

he can have for the successful prosecution of his work is a thorough knowledge of the natural sciences, a knowledge of the principles that underlie all changes that are constantly taking place around him—in the air, in the earth, in the plants that grow upon the earth, and the animals that feed upon these plants.

I do not mean to convey the impression by anything I have said that the farmer does not need to work; that his life is one long holiday, spent under wide-spreading trees in shady lanes and on the banks of cool and pleasant streams. Far from it. I do not think such a life would be desirable. The man who does not have to work does not have the capacity to enjoy his leisure to the full, and gets only one fourth the pleasure out of life that he is entitled to. It is this consciousness of duty faithfully performed that enables a man to enjoy properly his hours of rest, and it is only by close attention to business, and by the most unceasing vigilance, that the farmer is enabled to succeed and hold his position among other business men.

But if you will go with me through any of our best agricultural districts, and observe the farmers at their work and in their homes, you cannot help but notice the sturdy, robust bodies, fully able to do the work with ease that they are called upon to perform, and the jovial, contented look upon their faces, even in the busiest season.

Now, go stand on a street corner in the business portion of one of our large cities and watch the crowd as they pass; see how they hurry as if their lives depended upon getting to their destination immediately; how anxious they look, how many careworn faces bearing the stamp of overwork and disease plainly upon them! Or, go further, to the stock exchange, grain exchange, or gold room, and look at that crowd; see how they push and jostle each other; how their eyes protrude; how they yell their orders to the auctioneer; how their entire frames are shaken and swayed with excitement; what a perfect Babel they live in! Mark the utter despair of the man who has just lost his all by an unforeseen change in the market. Compare the expression of those men with that of the farmer you have just been looking at, and then tell me how long should a young man of quiet taste and domestic habits hesitate before choosing an occupation?

EXPECTATIONS AND EXPERIENCE.

By H. H. COLVIN, *Member from Lackawanna county.*

The beginner in stock-breeding, especially if he be inexperienced, has a delightful prospect of an easy success. In the commencement of his career, as in the morning of life to most men who have any attraction in their composition, any energy or fitness for their calling, all is bright and clear. Knowing that like begets like, they have only to secure the right kind of stock and go ahead. They imagine that they have nothing to do but to acquire the requisite amount of land and buildings, and then add the stock. If the offspring of their stock the very first season does not make them breeders, what can?

With very different thoughts the breeder of sixty years' standing looks back upon his work, however successful. The more successful, indeed the greater the strife has been, and the more difficult the

task accomplished. He is now familiar with the impediments, pitfalls, and stumbling-blocks of the journey, the disappointments of early hopes, and the more than compensating joys of successful labor.

It is impossible that any business which is so much of an art as stock-breeding, which involves so much of science, should be so easy as the beginner is ready to believe. It must be diligently learned, and unless the breeder applies himself to the study of its principles and details he cannot succeed. A competent mind, with all the force of a strong and resolute will, may succeed in multiplying animals, but cannot succeed in extending the grand work of improvement. According to his industry and circumstances beyond his control, which tend to regulate the measure of each man's success, he may reap pecuniary profit, more or less, but to become a really successful breeder, he must exercise higher powers of intellect than are necessary for the management of ordinary business. He has to do with living creatures, with organisms subject to natural laws which he cannot alter, and which these very laws constantly thwarting his aims. The workings of these laws he must watch, follow, and assist.

To become a master breeder, he must be the servant of nature. He must stoop to conquer. By patient and intelligent observation, step by step—not by sudden flight—he may become an eminent breeder; but he never will be so, in the true sense of eminence, by theoretical learning alone, or by the labor of other men; that is to say, by obtaining good stock without knowing by practical lessons how to use them, and how not to use them. Failures are annoying, and often discouraging, but they are not always a dead loss. The courageous worker may draw from them practical lessons for his future guidance. The highest success may be reached by the wise use of failures. Volumes may be written upon the principles of breeding, the laws of nature, and the details of the breeder's practice, and the same may be very good and very useful in their way; but, after all, the road to success must be found out in practice by each man for himself. Journals and books may set up serviceable landmarks to indicate the whereabouts of the path, but each traveler must look to his own footing as he goes, for the way is hazardous and the end uncertain. Is it true that like produces like? The answer to this, as to all questions that are problematical, is that, with certain material qualifications, the saying is true. The assertion taken singly and alone is misleading.

It is the qualifications back of it that call for attention and require to be studied. No one thing, be it ever so true, can be relied upon while the business of breeding is so complicated. The appearance of one calf quite the likeness of its dam, or its sire, or of both, is not necessarily a key to what the second or third offspring will be. We think it is not extravagant to say that prepotency may now and then appear taken up from remote ancestry, and, singular as it may appear to some, have a more pronounced effect upon the present production than the immediate parents. By this means we are able to explain how a given pair of animals may, as they not unfrequently do, bring forth progeny better than themselves, and the principal works both ways, as not a few have been disappointed at an evident retrograde movement with breeding.

In this way we have the fact forced upon us that we must accept the doctrine in a qualified sense.

If animals could be stereotyped in the breeding, would not one of

the strongest incentives to breeding be taken away? Many take up breeding as others take up games of chance, enticed to it in part by the belief that they can show a higher degree of skill than others who have staked their all and lost. The man who starts out at breeding in the belief that he is only to stereotype animals in moulds shaped by another, with no prospect of winning the title, skillful breeder, has a tame prospect before him. If the breeder could always know in advance exactly what a calf in shape and color was to be, would breeding have the infatuation it now possesses? Not by any means. The greater the difficulties, the greater the gratification, if it becomes manifest to all men that it has been planned to do a difficult thing, and the result is creditable. The aim of the present day is to scientific breeding, and anything less than this will not be tolerated.

It is true that we cannot make a rigid mathematical demonstration of it, or reduce it to exact practice, for there are things which influence breeding that man can never find out.

The Great Creator of beings alone is cognizant of all these. Still, with practice and minute records, and subsequently carefully studying them, we may become much more certain of results than we now are, and considerably less will be left for guess work in a haphazard way.

We read and hear about pioneer breeders of our improved varieties of stock forming a type and fixing that type as the permanent property of their stock by sure hereditary transmission.

It is true that a new type may be produced by skillful and persevering attention to certain rules of practice, in artificial addition to nature, and that so strong a tendency to breed true may be established as to make the perpetuation of the type, under favorable circumstances, a matter almost of certainty. But the favorable circumstances are necessary. The form, size, color, habits, and other properties of animals are subject to modifications, not by breeding only, but by food, climate, and other circumstances of daily life, and modifications ejected by such circumstances become in course of time as strongly hereditary as those effected by selection or by cross-breeding. It is well to keep this fact constantly in mind. Without the breeder's skill, no amount of good management can secure identity of type, but without the external aids to fixity, no amount of skill in the breeding of the animal can secure it. It is the want of these aids often, as much as injudicious breeding, that causes degeneracy.

Nature, left to herself or receiving uniform assistance from man without any designed interference on his part for the control of form and other characteristics in general, will not permit variation beyond certain limits; but if man wants to make alterations, here is his chance.

These same variations may be by him guided in any one direction until the barrier lines are broken, and developed variations branch out from the old stem. So long as there is no design, so long as man's will is neutral, this does not occur. There is nothing to overrule the even influences which favor constancy of type. Thus, out of minute degrees of variation, man constructs his sub-type, and effects his improvement in one direction or another according to his needs. In the finest results of his skill, there is much to admire; much that may well justify feelings of astonishment, yet we must not lose sight of the fact that these extremely good results are but the outcome of patient labor. No one who knows the variety of facts presented to the ob-

ervation of him who studies nature's process, will consider this an unimportant acquisition.

The common notion among men that stock-breeding is but a dull repetition of the most familiarly known events will not be shared by the genuine breeder who knows the number of curious, interesting, sometimes surprising and perplexing, incidents that enliven it. To obtain, before the completion of a life's work, something like a life's plenitude of knowledge, he must mix his life, to some extent, with the lives of other men. The breeding of the higher classes of farm stock is not a stationary, non-progressive business. These intricate details are not to be guessed at, neither learned by tradition. This is not an age when progress is made by groping, plodding, or guessing, but only by close study and active enterprise.

Those who rely upon tradition and hearsay influences are left far in the rear, and the breeder who justly comes under these criticisms may as well go back to the plow, and consider himself best employed, like Cain, in producing the fruits of the field, for he will not be likely to succeed in furnishing a perfect animal sufficient for a complete sacrifice.

HOW SUCCESS IS ACHIEVED.

By M. W. OLIVER, *Member from Crawford.*

[Read at the annual meeting.]

When Prof. Agassiz was asked to become a member of a firm, with the assurance that he could make "any amount of money," he replied: "I have no time to make money." The principle of this doctrine is the secret of success in life. It means, choose a calling and follow it. If a man had the power to multiply himself, to issue himself in many copies, and each copy to apply itself to some business, he might, if he were a capable man, succeed in all. But each man can apply himself only to his own business and succeed. This is the secret—concentration upon one business. Agassiz had no time to make money to be a statesman, lawyer, or mechanic; no time only to be what he was—a scientist—and he had a specialty in that. All his energy was devoted to this purpose, and he succeeded. We have here an example most conspicuous, conclusive, and encouraging. It only needs a relish or bent for the thing, and then careful, persistent application, being guided ever by facts. By taking this course, a person cannot fail being successful—it is simply the result of a cause. Hence so many succeed in this progressive age. Hence, also, for the lack of it so many more fail. Would you have success, then go regularly about it and secure it. It is like doing a "sum," it will always have the same and the correct answer if done right. It may be done in different ways, but the ways must always lead to the same thing, as different roads lead to the same place. It is discipline, generally, which develops men and women, and wins them success; accidents rarely. There must be, of course, natural capacity, and with this capital to start with, the mind that submits to discipline is ordinarily more than a match for those favored by the accidents of birth or fortune. Parents should seek to know the capacity and bent of the child's mind, that they may more intelligently give them opportuni-