in almost every solitary place in North America. They lead a sullen, lonely life in deserts and forests, and subsist upon vegetables and fruit. They are particularly fond of honey, and will climb lofty trees in quest of it. Fish, too, they delight in, and are often found upon the shores of lakes watching for any that may drift in or become stranded. When these resources fail they will attack small animals, sheep, pigs, and even a calf. The Indians of the Southern States hold the bear in strange superstition. A bear hunt is preceded by many strange ceremonials, and followed by many more. When they succeed in killing a bear, they blow smoke into his mouth, conjuring the spirit of the animal not to resent what they are about to do to its body. As the beast makes no reply, they cut its tongue out and throw it into the fire; if it crackles and shrivels up, as it is almost sure to do, they accept this as a good omen; if not, they consider that the spirit of the beast is not appeased, and that the chase of next year will be unfortunate. They were very troublesome to early settlers, and made night attacks upon their houses, carrying off pigs, sheep, or whatever they could find.

This is the story of our picture :—

Uncle Tom and Aunt Bessie lived in a small house,
So snug only Bessie could keep,
And a nice little pig pen so close to the door,
With one little pig fast asleep.

Uncle Tom and Aunt Bessie thought this little pig
Would make a nice Thanksgiving roast,
For though they were black they liked to live well,
In fact it was Aunt Bessie's boast.

But one cold, bright morning, the end of last month,
When the stars shone so bright in the sky,
Uncle Tom and Aunt Bessie both heard a sad noise,
And out of bed did both of them fly.

Tom opened the door and peeped out in the dark,
Saw something that made him turn white,
Their dear little piggie was in a bear's paws,
Being carried away in the night.

And, oh! how he squealed, as the bear held him fast,
With his claws sunk in poor piggie's skin,
And the more piggie struggled, the more piggie squealed,
The deeper the big claws went in.

Uncle Tom seized the axe and ran after the bear,
But the bear turned the white of his eye,
As he saw Uncle Tom catching up with him fast,
The faster old Bruin did fly.

But the snow being deep, and piggie was fat,
And he kicked and he squealed as well,
But the bear held him fast as he hurried along,
For he lived in a log in the dell.

Away back of Tom's house, in a dark cedar swamp,
With his wife and two babies so sweet,
So he very well knew if he let piggie go
His babies had nothing to eat.

Just look how he strides, with poor piggie held fast,
And his poor little mouth opened wide;
But he felt very tired, and thought he would drop,
So he squeezed him up close to his side.

But, alas! that last squeeze was the death of poor piggie,
He gave one squeal more and he died;
Uncle Tom got up close, struck him hard with the axe,
And down fell the bear at his side.

They watched from their window and saw the big bear
When he staggered again to his feet,
Looked around and saw Tom was away out of sight,
So the bear beat a hasty retreat.

Now Aunt Bessie thought it would be no harm,
And she would be a terrible sinner
To waste the nice pork of their dear little piggie,
So they eat him themselves for their dinner.

There are certain manners which, learnt in good society are of that force that, if a person have them, he or she must be considered everywhere welcome, though without beauty, wealth or genius.

A Very Curious Clock.

You have all heard of the wonderful clock at Strasburg, and the ingenious mechanism by which its heavenly bodies move in their orbits, the bells ring out the day and hour, and the processions of angels and apostles come and go. There is also a similar clock with a number of similar curious contrivances at Lyons, in France, and, indeed, it seems as if the mechanicians of the sixteenth and seventeenth centuries were never tired of exercising their inventive wits over clocks, so many strange and ingenious contrivances in the way of timepieces are still found in the older cities of Europe. But for an amusing clock, a laughter-provoking clock, a kind of negro minstrel of a clock, one made by a man named Droz something like a century ago, certainly takes the palm. When it was completed, the proud inventor carried it to the palace of the King of Spain. His majesty was pleased to examine the clock, and when set up ready for exhibition it was found to consist of a dial, beside which sat a negro, a shepherd with a basket of apples by his side, and a dog. When the hour struck the negro drew his bow and played six tunes on a violin, after which the dog, endowed with a taste for music, rose and caressed him. "Should it please your majesty to touch one of the apples in the shepherd's basket!" suggested the clock-maker. The king put out his hand to take an apple. Determined to protect his master's property, the dog flew at the royal hand, biting and barking, until a "really truly" dog in the room took up the strain and began to bark too. The king laughed heartily, and so, I think, would we have done.

While American society people have adopted a number of customs from the English which are thoroughly bad, because not adapted to our ideas, there is one that is now making its way in this country which is thoroughly good. It is that of inviting a guest to come at a definite date and for a definite time. The indefinite invitation is a thing of the past. You are told when to come and to go. There is no coaxing "to stay another day," or "wait until the next train." As you arrive on invitation time, so do you leave. The old-fashioned idea of hospitality is shocked at this, but it is the only proper way either to extend or accept the courtesy.

Uncle Tom's Department.

MY DEAR NEPHEWS AND NIECES,—If my letter to you in the month of roses savors more of dreamy sentiment than of earnest action, you must pardon one whose thoughts turn tenderly to the olden days, when, a barefooted boy, he rambled through the green fields of the old farm at home. Which of you has not yielded to the subtle influences of gentle May winds, and have rolled on the green grass with the blossom leaves gently fluttering down upon you—snowflakes of a cloudless sky. Have you not heard mysterious voices in your soul speaking to you of a life nobler, purer and infinitely higher than this one? Have not unsatisfied longings, ungratified aspirations, filled your mind as you looked upward to the blue arch above you, and in this delicious state of "dreamful ease" have forgotten for the time the many and irksome duties which render the spring-time anything but a delight? In the great temple of nature have not your hearts worshipped, and through nature you have been led to think of nature's God, who "hath made everything beautiful in its season." Has not the foliage day by day, clothing the forest in deeper tints of living green, seemed more beautiful than ever before; the waves on the little brook which you know so well play and dance in the sunlight with wonted sheen and ripple? Do the evenings seem more tempting than any spring before, and do you long for some congenial spirit, whose whole nature will chord in sympathy with yours to go with you to partake of this feast of the gods? The sunsets are so gorgeous—surely a hand divine upon canvas of vapor would teach us by that exquisite coloring and shading that it is the touch of One who is the perfection of beauty as well as the infinitude of love!

If such thoughts have come to you, rejoice that it is so—cherish and strengthen them, even though much of your duty lies where such thoughts seem not to harmonize. He who gives you them will in his own time give you opportunity to bring them to glad fruition. Oh, you boys and girls of the farm, how little you appreciate your privileges! You youths and maidens, how near you are to God, and yet you know it not! In every city there are thousands who in over-crowded rooms know little of the enjoyment of your free life in the country. It is true, indeed, many of them would not trade places with you; they think life in the country is a sort of living deadness, but they know not of its purer pleasures, its trees and blossoms, its quiet nooks and lovely walks. They know not that

"Earth's crammed with heaven
And every common bush afire with God."

and do *you*, my dear boys and girls, learn that

"Only he who *sees* takes off his shoes;
The others sit round it, and pluck blackberries."

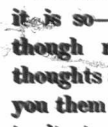
UNCLE TOM.

Puzzles.

1—DROP VOWEL PUZZLE.

K-nd h--rts -r- th- g-rd-ns, k-nd th- - ghts -r- th- r- -ts, k-nd w-rds -r- th- bl-ss-ms, k-nd d- -ds -r- the fr- -ts. ADA ARMAND.

No. 2.



The stars denote:

Before.
To peruse.
Minerals.
To interweave.
To scorch.
A European.
A consonant and a hand covering.
A low [illegible]in.
A support for a bridge.
A wild animal.
Denoting three.

Place instead of the zeros the name of a great orator, and the list of words will change into an assortment of names of great and illustrious men.

ELMER STINSON.

3—ILLUSTRATED REBUS.

4—CROSS.

Diagram.

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1. To endeavor.
2. A kind of fish.
3. Part of a play.
4. A villain.
5. A city in the United States.
6. A mineral.
7. An inclosure.
8. A boy's nick-name.
9. Crooked.

HENRY REEVE.

5—TRANSPOSITION.

Cebensa fo poucacoitn si etn ters,
A mdin tique cavant si a ndim tressderid.

TILLIE HERRETT.

6—CHARADE.

I said unto my little brother,
Whose name will suit my FIRST,
SECOND! child, alth ugh it's very dark,
We must not fear the worst.
We then did THIRD our arms,
And homeward we did flee,
And my TOTAL sprang from beneath our feet,
And flew up in a tree.

LOUISA F. REDMOND.

7—CHARADE.

Ireland, rejoice! FIRST may your hearts now be,
Nor longer like a SECOND lie in your breast,
Like noble Canada, soon shall you be free,
Like her have liberty the motto on your crest.
To celebrate the Royal Jubilee, who can suggest or ask a grander scene?
Not one! Then, if it comes to pass, thank TOTAL and Victoria our Queen. ADA ARMAND.

8—TRANSPOSITION.

O, yamn a thafs ta damonr tesn,
Fnids karm het rachre tellit tenam,
Dan naym a rwod ta radmon ksonpe,
Amy tooseh ro dowun a thare shtat korbne.

A. T. REEVE,

9—CRYPTOGRAM.

Tp atcwp, icmun yjgg wpa ecuhwa!
Hw hd wpj rjyjg to wpa pjmuw.
Wpmw euhljgjdd ejmug tfij gtdw wt wpjj,
Ft yjmgwp to wphfj lmf uj-hsemuw.

FAIR BROTHER.

10—CHARADE.

The poser's ship along is sailing,
Bound for puzzledom's happy shore;
Those who wish to sail TOTAL her,
All are welcome, rich or poor.

See the veterans she has landed,
Now advanced FINAL puzzle lore;
Many tyros too are sailing,
Following those gone on before.

All ye posers, come and welcome,
Solve the rebus and the square;
Then FIRST us you will be happy,
And of honor reap your share.

FAIR BROTHER.

Answers to May Puzzles.

1—'Tis pleasant, sure, to see one's name in print,
A book's a book, although there's nothing in't.

2—I count this thing to be grandly true,
That a noble deed is a step toward God;
Lifting the soul from the common clod
To a purer air and a broader view.

3—Deck, dick, dock, duck.

4—The heights by great men reached and kept,
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward in the night.

5—
P E N
O D E
G I N
N O M I N A L L Y
E D I N B U R G H
D I F F U S I O N
E R A
A G E
W H O

6—
S L Y
A M I A B L E N E S S
E B B
S T E A M
M E R R I E R
V A L U A T I O N
V E N T I L A T I O N

7—Excelsior.

8—Whip-poor-will.

9—Rat, bear, cow, dog, horse, pig, badger.

10—A well there is in the west country,
And a clearer one never was seen,
There is not a wife in the west country,
But has heard of the well of St. Keyne.

11—Serene will be our days, and bright
And happy will our nature be,
When love is an unenvying light,
And joy its own security.

Names of Those who Sent Correct Answers to May Puzzles.

E. Eulalia Farlinger, Arthur T. Reeve, Amos Howkins, Mary Morrison, A. Russell Boss, Robert Wilson, Henry Reeve, Annie C. Rothwell, Emma Dennee, Helen Connell, Ada Armand, Norris N. Broderick, W. B. Anderson, Louisa F. Redmond, Beatrice McDonald, Tillie Herrett, Annie M. Lackie, Stillman Root, Emma Waddell, Ivy Wilson, Hugh Barrett, Adolphus B. Pickett.

Song of the Mystic.

I walk down the valley of silence—
Down the dim, noiseless valley alone,
And I hear not the fall of a footstep
Around me, save God's and my own,
And the hush of my heart is as holy
As hovers where angels have flown!

Long ago was I weary of voices
Whose music my heart could not win;
Long ago was I weary of noises
That fretted my soul with their din;
Long ago was I weary of places
Where I found but the human and sin.

I walked in the world with the worldly,
I craved what the world never gave,
And I said, "In the world each ideal,
That shines like a star on Life's wave,
Is wrecked on the shores of the real
And sleeps like a dream in the grave."

And still did I pine for the perfect,
And still found the false with the true;
I sought 'mid the human for heaven,
But caught a mere glimpse of its blue,
And I wept when the clouds of the mortal
Veiled even that glimpse from my view.

And I toiled on, heart-tired of the human,
And I moaned 'mid the mazes of men,
Till I knelt, long ago, at an altar,
And heard a voice call me: since then
I walk down the valley of silence
That lies far beyond mortal ken.

Do you ask what I found in the valley?
'Tis my trusting place with the divine,
And I fell at the feet of the holy,
And above me a voice said, "Be Mine,"
And there rose from the depths of my spirit
An echo, "My heart shall be thine."

Do you ask how I live in the valley?
I weep and I dream and I pray,
But my tears are as sweet as the dewdrops
That fall on the roses in May,
And my prayer, like a perfume from censers,
Ascendeth to God night and day.

In the hush of the valley of silence
I dream all the songs that I sing,
And the music floats down the dim valley
Till each finds a word for a wing,
That to hearts, like the dove of the deluge,
A message of peace they may bring.

But far on the deep there are billows
That never shall break on the beach;
And I have heard songs in the silence
That never shall float into speech.
And I have had dreams in the valley
Too lofty for language to reach.

And I have seen thoughts in the valley—
Ah, me, how my spirit was stirred!
And they wear holy veils on their faces,
Their footsteps can scarcely be heard,
They pass through the valley like virgins,
Too pure for the touch of a word.

Do you ask me the place of the valley,
Ye hearts that are harrowed by care?
It lieth afar between mountains,
And God and his angels are there,
And one is the dark mount of sorrow,
And one the bright mountain of prayer.

The Names of Women.

Give your daughter but one name in baptism. She will be perfectly content with it. Her lover never requires, never uses but one of her names, if she has half a dozen. In the height of his tenderness he never exclaims: "Amelia Jane, come to my arms!" He simply extends his arms and cries: "Amelia!" When the girl marries let her always keep her surname. Then when ever we see a woman's name, we shall know whether she is married or single, and if she is married we shall know what her family name is. If she has earned a reputation as a writer or a doctor or an LL. D. as Mary Brown, she will carry that with her as Mary Brown Johnson; and in all cases there will be spared an infinite amount of talk and inquiry as to who she was before she was married. This system is essential to the "cause" of woman. It may be said that it lacks perfection in two respects; we could not tell from the three names whether the bearer of them might not be a widow, and it makes no provision for a second marriage. These are delicate questions. In regard to the first it is nobody's business to know whether the woman is or is not a widow, unless she chooses to make that fact prominent, and then she has ways enough to emphasize it. And in the second place it does not at all matter what becomes of the name of the first husband. It is the woman's identity that is to be preserved, and she cannot be required to set up milestones all along her life.

Annabella is not Annabella, or fair Anna, but is the feminine of Hannibal, meaning gift (or grace) of Bel. Arabella is not Arabella, or beautiful altar, but Orabilla, a praying woman. In its Anglicized form of Orabel it was much more common in the thirteenth century than at present. Maurice has nothing to do with Mauritius, or a Moor, but comes from Almaric-himmel-reich, the Kingdom of Heaven. Ellen is the feminine of Alain, Alan or Allan, and has possible connection with Helen, which comes from a different language, and is older by 1,000 years at least. Amy is not from amee, but from amie. Avice or Avis does not signify advice, as some think. It comes from Ædwis, and means happy wisdom. Eliza has no connection with Elizabeth. It is the sister of Louisa, and both are daughters of Heloise, which is Helewis, hidden wisdom. There is, indeed, another form of Louisa, or rather Louise, which is the feminine of Louis, but this was scarcely heard of before the sixteenth century. Emily or Amelia are not different forms of one name. Emily is from Emylia, the name of an Etruscan gens. Amelia comes from the Gothic amala, heavenly. Reginald is not derived from Regina, and has nothing to do with a queen. It is Rem-alt, exalted purity. Alice, Adelais, Adelaide, Aliza, Alix, Adaline are all forms of one name, the root of which is adel, noble. But Annie was never used as identical with Annis or Agnes (of which last the old Scottish Annas is a variety); nor, as is sturdily maintained, was Elizabeth ever synonymous with Isabel.—[*New Orleans States*

A Sunshiny Husband.

A sunshiny husband makes a merry, beautiful home worth having, worth working in and for. If the man is breezy, cheery, considerate and sympathetic, his wife sings in her heart over her puddings and her mending basket, and renews her youth in the security she feels of his approbation and admiration. You may think it weak or childish, if you please, but it is the admired wife, the wife who hears words of praise and receives smiles of commendation who is capable, discreet and executive. I have seen a timid, meek self-distrusting little body, fairly bloom into strong, self-reliant womanhood under the tonic and the cordial of companionship of a husband who really went out of his way to find occasion for showing her how fully he trusted her judgment and how fully he deferred to her opinion. In home life there should be no jar, no striving for place, no insisting on prerogatives, or division of interests. The husband and wife are each the complement of the other. It is as much his duty to be cheerful as it is hers to be patient, his right to bring joy into the house as it is hers to sweep and garnish the interior. A family where the daily walk of the father makes life a festival, is filled with something like a heavenly benediction.

Twelve Rules for the Care of Ears.

1. Never put anything into the ear for the relief of toothache.

2. Never wear cotton in the ears if they are discharging pus.

3. Never attempt to apply a poultice to the inside of the canal of the ear.

4. Never drop anything into the ear unless it has been previously warmed.

5. Never use anything but a syringe and warm water for cleaning the ears from pus.

6. Never strike or box a child's ears; this has been known to rupture the drum-head, and cause incurable deafness.

7. Never wet the hair, if you have any tendency to deafness; wear an oiled-silk cap when bathing, and refrain from diving.

8. Never scratch the ears with anything but the finger, if they itch. Do not use the head of a pin, hair pins, pencil tips or anything of that nature.

9. Never let the feet become cold and damp, or sit with the back towards the window, as these things tend to aggravate any existing hardness of hearing.

10. Never put milk, fat or any oily substance into the ear for the relief of pain, for they soon become rancid and tend to incite inflammation. Simple warm water will answer the purpose better than anything else.

11. Never be alarmed if a living insect enters the ear. Pouring warm water into the canal will drown it, when it will generally come to the surface, and can be easily removed by the fingers. A few puffs of tobbaco smoke blown into the ear will stupefy the insect.

12. Never meddle with the ear if a foreign body, such as a bead, button or seed enters it; leave it absolutely alone, but have a physician attend to it. More damage has been done by injudicious attempts at the extraction of a foreign body than could ever come from its presence in the ear.—*Health and Home.*

SLEEPLESSNESS.—Rise early, exercise freely in the open air, and do not sleep in the day time. Eat light suppers, and retire at a regular hour. Sponge the body with tepid water, and rub briskly with a coarse towel. Winter night clothes should be made of flannel, sufficiently long to cover the feet and prevent contact with cold sheets. Do not give a child paregoric or soothing syrups, for sleeplessness or fretfulness. Sedatives should never be administered, except by the advice of a physician,

Valuable Hints to Young Ladies Going into the Country.

New York *Journal*: "It is well enough to go into the country and play tennis and croquet, go on fishing-excursions and picnics, and sit in the hot sun half of the day; but what shall one do with her complexion?" lamented a fashionable young lady the other day.

Some one suggested that it was fashionable to return home as brown as an Indian.

"But I do not get brown," she exclaimed; "I turn a horrid red, and then my skin begins to come off, and my face gets rough and does not look at all pretty."

For the benefit of such young ladies the following items were given by an old lady of 60, who is still considered a beauty, and who retains a complexion noted for its delicacy of coloring:

Wear a large white sun hat when outdoors in the daytime, even if sitting in the shade.

The neck should never be permitted to be sunburned; and to avoid this wear thin flannel underwear, with a lawn or muslin dress, and tie a silk handkerchief about the throat when out boating.

A cheap toilet-water is made out of a half pint of water, a small cup of cider-vinegar, and the same amount of milk. Put into a jar or bottle and apply to the face with a soft sponge. Let it remain over night or until perfectly dry, and then wash it off with warm water. It will remove tan.

A shining face may be avoided by ladies who do not use powder if it is bathed over night with warm water, and the eyes only sponged in the morning.

A pomade for the face, to remove tan and whiten the skin, is made out of an ounce of almond paste, the juice of two lemons, and a little eau de cologne. It is to be applied at bed-time and left on the face until morning.

Gloves should be worn constantly to prevent the hands from tanning. The most serviceable are large ones of dog-skin of a dull tan shade, and these are suitable for most country pleasures.

Rain water is best for toilet purposes, and keeps the skin soft and smooth. Boiled rain water is considered as effective as a Turkish bath in removing tan.

Masks of white cloth dampened with warm water are worn at night by ladies who have the courage to stand their unpleasantness, and are considered most effective for beautifying the complexion.

Dark-colored veils of heavy gauze are a protection against the sun when driving or riding.

THE OCEAN'S BED.—The bed of the ocean is to an enormous extent covered with lava and pumice stone. Still more remarkable is it to find the floor of the ocean covered in many parts with the dust of the meteorites. These bodies whirl about in the heavens like miniature comets, and are for the most part broken into innumerable fragments. We are all familiar with the heavenly visitants as shooting stars, but it has been only lately discovered that the cosmic dust forms layers at the bottom of the deepest seas. Between Honolulu and Tahita, at the depth of 2350 fathoms, over two miles and a half, a vast layer of this material exists. Falling upon land, this impalpable cust is undistinguishable; but accumulating for centuries in the sea depths, it forms a wonderous story of continuous bombardment of this plant by cometary bodies.

The Love and Respect of Children.

If mothers could only realize what a critical period their children are passing through from the third to the sixth year, they would exercise more than ordinary care during that time. Not only physically, but mentally and morally, they are undergoing a change for better or worse, according to the care and attention they receive from their mothers and fathers. A father is no more exempt from certain duties toward his offspring than a mother. He should always bear in mind that his assistance in the control of his children is of more value to his tired wife than the presentation to her of a costly gift. It is at this time that the children begin to notice papa's and mamma's bearing towards one another; let this always be one of perfect courtesy and respect. Nothing so quickly destroys respect for parents as constant bickering in the presence of their children. The first thing a child should be taught is respect for their parents and elders; affection comes naturally with most children, and it is the most valuable aim in gaining control of their actions; next to this is respect, without it very little can be accomplished for the child's welfare. Parents should bear this in mind that children lose respect very soon upon hearing them disagree; using bitter cutting words to each other. This is inflicting the first actual pain these baby hearts have been called upon to bear. In the presence of this the child experiences conflicting emotions, which ends in pity for one parent and contempt for the other. O, parent, pause, consider before you lose this hold on the little being who has heretofore considered you perfect. Let there be unanimity of purpose in act, word and deed before those little creatures, who are so susceptible to every new impression, if you would preserve their love and respect.

Man and Monkey.

A baby gorilla is much nearer in physical constitution to a human baby, than the full-grown gorilla is to the mature man; thus indicating that the process of development within the lifetime of an Anthropoid is not in the direction of improvement or further approximation to the human type, but is it in the direction of retrogression, or further removal from the human type? "A great chasm," Professor Hartmann says, "between man and Anthropoids is constitut ed, as I believe, by the fact that the human race is capable of education, and is able to acquire the highest mental culture, while the most intelligent Anthropoid can only receive a certain mechanical training. And even to this training a limit is set by the surly temper displayed by the Anthropoids as they get older." So that it would seem as if the development of the Anthropoids morally, if we may so use the word here, is, like their physical development, not one of progress or improvement *in the individual*. The large apes, therefore, with all their striking resemblances to the human form, are not moving nearer towards man, but merely remain man-like.—[Chamber's Journal.]

Table Manners.

Perhaps the most essential part of table etiquette is care to give the conversation a desirable turn. The greatest thought should be exercised to talk of only agreeable topics at meals. The mutual forbearance which prompts the neat dress, the respectful bearing, the delicate habit of eating, the attention to table etiquette, should always make the mind put on its best dress, and the effort of any one at a meal should be to make himself or herself as agreeable as possible. No one should show any haste in being helped, any displeasure at being left until the last. It is always proper at an informal meal to ask for a second cut; to say that rare or undone beef is more to your taste than the more cooked portions; to ask for another cup of tea or coffee. But one never asks twice for soup or fish; one is rarely helped twice at dessert. These dishes, also salad, are supposed to admit of but one helping.

Devotion of a Parisian Husband.

Not long ago the husband of a lovely little woman, whom he had but a few weeks before led to the altar, saw her safe into a carriage in which she was setting out to make some calls. She was the very light of his eyes, and they had spent few hours apart since the wedding-day. Imagine his state of mind when late in the afternoon she was brought home senseless and almost unrecognisable. But I must go back a little. The horse that drew the carriage slipped in rounding a corner, the vehicle turned over, and the face of its occupant was terribly mutilated with broken glass from the windows. When the crowd which soon surrounded the carriage extricated the poor little prisoner, she was taken insensible into the shop of the nearest chemist to have her injuries examined. The cuts and scratches were dreadful but the worst was a gash from mouth to ear, from which a long piece of torn flesh hung. The poor hemist seems to have lost his head at the sight, for instead of sewing the piece in place again, he cut it off, and seeing that the patient remained unconscious he washed his hands of her as quickly as possible, and saw her driven in a cab to be taken home. The doctor who is called in breathless haste, exclaims upon the butchery of the chemist's surgery, and says there is nothing to be done but to take a piece out of the arm of the poor victim to supply the place of that which the chemist had so stupidly cut off. But the half frantic husband will not hear of it, and taking off his coat and baring his own arm, offers it to the doctor and bids him cut from that, and not touch her with his knife. "But," says the doctor, "one mutilated person is enough in a family, my dear fellow. Besides, the pain would be horrible." However, the heroic young man stuck to his point, and, it is said, went through the operation with a smile on his lips, remarking they had vowed to have all things in common, pains as well as joys. The doctor did his work deftly, the traces of his needle are already faint, and he says that when the healing process is complete there will scarcely be a visible trace of the terrible accident.—Max o'Rell, in Pittsburg Despatch.

Helen Jackson never wrote truer words than these, which were penned about one year ago: "It is a piteous thing to see how, in this life, the gentler and finer organized nature is always the one to suffer most, and come off vanquished in collisions, and the coarse-grained, brutal one to triumph."

The pleasures of the world are deceitful; they promise more than they give. They trouble us in seeking them, they do not satisfy us when possessing them, and they make us despair in losing them.

Stock Notes.

Messrs. Frank R. Shore & Bros.' sale of thoroughbred Shorthorns will take place at White Oak, five miles south of this city, on June 7th.

It may be of interest to record that the winner of the Grand National last week—"Gamecock," a horse which also won the seventh annual steeplechase on the following day—was sired by a horse called "Revolver," which was some years ago shipped to Toronto by the veteran exporter, Mr. Simon Beattie. "Revolver" unfortunately died some two years ago. There must, however, be several hundred of his descendants in Canada, and Canadians may congratulate themselves upon the presence among them of such excellent blood.—[Can. Gazette.

Notices.

Many of our readers would find it to their interest to examine the harvesters, mowers, reapers, horse rakes, plows, etc., manufactured by Frost & Wood, of Smith's Falls, Ont.

Attention is directed to the advertisement of Messrs. J. F. Millar & Son, of Morrisburg. We understand they have been very busy this season manufacturing the New Model Disc Harrow, which is getting a large sale throughout Ontario. Also, the Warrior Mower, which is still the favorite with many leading farmers. See detailed account of it in the advertisement.

A NEW PERIODICAL.—The Grip Publishing Company, of Toronto, have commenced the publication of a new monthly periodical, entitled Grip's Own Library. The first number is made up of "Good Things from Grip," being comic pictures and comic reading selected from the pages of Grip. It is printed on the finest calendered paper, and at the price of ten cents is a credit to the publishers, and will no doubt meet with a very large sale. The second number will be entitled "Jubilee Jollities," to be issued June 1st, and a very large edition is being prepared in anticipation of an enormous sale.

A thrifty farmer says fifty cents worth of awls, punches, linen thread and shoemaker's wax, will save $10 in harness repairs in twelve months.

At the mammoth dairy show recently held in New York, at which a series of butter tests were conducted, the Holstein eclipsed the Jerseys considerably.

If you have not provided a soiling crop for your cow, don't neglect to feed them some timothy or clover out of the hay-field, if your pastures begin to run short, occasioned by drought or keeping too many cows, or having short pasturage.

There is too much talk about breed and too little about individuality. Individual cows of the same breed often vary more in milk production than average cows of different breeds. You should therefore give greater attention to the points, also making tests if possible, and less to breeds and pedigrees.

As the warm weather advances, watch the under side of the perches for the red mites, as this is where they swarm in myriads during the day and suck the life fluid from the birds at night. Be sure to watch for them, and you will be almost sure to find more of them than you expect.

Jubilee Notice.

On the occasion of the Queen's Jubilee, June 22nd, we will be in our office in the forenoon, to read and receive suggestions, and to consider in what way we can do most good to the Queen's subjects in Canada, or in all the British possessions. Suggestions are solicited by mail or otherwise from those who desire to devise means for doing the greatest good to the greatest number. Beneficial thoughts often occur to many of you, and should be made known and acted upon.

Swindling Poultry Breeders.

The common supposition is that fancy breeders are swindlers, but this is a delusion, as no class of persons are more honorable than the breeders of poultry. The majority of the complaints come from those who do not understand the points of the breeds, and who also expect eggs to hatch under all conditions simply because the prices paid were above those asked at the store. Many purchasers do not know that chicks from black parents often have white on them at first, and the breeder is at once classed as a swindler, while others are not aware of the fact that out of every one hundred birds raised only one-tenth will be fit for the show room. The breeders have so many obstacles to contend against that many of them will not sell eggs at all, and we venture to say that they greatly rejoice whenever a swindler is detected and exposed.—[Farm and Garden.

The Phosphate Industry of Canada.

There are at present eight phosphate mines carrying on active operations in the neighborhood of the Lievres River, Ottawa Valley. They are situated at a distance of from nine to twenty-three miles north of the village of Buckingham; and are known as the Emerald mine (American company), the Little Rapids mine (Canadian owner), Battle Lake mine (Anglo-Canadian Phosphate Company), McLaren's mine (Canadian owner), the North Star mine (American company), High Rock mine (English company), Union mine (American company), High Falls mine (Anglo-Canadian Phosphate Company). Between 400 and 500 men in all are employed at these mines. Machinery of some kind is used at most of them, and air compressors are employed at the High Rock, Little Rapids and North Star mines. Besides these mines several other phosphate localities on the Lievres have been worked at various times, and with varied success.

The deepest mine on the river, the North Star, has already sunk to the distance of almost 450 feet from the surface. The second deepest is Battle Lake mine, which has reached almost 250 feet in an inclined shaft. The Anglo-Canadian Phosphate Company, the owners of the Battle Lake and High Falls mines, are also working on a large scale a mine in North Burgess, five miles from Perth, and known as the Otty Lake mine. It is one of the very best phosphate mines in Canada. An air compressor, capable of working seven steam drills, has been put in, and proves very serviceable in working the rich phosphate veins on the property. The outpnt of phosphate in 1886 was 18,968 tons, as against 23,849 tons in 1885, and 20,747 tons in 1884. This falling off in product was largely due to the low price offered for Canadian phosphate, and is only temporary.

The phosphate is shipped down the Lievre in scows in the summer time, and loaded at Buckingham on cars for Montreal, whence it is shipped to the various markets in Great Britain and Europe. The quality of the phosphate is very good, some shipments averaging over 85 percent phosphate of lime. One shipment from the North Star mine averaged 86.48 percent.—Ottawa Journal.

Complimentary Letters.

I am very much pleased with the ADVOCATE; would hardly know how to do without it. Have received a great deal of useful information from its pages in the years I have taken it. I am satisfied it has put many a dollar in my pocket.—THOMAS N. ALLEN, Adolphustown.

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Please find my subscription for the FARMER'S ADVOCATE. I like your ADVOCATE AND HOME MAGAZINE well, and so long as you with your manly and unexcelled vigor combat the enemies and monopolies organized against the true interests of the farmers of our fair Dominion, so long will the ADVOCATE wield an influence which will tell for the future weal of our Canadian farmers. I have received much good advice and many useful hints through its columns.—JOHN ROBINSON, Sandfield P. O., Manitoulin Island, Ont.

Enclosed find my subscription to your excellent paper, which has been a welcome visitor in my family for many years.—ROBERT WILKIE, Blenheim P. O., Kent Co., Ont.

We are very much pleased with the ADVOCATE, its monthly visit is very welcome as well as profitable to us farmers. I intend to try and get some new subscribers for your paper, as I believe it is the best agricultural journal published in America.—MORIS TINKESS, Avonmore, Ont.

Inclosed please find the sum of $1, bing my subscription for the FARMER'S ADVOCATE for the year ending 31st Dec., 1887. Please excuse delay; I lost your form and delayed in hopes of finding it. I consider your paper the best farmer's paper in the Dominion, and would not do without it for twice the price.—JOHN FORSYTH, JR., Alberton, P. O., P. E. I.

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I have been taking the ADVOCATE for ten years, and find I cannot do without it. It is undoubtedly the best farmer's paper in Canada.—WILLIAM CLARK, North Wiltshire, P. E. I.

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I consider the FARMER'S ADVOCATE the best agricultural paper I have ever read.—J. DOAN, Drayton, Ont.

I cannot afford to be without your paper on account of the many very excellent articles usually to be found therein on the subjects of farming, stock raising, etc.—WM. PALING, North Seneca.