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The third is the Black Annett, as the mother parent, crossed with Oliver or Senator. The influence of the male parent in this cross is very striking; the small limbs of the mother tree and the form, have practically disappeared; while the strong, long-branched, upright habit of the male parent is conspicuous in every seedling.

Fourth and lastly, is a section of four-year pear trees; the mother parent being the only non-blighting sort introduced by Prof. J. L. Budd, nearly twenty-five years ago. It is as upright in habit as a Lombard Poplar. This tree was crossed with the Anjou. Not one of a goodly number of trees has the form of the mother parent, all are in form as you see in the view, but several of them closely resemble the Anjou in bark and general appearance.

While the thoughts herein presented will not seriously conflict with the well established laws of breeding, they may serve to awaken thought, and throw some side light onto this most intricate problem of inheritance, which caused a Darwin to exclaim, "that the whole subject was wonderful." But in its unfolding as witnessed in the last half century, it requires no prophetic vision to see in it, and through it, one of the great uplifting forces for the human race.

THE BREEDING OF PUREBRED HOGS AND THE BUILDING UP OF A TRADE.

By A. J. LOVEJOY, *Roscoe, Ill.*

The above subject was given me by your committee of arrangements, and is one that covers a wide scope, one that must treat of many years of trials and troubles, dark days and bright ones, successes and failures, bitter experiences and final achievements; yet with all this it is one of the most interesting as well as profitable ventures that can be carried on in connection with the farm.

To enter the arena as a breeder of purebred hogs, one must have certain qualifications born within him, first and foremost of which should be an unimpeachable character. He should be broad-minded that he may see beyond the present horizon; honest that he may always be willing to do as he would be done by, and not like some who believe in doing the other fellow first, thinking he would do you if he could.

Next he must be absolutely sure that he will like the business even during the most discouraging days, ever keeping his eye on the bright star of hope for final success be it ever so far distant. He must also have the element of stick-to-it-iveness, and should be ready, even when great black clouds appear on the horizon, to stick to his business and make it win. He must ever have that needed quality known as pluck. Having these qualifications with a love for the business and a determination to succeed, one may enter the ranks as a breeder of purebred hogs with a bright prospect of making it a financial success.

A CONSERVATIVE BEGINNING BEST.

To best insure success one should, as a beginner, commence in rather a small way, and gradually increase his herd as he grows in experience, the best though the most costly of all schools. One will run up against many perplexing questions that will require all there is in him to master. We have all seen the plunger, even in the hog business. He has figured out that, if Mr. A can sell a litter of pigs for several hundred dollars, he can certainly do as well; also that if one litter will bring so much, 20 litters will bring 20 times this amount; and it all looks easy to him on paper. He launches out perhaps with a good capital, buys many high-priced animals, and soon finds himself long on hogs and experience and short on cash.

Quite different is the case of one who starts in a moderate way, is willing to begin at the bottom and build up a trade and a herd that will be a credit to him and the breed he represents. He may be able to purchase but three or four sows to start with, yet he tries to get good ones, sows that are not only well bred along lines of popular breeding but that are good individuals of the breed he selects. If he buys a boar to mate with them, he sees that he is still better than the sows, that he may improve even from the start. He realizes that it is cheaper to have the best of animals for his foundation than to buy more and of a more common quality. He also realizes that there is a difference in popular strains of breeding. There are certain strains of blood in every kind of live stock that command more money than others. This may be for the reason that certain strains produce more prize winners than others, and also are more valuable as breeders, having the power to transmit their good qualities to their get to the third and fourth generations. One should, therefore, begin as near right as he can, with what knowledge he has, and what means he can command.

He should, if he has not already learned the lesson, obtain a knowledge of how these purebred animals should be fed and cared for. There is much in care and feed, some claim possibly about as much as in breed. He should feed always with a view to the usefulness of these animals as breeders, and for this purpose he need not go to great expense in purchasing every known "stock food" advertised. He can make up a well balanced ration almost entirely from the products of the farm. If he lacks one or more of the proper kinds of grain or other feed he may purchase something that will help balance up the ration.

For his sows during the period of gestation he can make a good well balanced ration as follows: Take equal parts by measure of good old-fashioned corn and oats, ground fine, and to this add an equal measure of good middlings, or what some call "shipstuff." If in winter and the hogs can get no grass, let him add some bright well-cured alfalfa, either run through the cutting box or fed whole. We generally grind the corn, oats, and cut alfalfa all together, while the amount of alfalfa is small and when ground with the other parts of the ration hardly shows, still it makes a green, thick sweet smelling heavy

feed so well balanced that it furnishes the flesh-forming and bone-making material so necessary to grow the unborn litter. I speak of this matter of a proper ration for brood sows that a young beginner may not make the error of feeding that easy and always ready ration, corn, corn, corn. Corn is all right for the fattening period in finishing hogs for market; yet one can even then add pounds cheaper and quicker by making the ration 80 per cent corn and 20 per cent tankage, as has been fully demonstrated in feeding hogs both for the International Show and for the Chicago market.

Corn fed to the brood sow carrying a litter is almost sure to cause bad results; the pigs will be farrowed very weak, with hardly vitality enough to even hunt for their dinner; and it is quite likely to produce a feverish condition in the sow, with a tendency for her to destroy her pigs. One other very necessary thing in the successful handling of the brood sows, is that they must absolutely have abundant exercise for best results. With the above combination of feed for a regular ration and with plenty of exercise one may be sure of good results at farrowing time, and that the youngsters will be strong enough to meet every little trouble that comes along during his first few weeks of pig-hood. There is still another matter, in the care of the sows, and especially of the sow with a litter—an absolutely dry bed, warm if in winter but always dry. Keep this clean, dry, and well disinfected with an occasional spraying of the animals with crude petroleum or some other of the many disinfectants, and you will avoid that pest too often found, the hog louse.

HOW TO GET A START IN SELLING THE PIGS FOR BREEDERS.

When one has gotten his first crop of pigs up to about six or eight months of age, he naturally begins to look about him for customers. I know of no quicker or better way for a beginner in this line of work, than to select a few of his best specimens, and fit them for the fairs. In this way perhaps better than any other can he make his first bow to the public. He should only show at the county fairs at first, where he should show what he has to the best of his ability, and in prime condition yet not overdone. Let him be on hand early and secure as prominent pens as he can, and above all things let him remain at all times with his exhibit, that he may answer all questions regarding them for those who ask. Right here is where many a man has failed in his sales, while he was over at the track looking at the races, some other fellow was selling the pigs. He should keep his exhibit clean, as well as the pens and surroundings and when his entry is called into the ring, let him be ready, and present them in the best possible form. Do not commence to call the attention of the judge to the good points of your animals, he undoubtedly can see these points as quickly as you can; what he is looking for is the weak spots, and he will find them too. If you are successful in winning a ribbon or two at your first show, you may well feel proud. Should you not, however, be so fortunate, do not go up in the air and proclaim in a loud voice that the judge does not know his business or that you will

never show at this fair again. Remember that the fair has probably been held for many years and it will continue just the same whether you are there or not. Better keep quiet and go and closely examine the pig that won over yours and if you cannot see where yours lacked go and ask the judge, he will be glad to show you. One should by careful observation soon learn what it takes to win and each year he should be able to come a little stronger and soon be winning his full share of the coveted ribbons. One should even at this first show be able to sell his best pigs to those who are always looking for something good. His second year he should come still stronger and should win a little more, and sell his pigs easier and so on each year, his trade and his acquaintance will grow, and each year he will find the business coming his way more and more.

By this time if not before, one should commence to advertise his herd through the best live stock publications in his vicinity; and once he places an "ad," let him ever after keep it before the public. Advertising is something that cannot be carried on spasmodically, but should be continued every week or month in the year and every year. What better recommendation could a man want than to have his "ad" appear for years in the same paper and only change of matter occasionally. In making up your advertisements, do not gush too much; state facts in as few words as possible, avoiding the use of many adjectives such as "crackerjacks," "world-beaters," etc. Just state what you have to sell and be sure you have the goods to deliver.

THE MAIL ORDER TRADE IN HOGS AND PIGS.

After all probably 75 per cent of the hogs sold by most of the old breeders are sold on mail orders, and it is the cheapest method one can employ. There is very little reason for dissatisfaction either on the part of the seller or the buyer if everything is done as it should be. One should, on receiving a letter of inquiry, be sure he has what the inquirer is looking for; and, if he has, he should describe it as correctly as he can; he should answer the inquirer promptly, and be sure to keep a copy of every letter he writes both regarding the selling of hogs and any other business he may do through the mails.

There is no reason why any man who follows the breeding of purebred stock should not either have a typewriter of his own and learn how to use it, and keep a carbon copy of every letter he writes, or have a letter press and copying book and take a copy of every letter, whether in script or produced with a typewriter. Here is where 90 per cent of all disputes originate; one forgets what he wrote, or what price he asked, or how he described the animal. If you get another letter asking further questions, look up what you wrote the first time.

Do not write long letters; be as brief as possible and fully describe the animal. I believe I could show you every letter we have received in twenty to thirty years and the copy of the answer. This is often of great value to us in our business, as we frequently receive a letter asking if we can furnish a pig not related to one purchased from one to five years earlier. It is but a simple matter to look up the whole

correspondence and also the stub of the pedigree sent, and even the name and date of birth of the animal on the breeding record.

After one has followed the county fairs a few seasons and has in a measure learned something of what it takes to win, he may widen his acquaintance by making a circuit of the State fairs; but remember, when you start out to make a State fair circuit, do not imagine you are going to clean things up by winning most of the prizes; nor had you better promise your wife a new piano from your winnings for you are now going to run up against the real thing. You will now meet the real artists, the P. T. Barnums of the show ring; and, while your geese may have all looked like swans to you at home you will be quite likely to find that they are only geese after all. Probably you will find you have secured but few if any ribbons at your first show. However, always look pleasant, even though you are knocked out come up smiling; do as I advised you to do when starting out to the county fairs when you were a beginner—come again next year and come stronger; you will, if your judgment is good, soon be winning your share of the "blues" and "purples," and each succeeding year you will learn better what to take out to win the coveted prizes. The acquaintances you make at the great shows will be of far greater value to you than what can be made at local shows, for to these great shows men come from every state, and they are the men who are willing to buy the best, and pay what they are worth. Besides all this, a ribbon won at one of these large shows is worth many times that won where competition is less keen.

ALWAYS SATISFY YOUR CUSTOMERS.

A satisfied customer is a living advertisement for you; and you should make it a rule to give satisfaction if complaint is made even though it is not altogether your fault. One may occasionally be imposed on but not often. Should there be complaint regarding a pig or hog shipped through a difference of opinion always try to do a little more on your part to satisfy the purchaser. With care in replying to inquiries as well as in describing the animal, complaints will be few and far between. Probably more complaints come from buyers of bred sows, than from any other source. Many make an error in shipping a bred sow too soon after receiving the order. She should be held till you are fully satisfied she is safe in pig, and this is not always sure even after she has passed the second period. A better way is to hold till she shows her own guarantee.

TAKE CAREFUL RECORD OF ALL THINGS DONE.

Never depend on your memory for anything, and especially do not try to identify your pigs without having plainly marked them. You may think you know every pig farrowed, but suppose you were taken sick and did not see them from the time they were two or three weeks old till they were two months old. You would certainly be all balled up, and with one to two hundred pigs it would be simply a case

of guess work. There are many systems of marking pigs, but only one that is safe and practical. Labels are simply a failure, and more will come out than will remain in, for six months. The best system yet discovered is the use of the harness punch, and a system of marks by which one can identify every pig up to a thousand head, and make no mistakes. These punch marks need not be made so that the ear will be disfigured at all; make the mark small, and do it when the pig is young.

Keep a private herd record that will show the name of every sow, as well as the name and number of her sire and dam, date of service, date litter was farrowed, the number in the litter and the sex, how marked, also the disposition made of each pig. In fact have a well regulated system of doing everything connected with the business and adhere closely to this at all times. Have every breeding animal recorded in the record association for the breed. If using several herd boars, keep a little book in your pocket showing just what sows are being bred to each, and each day go over this book and note what sows should be looked after. Know to a certainty every detail of the matter; do nothing in a slipshod manner. As your business grows, add every convenience possible; always be prepared for company; do not have to make excuses; keep everything shipshape. First impressions are generally the most lasting. Let your herd and surroundings be such that this first impression will be a good one. Do not let your herd show by condition, care, or general outlook that you are careless, and not up to your business. When you have a visitor do not "slop over" in praising the good points of your herd. Better let him do most of the talking. He will know whether you have good animals or not, and just how good.

Be as square in dealing with a mail-order customer as you would with him if present. In thirty years we have found the selling of hogs through mail orders very satisfactory indeed, and our orders of this class run up to many thousands of dollars annually from this source alone.

A WORD REGARDING THE PUBLIC SALE.

The public sale is also a good way to dispose of one's surplus stock and has no doubt come to stay. One of the advantages of this system is that it brings many breeders to the farm where the hogs are bred, and the purchaser can see the system and manner of handling the stock on this particular farm. Besides it brings the value of the animals all at once which can often be used to a better advantage than when it comes dribbling along in smaller amounts. We have also made a practice at home of holding annual sales, and have found them very satisfactory, and we feel that we have been quite successful in bringing the very best breeders to our sales from many States each season.

There are many little matters that go to make a satisfactory sale. First, only good animals should be catalogued for the sale, and these should be in prime condition yet not loaded with fat. Every hog or pig should be plainly labeled with a number to correspond with the

catalogue number, and every convenience should be made for the crowd and for the easy handling of the animals. Every man that is to help about the sale should know his place and be at his post that no delay may occur. Every promise made in the catalogue should be lived up to, and every guarantee fulfilled.

I might go on with this subject indefinitely, yet I feel that I have said enough. In closing I can only say, that I have been a breeder of purebred hogs for 30 years, starting at the very foot of the ladder without capital or experience, so that what little I do know about the business I have learned under adverse circumstances, and by bitter experience, yet I can say truthfully, I have never wavered for a moment in my ardor even though many times knocked and buffeted about. I have always had faith that the breeding of purebred hogs was a profitable business with no limit in extent, and, with all its ups and downs, is to me one of pleasure.

THE IDENTITY OF VARIATIONS AND MODIFICATIONS.

By MAJOR CHAS. E. WOODRUFF, of *Plattsburg, N. Y., Surgeon, U. S. A.*

For nearly twenty years the writer in his official duties has been compelled to study the human variations and modifications which disqualify for military or naval service, and for eight years he has been trying to classify these anomalies under the current theories of heredity. It was soon discovered that a degenerate generally has some anomaly or stigma, such as poor eyesight or hearing, which is a disqualifying defect, so that the accepted recruit, as a rule, is a normal man in every sense of the word. On account of this rigid physical examination, the army and navy personnel contains fewer degenerates than any other class of men. Among the rejected candidates, there is a great field for the study of the degenerates who flock to the recruiting offices. The few who succeed in passing the examination are borderland types, and the great majority of deserters in peace times are restless, unstable defectives. The deserter in war is always a degenerate.

In explaining the defects or stigmata of these men, it was found impossible to class them as hereditary variations, or as nontransmissible modifications, for no matter which view one takes of them, he soon comes to a contradiction of evidence. For this reason, the literature of the etiology of human degeneration is in a chaotic condition. The followers of the newer Lamarckian school of biologists find that the anomalies and the underlying condition of the nervous system, being direct results of an unusual environment, including excessive use or disuse of parts, are modifications, and are necessarily transmitted to offspring yet there is indisputable proof that, in many of the cases, they are not transmitted at all, and there is a wealth of evidence that anomalies may not be transmitted, unlikeness to parent being the rule in such families. On the other hand, the followers of the opposite biologic teachings of the later Darwinism also find that