

Phil, the Fisherman's Son.

"So now, what're ye goin' ter do? Ye lost the chanse o' goin' on the Northern Light, an' ye wuz on'y jost in time, o' course, to lose the job ashore. Ye ain't any like yer father, an'—"

"Oh, don't ma'am," pleaded the big boy at the window.

"An' ye ain't like yer brother—both on 'em layin' out there on Georges till the las' trump soun's. Ken ye tell of ye've got any spunk er goahead about yea, at all, 'sides wantin' ter go ter school?"

Phil did not answer, only looked sullenly and unseeing out of the window at the driving sleet that threatened at times to dash in the panes. When an occasional hull came, a glimpse of the "backshore" was caught, with the ocean spray dashing to an enormous height along the rocky coast. The storm of words from Phil's stepmother, and the raging of the elements without both helped to stir up a strange commotion in the breast of the fisherman's boy. He looked out, and felt that he would rather face the sleet and the wind.

Now, as he gazed dully into the up-roar without, in an instant his eye dilated, and his vision suddenly glowed with a certain intelligence that nearly betrayed itself by a quick ejaculation from his parted lips. He got closer to the window and looked more intently. Then, without a word he jumped to his feet, and, catching up his hat, made for the door.

As he passed out into the yard, he stopped at an old shed, and taking up a gun and a heavy bank of cordline that lay in a corner, he was out and away in a moment, making for the "back shore" as fast as his sturdy legs would carry him. He followed a beaten path over knolls and hollows, and keeping his gaze fixed steadily before him, he at length buffeted his way through the fierce tempest to the long popple beach.

Yes! There was no doubt of it, now—a schooner had struck on Wolf Bar, and most of the crew had taken to the rigging. The tide was low, and the storm had tossed the vessel upon that unlucky shoal, where so many others had found their grave.

Phil did not stop to ask himself what was the best thing to be done. He knew what to do, as he had seen his father act promptly in a like situation only two winters before. It was impossible, he knew, for his line to reach the schooner from the beach. There was nothing for him but to get out on Table Rock, ten feet distant. He watched his chance. Meantime, every passing moment was one of wretchedness and misery for the shrieking men out there in the storm. At times the breakers were enormous. Phil must hurry if he would do anything.

Now or never, he thought, as the fury of the waves lessened a bit. Holding the gun high over his head, without hesitation he ran down into the bitterly cold water that surged and swelled to his arm-pits, but he reached the rock safely, and climbed upon it, soaked and shivering. He could hardly keep his feet, but he uncoupled the line, and fixed the stick fastened at the end of it into the gun muzzle. With his heart pounding fiercely, he raised the gun, and carefully sighting over the vessel's deck, he touched the trigger.

Like a live thing and almost as swift as light, the line shot out from the rocks. Holding it end firmly, he watched it anxiously as the wind bore it out of its course, until—thank God!—it fell and hung over the bow. He saw one of the poor fellows force his way along the flooded decks and grasp the line just as it seemed about to be blown away. He watched him with all his heart in his eyes as he made his perilous way up the rigging, with a heavy rope bound to the line. In a moment Phil heard:

"Pull away!"

Jumping into the seething water again, and just escaping being caught in a breaker, he ran high upon the shore, and hauled in the rope as rapidly as he could. Winding its stout end about the base of a small boulder and securing it, he waved his arms to the men in the rigging. In their dangerous place they made the rope taut and attached to it a string running loop of canvas. A brave young fellow was the first to test it, and drawing himself along with all his strength, he soon found himself by Phil's side. Back went the loop by means of a line the men had tied to it and ashore came another man, and so on, until the crew of fourteen found themselves thanking God and blessing Phil that they were safe ashore again, though they were the losers of nearly all their earthly possessions.

Somehow or other, the storm-beaten party at last found its way to the house of Mrs. Torrey, Phil's stepmother. That Mrs. Torrey did possess a heart was evidenced by her sincere and tireless efforts to make the half-drowned men comfortable; and that she succeeded in doing so was plain from the thankful ejaculations of the crew.

"Phil," she said to the boy, later on; "I c'n see now why it wa'n't meant ye sh'd go out in the Northern Light; an' I hope ye haint took it too much ter heart, my speakin' ter ye so. We'll see if ye aint some way in the world 'at ye c'n go ter school, ef ye want ter. I shan't oppose ye no more. This day's doin's is enough ter satisfy me 'at ye're o' the hero sort, like yer father wuz."

Phil did go to school, "worked his way," as heroes often do, through a college, and is not only an ornament but an honored leader in the com-

munity in which he lives.—Frank Walcott Hutt in Portland Transcript.

State Aid for Road Improvement.

Reports of some of the agricultural meetings recently held in Illinois indicate that the subject of state aid for the improvement of roads is meeting with some opposition. The objection raised was that a state tax would mean that to just the extent of the state tax paid by him, a citizen of one county would be made to pay for improvements in another county that would be of no personal interest or value to him.

Is this position well taken? Can there be a great public improvement in one part of a state that will be valueless to the people in other parts of the state? The people in the rural districts of Illinois probably feel that they have no interest in the public improvements in Chicago, but is it likely that if no improvements had been made; if Chicago had remained the mud hole it was when old Fort Dearborn was built, that Illinois would be the great state it is today? Would it have made the great and rapid development it has experienced without the stimulus of a great city reaching out for its products?

No thoughtful man questions the wisdom shown by the government in encouraging the building of transcontinental lines of railroad by large grants of land or money, yet the same sort of an objection might have been made when the Union Pacific was built, that is raised now when state aid in the building of wagon roads is proposed, viz: that it would only benefit the states through which it passed. It is generally admitted that the railroads are the arteries of commerce, and therefore of value to every citizen of the United States. If this be true, surely the wagon roads are the veins of commerce and because they are nearest to the products on which the citizens of our country depend either as consumers or exporters, the more valuable. When the country roads are impassable, as is frequently their condition during the winter season in the corn belt, farmers are unable to haul their produce to the railroads and the shortage in supply that such conditions breed, causes a rise in prices, of which the middleman with a stock on hand, reaps the benefit. As soon as shipments are resumed the market is temporarily glutted and prices drop before the farmer has a chance to realize on his shipments. If all the avenues of trade could be kept open all the year around, it would undoubtedly be better for all concerned, certainly for the railroads, who would rather have enough business every day in the year to keep all their cars employed than to have such a rush at certain seasons that they are unable to handle it. That the railroads are alive to their interests in this matter is proved by the action of some of them in shipping material for road improvement free or at a nominal cost.

If the grain grower could be sure of good roads for hauling and good shipping facilities all the year around, he would not feel obliged to sell his grain as soon as it is threshed rather than take the risks of getting it to market later in the season, as he is often constrained to do now. Nothing would so greatly aid in the economical distribution of produce as good roads. When the corn crop falls in one state the feeders of live stock want to purchase the corn of some other state and the condition of the roads in that state over which it is hauled may considerably affect the price they will be compelled to pay.

In a country like ours, what is for the best good of the whole is for the best good of the individual and no one can afford to oppose great public improvements because he fails to see direct personal advantage to himself. Such a spirit indulged in and carried to its legitimate ends would overthrow all our institutions, for the whole scheme of government, of civilization itself, is the combined effort of all for the good of all. As the good book puts it: "No man liveth unto himself." We cannot get very far from the golden rule without retrograding commercially as well as morally. In a later issue we hope to give full particulars of the road improvement bills recently introduced in the Illinois legislature by Representative Curtis.

Horse Sales at Chicago.

Sales at the Chicago horse market during the week ending January 26 included an unusually large number of coach and draft stock of a superior order. There was considerable demand on the part of eastern buyers some individual animals bringing \$250 to \$350 and extra choice teams of 4,200 to 4,440 pounds, \$600 to \$700. A good many orders for farm chunks weighing 1,200 to 1,500 pounds, were placed at \$90 to \$125. Bussers brought \$85 to \$120. There was good inquiry for coach horses, which sold for the highest prices of the season, high class single animals ranging from \$300 to \$1,000, while fancy teams realized \$600 to \$1,175. Exports did not equal in numbers those of the corresponding week last year. Dealers say that the volume of Chicago's export trade thus far for 1901, is lighter than it has been in three years during the corresponding period, but they anticipate a larger business next month.

Rotation economises applied manures by making use in due time of all their fertilizing ingredients.

The greatest caterpillar in the world is the yooman tung; it kin make skandal fly clean across the continent.

The largest mosquitoes in the world are found in the arctic regions.

Clever Eskimo Dogs.

"Talk about dogs," said the old Alaska miner, whose remarks have been published in the New York Sun, "why, these curs of high and low degree in the east are not in it when compared with the Alaska mamaloot. "From puppyhood up he takes to harness like a duck to water. He goes at it with vim and vigor characteristic of his ancestors. Rig the pup in any old harness, and it's amusing to see how good naturedly he buckles down to business, staying with it like an old stager, never tiring, never feeling discouraged. One becomes very much attached to these exceedingly useful and companionable animals, and they always improve on acquaintance. The longer you know them the better you like them. With white men they are at first disposed to be a little shy, but they gradually make advances, and ultimately take the visitor into full confidence.

"When we pitched our tents on Nome beach last summer we had a little experience with huskies from the Eskimo huts. In our absence from the tents these dogs were inclined to take liberties with our provisions, but they did it in such a scientific manner that we felt more amused than outraged. The dogs would form a skirmish line on the outside, and then send their most skilled thief into the tent to reconnoiter for meat and bread. If this thief failed they would send another, and if he was successful they would divide the plunder in an intelligent and equitable manner as dog thieves were capable of doing. These dogs were honest Injuns at home. When they became better acquainted with us we could leave the mess chests open and they would never touch anything; they were on their dog honor, and never violated it, only accepting food when it was offered to them.

"I'm led to these remarks," said the old miner, "from seeing men and boys on the streets endeavoring to break all manner of domestic dogs to harness. They can't do it; it's utterly impossible, because the poor brutes were not born that way. The Newfoundland, or St. Bernard's don't appear to have any interest in their new calling, and they show it in their downcast faces, and they show it in their downcast tails and dejected countenances. You must remember that dogs have very expressive faces, and show their feelings in a remarkable degree; they are the only animals that laugh and cry. They have shared my joys and sorrows in the bleak arctic, and this is why I have a tender heart for dogs.

Humus.

THE STARTING POINT OF FERTILITY.

To the Farmers' Review: During the past few years we have heard a good deal about humus, yet so little is it understood that some remarks in reference to it may not be amiss. There are a good many farmers who can talk quite readily about the elements of fertility, but their knowledge of them seems almost useless in practice owing to their not understanding humus. They seem like people who have learned sufficient words to speak a language, but never having learned the grammar of it are continually misplacing the words. Now, I don't want to be understood as casting any reflection on farmers' English, but what I mean to exemplify is that until we ground ourselves properly in the principles underlying humus in the soil we cannot cultivate very intelligently. If all the countless experiments in manuring carried on by the agricultural stations had been guided by first established principles, we would not today be floundering in the mire of empirics on the manuring question. The decrease in the fertility of our farms can invariably be traced to destruction of humus and want of balance in the humus restored.

It is difficult to find a simile to illustrate humus, but perhaps the reader may gather some idea of it in contemplation of charcoal. Charcoal, like humus, results from the partial destruction of vegetable matter, in which the more readily combustible gases are driven off. Charcoal will not readily decompose, yet it can be burnt up, and its constituents largely pass off into the air, leaving only the mineral soil elements in ash. The manure heap, consisting of straw and dung or a pile of grass, practically burns until the more readily combustible gases are driven off. If it has been kept sufficiently well wetted to prevent "fire fang," there remains a mass of black and brown stuff, which we call humus, and which decomposes only very slowly, practically conserved by its own acids. This stuff, like charcoal, has important absorptive power, and like charcoal preserves for a time from decomposition what it absorbs. It has within its own structure all the mineral elements and most of the carbon and nitrogen of the plant or manure from which it is derived. It absorbs from the soil the mineral elements which are constantly being set free by the various agents at work there. In this way it becomes a storehouse for plant food, and it is from it the plants seek and obtain their food. As a matter of course this humus is not altogether indestructible. It is consequently breaking down, or perhaps more correctly burning up, and the carbonic acid resulting from it frees more possible plant food from the soil basis. The passing of seasons leaves more material to die on and in the soil, to form more humus to absorb the newly freed ingredients. Thus in time the soil becomes what we term rich and this is the condition of virgin soils. Thus the young plant at each successive season finds its sustenance in the food prepared and

stored up for it by its ancestors and parents, and for which they have left the charcoal of their bodies a storehouse. If we would keep up the condition of fertility we find in a humus virgin soil we must provide first for keeping stationary the percentage of humus. From time to time we must add sufficient new earth from the subsoil to allow of a renewal of the mineral ingredients for humus storage. Also we must make provision for the storage of nitrates, either from the atmospheric air or from nitrate salts. We find it is necessary to keep up the balance of the plant food contained and stored in the humus, just as necessary indeed as it is to balance the food for our animals by using as foods the grains of ripened fruits of the plant as well as the fodders. Here is borne in upon us the tremendous value of the legumes (pod plants and clovers) as manurial agents, for they supply nitrogen as well as humus.

Suppose we have, as most farmers have, destroyed the humus condition of our soils which it took nature many years, perhaps hundreds of thousands, to accumulate by leaf, straw and insects. What shall we do? Can we readily restore it by plowing in legume crops? Certainly we can, and if we have the courage of our convictions we will do it thoroughly and in a comparatively few years. But will we then have the original virgin condition in our soil? No, and for several excellent reasons. We have taken from the soil we are now about to reclaim so much of its available mineral matter, particularly its phosphoric acid and lime, that our humates will be deficient in balance even if we could produce them rapidly enough. Then we can manufacture humus pretty rapidly, but its gradual decay and consequent action in liberating soil ingredients is too slow to fully answer our purpose. With the removal of the lime and magnesia the phosphoric acid may have fallen a prey to the steel-jawed iron and alumina and is held so tightly that the weak acids resulting from the destruction of the humus cannot readily release it. The silicic acid also suffers in a like manner and as a result we have such a poorly balanced plant food in the humus that we do not get the full benefit in ripened crops that our plentiful supply of nitrogen would predicate, and our straw but poorly supports what grain is formed.

In a later article I will take the opportunity of expanding this subject to show conditions necessary to the production of greater crops than normal soils are capable of.—Thomas Wallace.

Energy in Milk Production.

A bulletin of the Storrs experiment station says:

The digestive tract prepares the food for assimilation into the tissues, the udder elaborates the milk, the heart forces the blood with its load of food and oxygen through the body, the lungs supply oxygen to the blood and remove from it the products of the oxidation which takes place in the body; but the brain and nerve system are concerned in all these operations. Through the influence of this system the activities of all the organs are aroused, guided, controlled, and harmonized. In the cow the heart and lungs are ever active. The digestion, absorption and assimilation of food, and perhaps the mysterious elaboration of milk, are constantly going on. Collier estimates that a cow giving an average quantity of milk produces, on an average, 138,210,000 fat globules per second during each twenty-four hours. This and the secretion of the other constituents of the milk illustrates the amount of activity in the milk organs alone, and suggests the need of a highly developed nerve system. The more pronounced of the outward signs that indicate this nerve development are a bright, lively and prominent eye, this prominence causing a dish face; a wide forehead; a wide junction of the skull and spinal column, indicating a large brain; a large, prominent backbone, giving room for a well-developed spinal cord; a long, slim tail; and considerable energy and vigor and style of action.

The Negro and the Mule.

Why is it the negro is so successful at managing the mule, and is so unsuccessful at managing a horse? It is generally admitted that both these propositions are true. The negro is a noisy driver; while he is teaming he is constantly shouting at his beast of burden. The mule is by no means as sensitive to noise as the horse is; he is less excitable and more patient. The horse's excitement exhibits itself in violence, that of the mule in stubbornness. The phrase "horse sense" is founded upon absurd error, for the horse actually has very little of that which humanity terms "sense." Yet, have we a right to expect any vast amount of sense in an animal whose eyes are so constructed as to magnify objects from eight to twelve times their actual size?

While it is true that the negro soon ruins the average horse, it is not true that he is more successful than other people in the management of the mule. The mule is adapted to every class of driver, but the negro can be adapted only to the mule, and this, we suppose, is really why we indulge the humorous heresy that nobody can get along with the mule but the negro. The fact is that the mule is the only quadruped that can get along with the negro.—Chicago Record.

Clay soil that is well drained and full of humus will be frozen to a greater depth than soil that is full of water.

Hard clods will hold neither heat nor moisture and hence cannot be used by the feeding rootlets of plants.

Wood Preservation.

There is now being introduced into England by the Xylosote Company a process designed to prevent decay in wood, and known as the Hasselmann system. In this the timber to be treated is enclosed in a cylindrical vessel in which a fairly high vacuum is produced by a suitable air pump. When the sap has been drawn out of the pores under the diminished pressure a solution of metallic and mineral salts is allowed to flow into the vessel, and the wood is steeped in this for some hours under steam pressure and at a temperature of about 130 degrees C. Then after being dried, it is ready for use. The impregnating liquid is a solution of the sulphates of copper and iron whose preservative properties are generally acknowledged, together with some aluminium, potassium and magnesium salts. The inventor of the process maintains that the copper destroys any germs of decay that may be present while the iron combines with the cellulose, or woody fibre to form a compound which is insoluble in water, and hence cannot be washed out by the action of rain. The salts in this way are made to permeate the substance of the wood, and are not merely deposited mechanically as minute crystals in the pores by the evaporation of the solvent. It is claimed for the process which apart from the drying takes about four hours, that it greatly reduces the inflammability of the wood, enables it to take a brilliant polish and increases the hardness of certain soft woods to such an extent as to render them available for purposes to which formerly they could not be applied. Another advantage attributed to it is that it saves the expense of seasoning in the ordinary way since perfectly green wood after treatment neither shrinks nor warps. The process appears already to have gained considerable recognition abroad; thus it is stated that the Bavarian State Railways and postoffice have contracted to have all their sleepers and poles up to 1905 treated by it, while the Swedish government has adopted the system and ordered 600,000 sleepers preserved by its use.

Like Begets Like.

A new beginner asks: "Do you think it likely that the daughter of a sow that has been noted for her large litters will be a breeder of the same sort or more so than a sow from a dam that has always had small litters?" We have to say in answer to this that it is to be expected that she would inherit the good characteristics of her dam. If she did not in some measure, there would be what is called "atavism," or harking back to the characteristics of a remote ancestor, which is unusual and not to be counted upon. The whole plan of breeding is based upon the truth of the saying that "like begets like." We would not expect to get a good milking cow from a poor milking one unless the sire influenced the progeny towards milk production. The latter effect is to be counted upon to help the prepotency of the dam, but the dam should also have prepotency towards the production of that product for which she is kept. The scrub cow is bred to withstand the rigors of the climate without shelter and to live upon poor food, but she has no prepotency towards the production of a large flow of milk or towards producing a maximum amount of flesh or fat from a minimum amount of food. The breeding of sows is based upon the same laws as those applying to cattle breeding and indeed the breeding of all animals. The sow is expected to produce after her own kind and like herself, and the boar is to be chosen possessed of those attributes and characteristics which will not counteract the prepotency of the sow, but being of the same sort, join with it and make the progeny even stronger in those attributes than is either of the parents, or at least as strong. The sow of a dam that had always proved to be the breeder of small litters would be likely to have small litters also unless she were bred to a boar that had descended from a line of females noted for their prolificacy. The boar might not altogether overcome the prepotency of the sow to produce a small litter, but it would be found that he would help matters and in time the sows of the small litter-producing sow would increase in their prolificacy and so prove profitable breeders. In the same way the breeding qualifications of the family of large litter-producing qualifications could be improved by mating with boars having the same sort of prepotency, but would be spoiled in time by breeding to boars from the other kind of family. From these points it is to be seen that, in breeding, prepotency towards a desired end should be present on both sides of the family, and when it is there, it is to be improved upon by continued breeding of the males and females of the same family or line of descent. So well was this proved by the early breeders that they hated to change the male which had given good results, for they found that his work as a breeder was even stronger in the desired direction when he was bred over and over again to his own offspring or their descendants. In fact, it was found that in-and-in breeding would clinch the progress made by selection and establish the strongest kind of prepotency. Such prepotency is found today in the capacity possessed by the Poland-China hog to make lard out of corn, a prepotency which has been established by the continued breeding of the same line of blood. When carried too far, close breeding gradually lost its value and showed bad effects in loss of vitality and constitution and invariably

less likelihood to produce large litters of pigs. A new beginner, then, must select the right type of sows and boars possessed of prepotency to produce the product or type he desires. He may clinch his work by a few crosses of close breeding, but must not go too far or he will defeat his own purposes by weakening his hogs constitutionally or as producers of litters. "Like begets like," 'tis true, when all things are favorable, but man may interfere with this law of nature either towards improvement or the reverse and so must breed his animals with care and intelligence.

Sheep in New Zealand.

A correspondent in an exchange writes of New Zealand's sheep industry as follows: Sheep farming may fairly be called the leading industry of New Zealand. There are over 19,000,000 sheep in the colony. During the year ending March 31, 1900, wool to the value of 4,749,282 pounds sterling, and 3,339,153 carcasses of frozen mutton and lamb were exported. Considerable capital is invested by individual farmers, as some of the flocks number over 100,000 sheep. Anything under 25,000 is considered a small flock. It is said that there is not much money in the business of late years, and at best the profits are not more than interest on the money invested. Much of the land devoted to this branch of farming is extremely rough and hilly, and to a stranger at first glance would appear to be quite worthless. It is astonishing, however, to see the kind of country over which the sheep will graze, and many districts quite useless for any other purpose of agriculture will carry two to three sheep to the acre. In southern districts where the winters are more severe, it is the practice to grow turnips, into which the sheep are turned during the winter. In other districts they depend entirely on the pasture.

Wyoming dispatches say that reports from the north say a month ago cattle men along Powder river and Otter creek sent warnings to the sheep men to get out of the country. The flockmasters refused, and a band of masked men captured a sheep camp and drove 2,000 sheep over a cliff, killing them. R. R. Seway owned the sheep, and he has offered a reward of \$2,000 for the arrest of the raiders.

The Sheep States.

"Today the seat of the sheep-rearing industry of the Union has shifted from the Middle West to the plateau region between the Rockies and the Sierras. Ohio is still doing very well in the business, with nearly 3,000,000 head, but she has dropped from first to fourth in the list of mutton-producing states. New Mexico is at the head, with more than 4,000,000; Montana has nearly as many, while Wyoming leads Ohio by a few hundred thousand head. Idaho closely follows Ohio in the rating. Oregon, California and Texas each has about 2,500,000 sheep.

Habit of the Farmer.

In one of the publications of the Field Columbian museum Dr. Elliot gives a description of the curious little North American rodent known as the saweell, and often called the mountain beaver or farmer. The latter name is derived from its habit of making hay. The little rabbit-like animal excavates its burrow in the neighborhood of a low-growing water lily. It cuts down the stem and leaves of this plant in great quantities and carries it to the mouth of the burrow, where it is spread out to dry in the sun. When properly made into "hay" it is carried into the burrow, where it is used for feed and bedding. It frequents swampy places in the vicinity of small streams.

The Canadians are elated over the fact that both their butter and cheese received high marks at the Paris Exposition. This strengthens their standing in the foreign market. The Canadians are striving to win on the butter trade as well as on the cheese trade, so far as the English market is concerned. However, we cannot believe that it will be an easy matter to build up a large foreign trade even for Canadian butter. They are hampered by the same circumstances that keep us down—the inclination of the home market to take at a good price all the first-class product that can be turned out. That this state of affairs is not imaginary is proved by the Canadian exports of dairy products last year. Their exportation of cheese was increased and the price received was larger than the previous year by 25 cents per box. On the other hand the exports of butter dropped from 451,000 to 256,000 packages, though the price in England was 70 cents per package more than last year. The amount of butter being sent to England by Canada is only equal to the amount sent by Australia. We do not believe that Canada will ever be able to compete with the other colonies in this matter for the simple reason that she has access to populations at home that are used to paying high prices for what they want.

A system of rotation of crops should be so arranged as to economize the natural supplies of fertility contained in the soil. Different crops feed upon different soil ingredients, or at least they require these ingredients in varying quantities. A proper succession of crops brings all the elements of plant food into use and hence prevents any of these from lying idle and being wasted, as for example, by being carried away by water in its constant percolation through the soil.

What we call a spider's thread consists of more than 4,000 threads united.