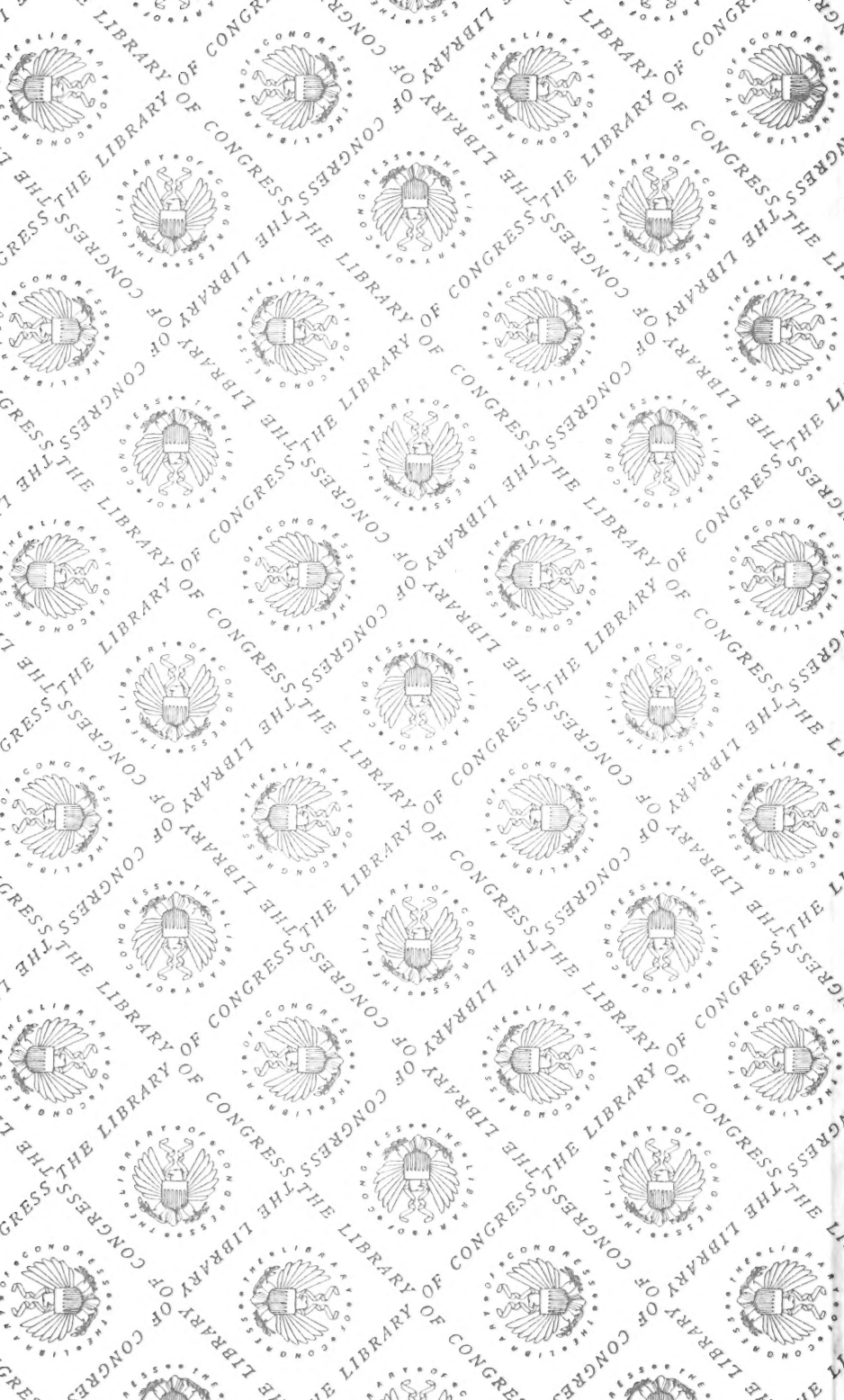
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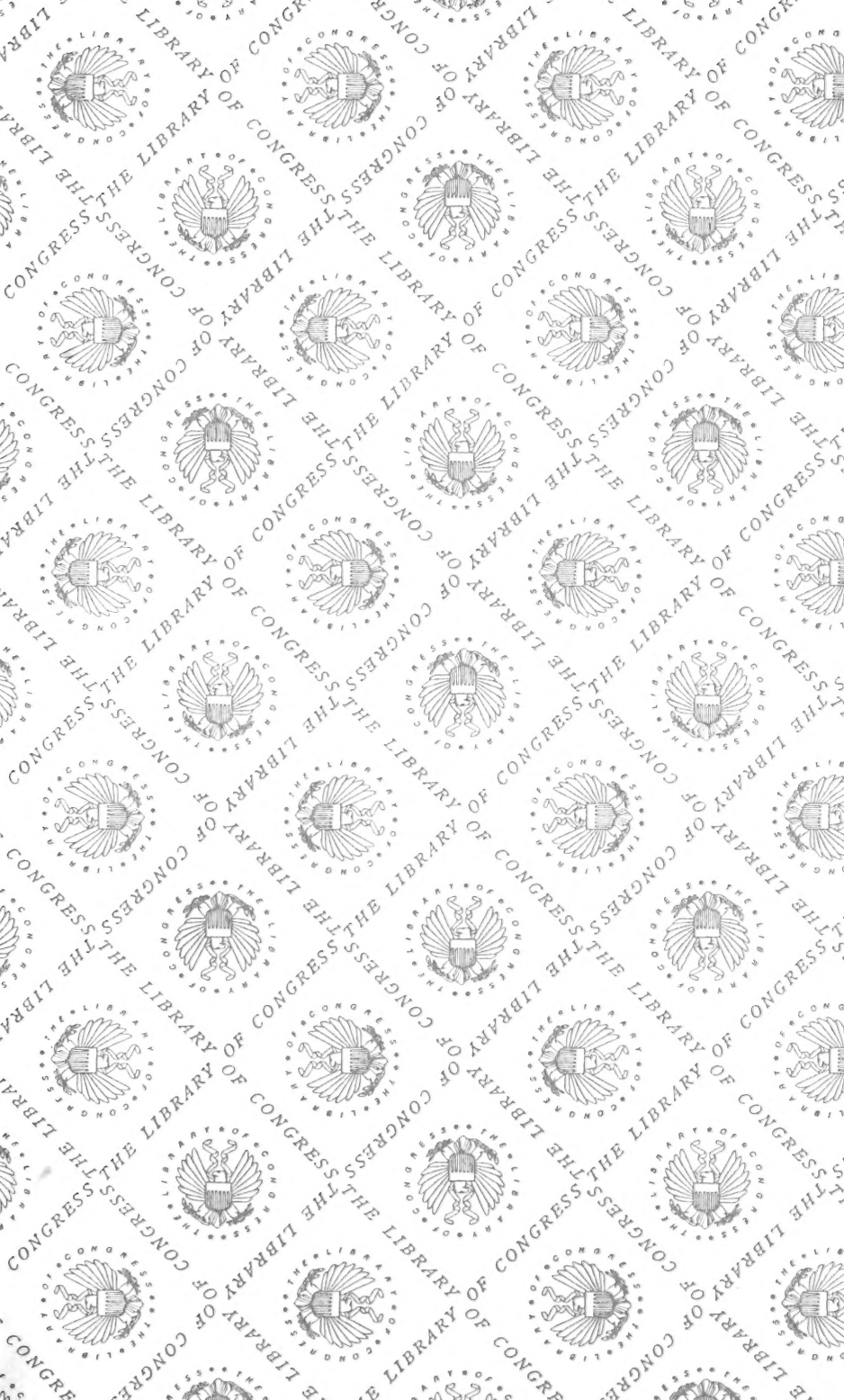
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The Ohio Corn Improvement Association

Proceedings

of the Meeting held at Columbus, Ohio, on November 23-25 and the Report for

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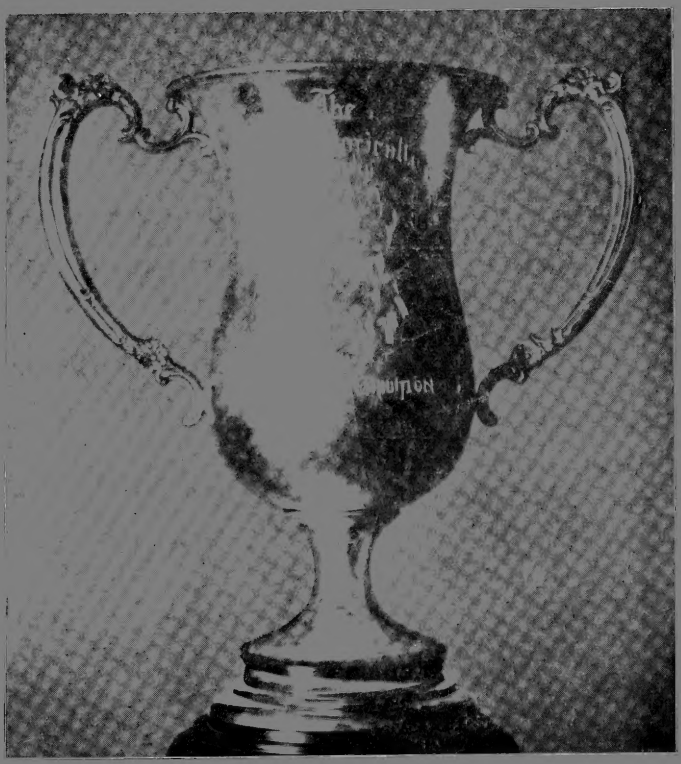


THE AGRICULTURAL COLLEGE TROPHY CUP

OHIO CORN IMPROVEMENT ASSOCIATION

No. 35

Compliments of the
Ohio Corn Improvement Association.

REPORT OF THE MEETING HELD AT COLUMBUS, OHIO, NOVEMBER 23-25, 1908, AND FOR THE YEAR 1908.

THE EXPERIMENT STATION PRESS
WOOSTER, OHIO
1909

PROCEEDINGS OF THE MEETING OF THE OHIO CORN IMPROVEMENT ASSOCIATION HELD AT COLUMBUS, NOVEMBER, 23-25, '08

THE FIRST ANNUAL MEETING OF THE OHIO CORN IMPROVEMENT ASSOCIATION was held at Columbus, Monday, Tuesday and Wednesday, November 23-25, 1908. The sessions were held at the building of the Ohio State University, and in connection with them was held the first State Corn Show, a report of which will be given by the Committee on Institutes and Expositions. The afternoons were given over to the Corn School, which lasted throughout the week, and to a study of the exhibits. The attendance at all sessions held in the forenoons and evenings, and the number of exhibits at the corn show far exceeded the expectations of the committee in charge of the meeting, thus causing some little embarrassment.

At the business session Wednesday forenoon the following counties were represented by accredited delegates who were authorized by the Committee on Credentials to cast the number of votes given opposite the names of their counties.

Butler	2	Montgomery	2
Franklin (Farmers)	2	Stark	3
Greene	6	Vanwert	3
Hancock	2	Darke	3
Madison	1	Gallia	2
Mercer	7	Hamilton (township)	2
Richland	4	Licking	5
Trumbull	1	Meigs	4
Clinton	5	Putnam	7
Franklin (township)	2	Summit	5
Guernsey	1	Washington	1
Hardin	26	Wood	3
Medina	1		

Total votes cast by 25 counties 100

At this session the Constitution and By-laws were amended to read as given elsewhere, and the following officers were elected for the ensuing year:—

W. B. Gramlich, Kenton, President
W. M. Hardman, Yellow Springs, Vice-president
L. H. Goddard, Wooster, Secretary
J. W. Hedges, Duvall, Treasurer

District Vice-presidents:—

Tasso Terrell, New Vienna
H. N. Firestone, Middlebranch
W. A. Lloyd, Albany

The following papers and reports were presented at the meeting:

RECENT ADVANCEMENT IN OUR KNOWLEDGE OF THE LAWS OF HEREDITY.

BY W. J. SPILLMAN, AGRICULTURIST U. S. DEPARTMENT OF AGRICULTURE.

A dozen years ago the subject of heredity was usually not taught in our colleges; we did not know enough to justify teaching it. Even yet the subject is hardly organized from a pedagogic standpoint, but there is plenty of subject matter for a strong college course. This matter is rapidly assuming form, and will doubtless soon form one of the most important and most popular biological courses.

The discoveries in this domain during the eight years are nothing less than epoch making. We do not even yet appreciate their full importance, yet important applications of this new knowledge have already been made in the improvement of crops and domesticated animals.

During the last two years of the past century, five men, working independently of each other, discovered a highly important law which enables us to predict the results of the crossing of two distinct varieties for the second and later generations of the progeny. The discovery of this law was hailed with much enthusiasm, as it was the first inkling we had had that there are any laws governing the transmission of hereditary characters from one generation to the next.

After the discovery was announced, Correns, one of the men who had made the discovery, in searching through the literature of the object to see whether the law had been recognized previously, made the astounding discovery that this law had been worked out in very great completeness by a monk in an Austrian monastery and published in 1865, demonstrating anew the old saying that "There is nothing new under the sun." But the discovery was new when the Austrian monk made it, and it has very appropriately been named "Mendel's Law", for this was the name of the recluse who, working with varieties of the common garden pea, had discovered a law the knowledge of which enables us now, I am tempted to say, to produce almost any type of plant or animal we desire, provided we can find the characters we want scattered amongst races or varieties that can be crossed with each other. There are, however, many limitations in the application of the law, but new facts are being discovered concerning it almost daily. We do not know that all hereditary characters obey Mendel's law, but many hundreds of them do, and it is barely possible that all do. The highly significant fact is that we have discovered a law which hundreds of hereditary charac-

ters do obey. It is now my task to give an exposition of this law, together with some of the important results which have followed its application in the breeding of plants and animals.

Suppose we cross a bearded wheat with a smooth (beardless) wheat. Experience shows that this gives a wheat which is smooth, or only very slightly bearded. In this cross we bring together two naturally antagonistic characters. For some reason one member of this pair of characters prevents the other from developing. The biologist expresses this fact by saying that smoothness is dominant over beards, or that beards are recessive to smoothness. Generally speaking, one member of a pair of antagonistic characters is more or less completely dominant over the other. For instance, if we cross a polled breed of cattle with a horned breed none of the progeny will have perfect horns. About 5 percent of them will have what cattlemen call "scurs", that is, imperfect horns. The other 95 percent will be as perfectly polled as their polled parent. Thus, the poll character is said to be dominant and horns recessive, though the dominance is not absolute in all cases.

The cases cited are illustrations of what we call "Mendel's law of dominance." We have many beautiful illustrations of this law. For instance, if red tomatoes be crossed with yellow the fruit of the hybrid is red. If white hogs be crossed with black or red the hybrids are nearly always white. If the white faced Hereford cattle be crossed with cattle having a colored face the crossbred animals have white faces. If a red rose be crossed with a white rose the hybrid is red. If a pink-eyed albino be crossed with an individual having no albino blood, none of the progeny will be albino.

DOMINANCE NOT ALWAYS PERFECT.

The dominance of one character over its opposite is seldom absolute. In nearly all cases there is some indication of the hybrid character of the progeny. Even if there is no other indication the hybrid is usually stronger growing and more vigorous than the pure bred. But usually the recessive character itself shows, at least partially, in some individuals resulting from the cross. As stated above, the cross between bearded and smooth wheat shows a slight tendency to be bearded. The cross between polled and horned cattle in a few individuals develops imperfect horns, or scurs. Recessive characters are especially likely to show when age comes on.

In some cases, however, we have a very different result. There is a certain red primrose which, when crossed with a certain white primrose, instead of giving red progeny gives a beautiful purple flower. This primrose has for years been sold on the market under the name of "Imperial Primrose"; but it is a hybrid and does not reproduce true to seed. We shall later see why this is the case.

In some crosses, instead of having dominance of one character over its opposite, the hybrid is intermediate between the two parents. For instance, in my work with hybrid wheats some years ago, I crossed several varieties of the ordinary types of wheat with the extremely short headed club wheats grown on the Pacific Coast. While the hybrids produce club shaped heads with the characteristic dense growth of the club varieties, these heads were nearly always longer than the original club heads, so there could not be said to be complete dominance of the club character. Prof. Castle, of Harvard, crossed long-eared rabbits with ordinary rabbits, and the progeny had ears intermediate in length between those of the two parents. On the other hand, when dwarf peas are crossed with standard sorts the hybrid grows even taller than the standard parent.

These illustrations are sufficient to make clear the law of dominance and the fact that this law is not universal. We come now to the more important law, the law of separation of character pairs. It is this law that is ordinarily meant when we speak of Mendel's law, because it is so much more important than the law of dominance.

It is part of the irony of Fate that Mendel's discoveries were utterly ignored and even forgotten during his life time. He never knew he had made an epoch making discovery. When the whole world went to breeding improved varieties of plants these discoveries were made again. Now we are building a monument to Gregor Mendel at Brunn, Austria, in the little monastery garden in which his epoch making work was done.

MENDEL'S LAW OF SEGREGATION.

We have seen what happens when a pair of antagonistic characters are brought together; that is, what happens during the life of the individual bearing these two characters. But what happens to this character pair in passing to the next generation? In order to make the matter clear, let us take a concrete case. Let us suppose we have a hybrid pea which was produced by crossing a red pea with a white one. This plant produces ovules in the young seed pod, and these ovules must be fertilized by the pollen grains which it produces in its anthers, or by pollen grains from some other flower before they will develop into seed. But let us take the case in which the ovules are fertilized by the pollen grains produced in the anthers of the same flower. A most interesting thing happens in the formation of both pollen and ovules. For lack of time I cannot explain this in detail, but in the production of pollen or ovules a certain cell division occurs which splits apart the members of our pair of antagonistic characters. The two cells which result from this

division are therefore not alike. One of them has in it the red flower character, the other the white flower character. Essentially the same thing occurs in the formation of both ovules and pollen.

In other words, when a hybrid produces those cells which are to be used in the production of a new generation—that is, reproductive cells, or, as the biologists call them, gametes, every pair of antagonistic characters present in the hybrid is split apart so that half of the gametes formed inherit one member of each pair; the other half inherit the other member. This is called the "law of the segregation of character pairs in hybrids."

In reality, the same thing happens in plants and animals that are not hybrids. The hereditary characters are inherited from both parents, and there is really a pair present in all ordinary cases. But in pure bred races the two members of a pair are alike, and hence can not be distinguished. A very good way of expressing Mendel's law is as follows: a character inherited from one parent is transmitted to half the offspring; the corresponding form of this character inherited from the other parent is transmitted to the other half of the offspring.

Returning again to the case of our hybrid pea, let us picture a particular one of the ovules and let us assume that it is one which by chance has the red flower color in it. Now this ovule must be fertilized by pollen before it can develop into a seed. That is, the nucleus of the ovule must unite with a nucleus obtained from a pollen grain before growth can take place in the ovule. But half of the pollen of the plant has the red character and half the white. It is therefore an even chance whether this particular ovule shall be fertilized by red pollen or white pollen. If it is fertilized by red the plant developing from this ovule will then be pure red in flower, because it has inherited red from both sides. Such a plant is said to be homozygote, a term which means "like things joined together." But if this ovule should be fertilized by white pollen, then the plant which developes from it will be hybrid, because from one side it inherits the red and from the other the white. It is said to be heterozygote, a term which means "unlike things joined together." Because of the law of dominance, the flowers this heterozygote plant would produce would be red, but they would not reproduce true to seed. These terms, homozygote and heterozygote, apply to animals as well as to plants.

Let us see how many different kinds of seed our hybrid pea plant could produce. Half of its ovules are red and half white. By this, of course, I mean that half of them have inherited the red character and the other half the white. We have just seen that the

red ovule is just as apt to be fertilized by red pollen as white pollen, hence, on the average, half of the red ovules will unite with red pollen and half of them with white. Likewise, half of the white ovules will unite with red pollen and half with white. We thus have four cases, namely: red uniting with red; red with white; white with red; and white with white. Each of these four cases is as likely to occur as another. Hence, on the average, they will occur an equal number of times, especially if the number of seeds produced is large. Thus we see that the progeny of our hybrid is one fourth pure red, one half heterozygote between red and white, and one fourth pure white. But since the heterozygotes also appear red, the progeny of the hybrid we are considering will be three red to one white. This is the well known Medelian ratio found in the progeny of a hybrid plant or the progeny of two hybrid animals.

As this is the most fundamental point in the whole subject of heredity, I will take the liberty to use another illustration. Suppose that the parents of a family of children are both heterozygote for brown eyes and blue eyes. Since brown is dominant to blue both these parents will be brown-eyed, but each of them will transmit brown eyes to half the children and blue eyes to the other half. The possible types of children in such a family are as follows. The first group consists of children which inherit

1 Brown eyes from the father and brown eyes from the mother. This group is homozygote for brown eyes.

2 Brown eyes from the father and blue eyes from the mother. This group is brown-eyed, but heterozygote, as is also the next.

3 Blue eyes from the father and brown eyes from the mother.

4 The last group inherit blue eyes from the father and blue eyes from the mother. Being homozygote for the blue they will be blue-eyed.

Each of these four cases is equally likely to occur. The first three of them give brown eyes, the last blue; hence, on the average of a large number of such families, three fourths of the children will be brown-eyed and one fourth of them blue-eyed. Many of you will know families in which this law is illustrated. It must be remembered, however, that in such families all the children may inherit either brown or blue from both parents, but such cases will be rare. It is possible from the law of probability to calculate in what proportion of such families any particular combination of brown and blue eyes will occur.

Let us now return to the case of the Imperial Primrose. This beautiful purple flower originated in a cross between a red and a white variety, the heterozygote being purple. Now when this

purple plant produces ovules and pollen, half the ovules carry the red character and half white. Likewise, half the pollen carries the red character and half the white. The chance union of these pollen grains and ovules covers the same four cases we have considered above in the case of eye color. One fourth of the seeds produced are homozygote for red; one half of them are heterozygote; the remaining fourth are homozygote for white. We can now understand why this primrose, grown and sold by an English florist for a period of fifteen years, always produced some red, some white, and some purple progeny. Generally speaking, one fourth of the seed produced red flowers, one fourth white, while half of them reproduced the beautiful Imperial Primrose.

Experience has shown that it is impossible to fix the type of a heterozygote by selection, and we now know why this is the case. It is because of the law of separation of character pairs when reproductive cells are formed. How, then, shall the breeder of plants and animals secure any advantage from this law?

MULTIPLE HYBRIDS.

In most crosses, either with plants or animals, we have to deal with several pairs of characters. For instance, in the cross between Herefords and Angus cattle the Herefords have white face, red body and horns; the Angus has colored face, black body, and no horns. The hybrid, because of the law of dominance, will have a black body, a white face, and no horns. But if we cross this hybrid with Herefords it will transmit the poll character to half the offspring, the red body to half, and the white face to half. But a calf which receives the poll character is just as likely as not also to receive the red body color from the hybrid parent; and a calf which has inherited both the poll character and the red body color is just as likely as not to inherit also the white face from the hybrid parent. If we secure a large number of such progeny, some of them then will have the pure white face and the pure red body of the Hereford, and at the same time will have the poll character from one parent. They will, as far as external breed characters are concerned, be pure Herefords in color, in face, and will be hybrid polls.

Let us now see what use the breeder can make of these newly obtained polled Herefords. It must be remembered that they have inherited the poll character from one side only and are therefore heterozygote for this character. Suppose we cross one of these heterozygotes with pure horned Herefords. From the pure Hereford side the calves all inherit horns. From the heterozygote parent half of them inherit horns and the other half the poll character. This style of breeding, therefore, simply increases the number of

our heterozygote polled cattle, and gives us no pure polled cattle. After a while, however, we secure a large number of these heterozygote polls. Now suppose we confine our crossing to the heterozygotes. In that case we get exactly the same results as were outlined above in the case of eye color where both of the parents were heterozygote for this character pair. One fourth of the progeny will be homozygote for the poll character; or, in other words, they will be pure polled animals producing only polled progeny, no matter with what they are crossed. In this manner we are able to obtain a few pure polled animals which have all the visible characters of the Hereford breed except the horns.

What I am describing is no fancied case. This work has actually been done, and we have now two breeding associations in this country which are breeding Polled Herefords in the manner described.

We may now state Mendel's law in a new way, and in a way which shows its tremendous importance to the breeder. In the second generation of a hybrid, every possible combination of the parent characters will occur, and if the number of individuals in the second generation be large enough there will be some individuals representing every combination of characters that will be homozygote with reference to all the characters present, thus giving fully established new types which require no further selection for their fixing. This phase of the law is beautifully illustrated in some recent work in the breeding of tomatoes done by Professors Price and Drinkard of the Virginia Experiment Station.

The parent plants used in making this cross differed in three important characters. One of them had green leaves, the other had yellowish leaves; the one with green leaves had yellow fruit with a neck on it, rendering it pear shaped, the one with yellow leaves had red fruit which was round, or without neck. We thus have three character pairs, namely, green and yellow leaves, red and yellow fruit, neck and no neck on the fruit. The possible combinations of these three characters that can occur in the second generation of the hybrid are as follows:

First, we may have either green leaves or yellow leaves. In each of these classes we may have yellow fruit or red fruit, and in each of these sub classes we may have the neck or its absence. This gives eight types. Type No. 1 has yellow fruit with the neck. This is exactly like one of the original varieties used in this cross. Type 2 has yellow fruit with no neck.

So much for the two green leafed types that have yellow fruit. We will now turn our attention to the two green types which have red fruit. The first one (type 3) should have the neck. This plant

showed the neck plainly in the first fruit formed on the vine, but in the fruit which formed later the neck was absent, the fruit assuming an oblong shape. This plant was probably heterozygote for the neck. It is not an uncommon thing for heterozygotes, as they grow older, to show more or less of the recessive character present in them. If the number of tomato plants produced had been large enough it would have been possible to find some of this type that were homozygote and would have produced necked fruit during the whole season.

The next type has no sign of neck. (Type 4.) We have now seen the four types having green leaves. Two had yellow and two had red fruit. Both yellow and red fruits showed types with and without neck on the fruit.

Next, we shall see four corresponding types having yellow foliage. The first two of them (types 5 and 6) have yellow fruit, and of these yellow leaved, yellow fruited types, No 5 has the neck, while No. 6 does not. The other two yellow foliaged plants (types 7 and 8) have red fruit, the first with neck, the second without. Type No. 8 is exactly like one of the original parent varieties. As already stated, type 1 was like the other parent.

Types 2-7 represent new combinations of the characters of the parent varieties. The great value of Mendel's law lies in the fact that by means of it we are able to secure any desired combination of characters that can be found in plants or animals closely enough related to permit of crossing.

Let us now return to the case of the hybrid wheats mentioned above. In the State of Washington, which is a great wheat growing region, the only wheats the farmers had ever found satisfactory were three varieties of spring wheat. The winter wheats that had been tried would not stand up and would shatter their grain easily. These three varieties of spring wheat were nearly always sown in the fall, because when they did go through the winter they would yeild 50 percent more from fall sowing than from spring sowing; but about every third year they would freeze out. Farmers were eager for a good variety of winter wheat. At the Washington Experiment Station, with which I was connected at the time, we secured a large number of varieties of winter wheat, tested them five years to determine which were best, and then crossed eleven of the best winter varieties with two of these spring varieties, hoping to combine the winter character with the stiff straw and hard chaff of of the spring varieties. In this we were completely successful. The Washington State Experiment Station is now growing a large

number of these hybrids, having selected out the homozygotes, thus securing new and fixed types of winter wheat eminently adapted to the peculiar climate and soil conditions of that region. Last year a few of the best of these hybrids were distributed to the farmers. The reports this year indicate that they out-yielded all other varieties against which they were tested, and the farmers are very enthusiastic about them. 12,000 acres of these wheats have been sown this fall (1908). Thus, Mendel's law is not simply a plaything but is a discovery of fundamental importance. It has already had important applications, and that it will have many others can not be questioned.

FANCY POINTS IN BREEDS.

I will next call your attention to a great mistake that is made in establishing many breeds of live stock. In my work I have on various occasions seen cattle, of no special breed with a narrow belt of white just behind the shoulder extending clear around the body. Fortunately, no one has ever attempted to produce a breed of cattle with this particular form of color. It is entirely possible that such a breed might be produced, and from the standpoint of the breeder who can see nothing but color might be highly advantageous; but it must be remembered that in trying to establish any such character there will for many years be a lot of heterozygotes in the breed and that mating them will produce animals without the desired character. Thus, some of the best animals produced in the breed will be sacrificed because they lack some character which has nothing to do with the real value of the animal. Any breed which has such a handicap will be retarded in its developement. The white face of the Hereford cattle is a case in point. This is not the only breed that has suffered because of color requirements. It happens that this white belt I have mentioned, but in a different form, has been fixed on a breed of cattle known as the "Dutch Belted." In them the belt is broad and covers the entire middle of the body. This breed has never amounted to much and probably never will as long as this color requirement is made of it. We have a similar character in the Hampshire breed of swine. These pigs are very pretty with their white belt around their shoulders, but many of the pigs born in this breed do not have perfectly developed belts, and the effort to fix the belt has resulted in the sacrifice of many valuable animals. It is doubtful if breeders of this breed should make the belt a requirement for registry.

CONCLUSION.

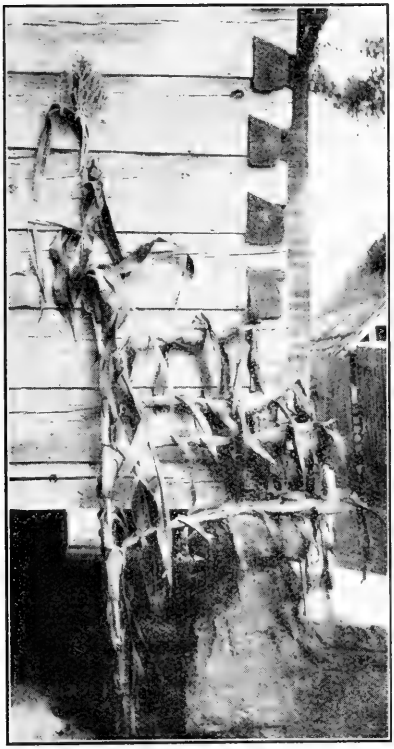
For lack of time I have been able to give you tonight only the merest outline of Mendel's law and its consequences. When the law was first discovered there was very naturally a great deal of enthusiasm about it, especially amongst the younger men, while some of the older men refused to recognize the validity of the law. There are very few left, now, however, who do not recognize in it an extremely valuable discovery. The field of its application is as yet comparatively limited because we have worked out only a few hundred of the hereditary characters which obey Mendel's law. Judging by past experience, there are many thousands of these characters yet undiscovered. The main work of the breeder now is to discover the Mendelian characters, while at the same time he is producing new and improved races. A few characters have been discovered which do not seem to follow Mendel's law. This may be because they obey some other law, or it may be because they are so complex on account of the presence of several Mendelian factors that we have not yet unraveled them. Perhaps some day, when we get through improving plants and domesticated animals, we may progress to a point where we can apply these important principles in improving a certain wild animal known to biologists by the dignified title of "Homo sapiens."

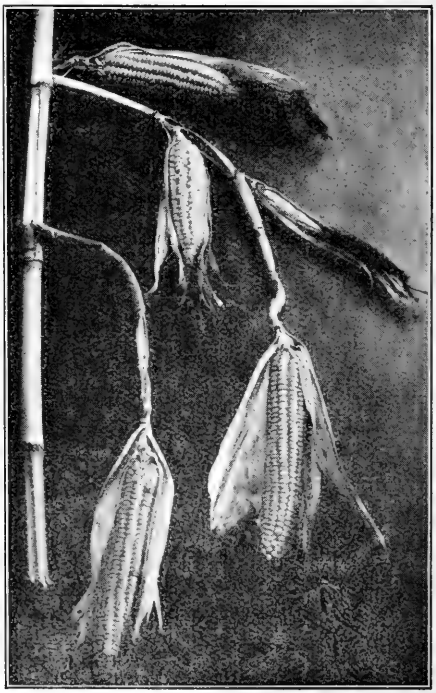
UTILIZATION OF CORN VARIATIONS.

BY C. P. HARTLEY, IN CHARGE OF CORN INVESTIGATIONS,
U. S. DEPARTMENT OF AGRICULTURE.

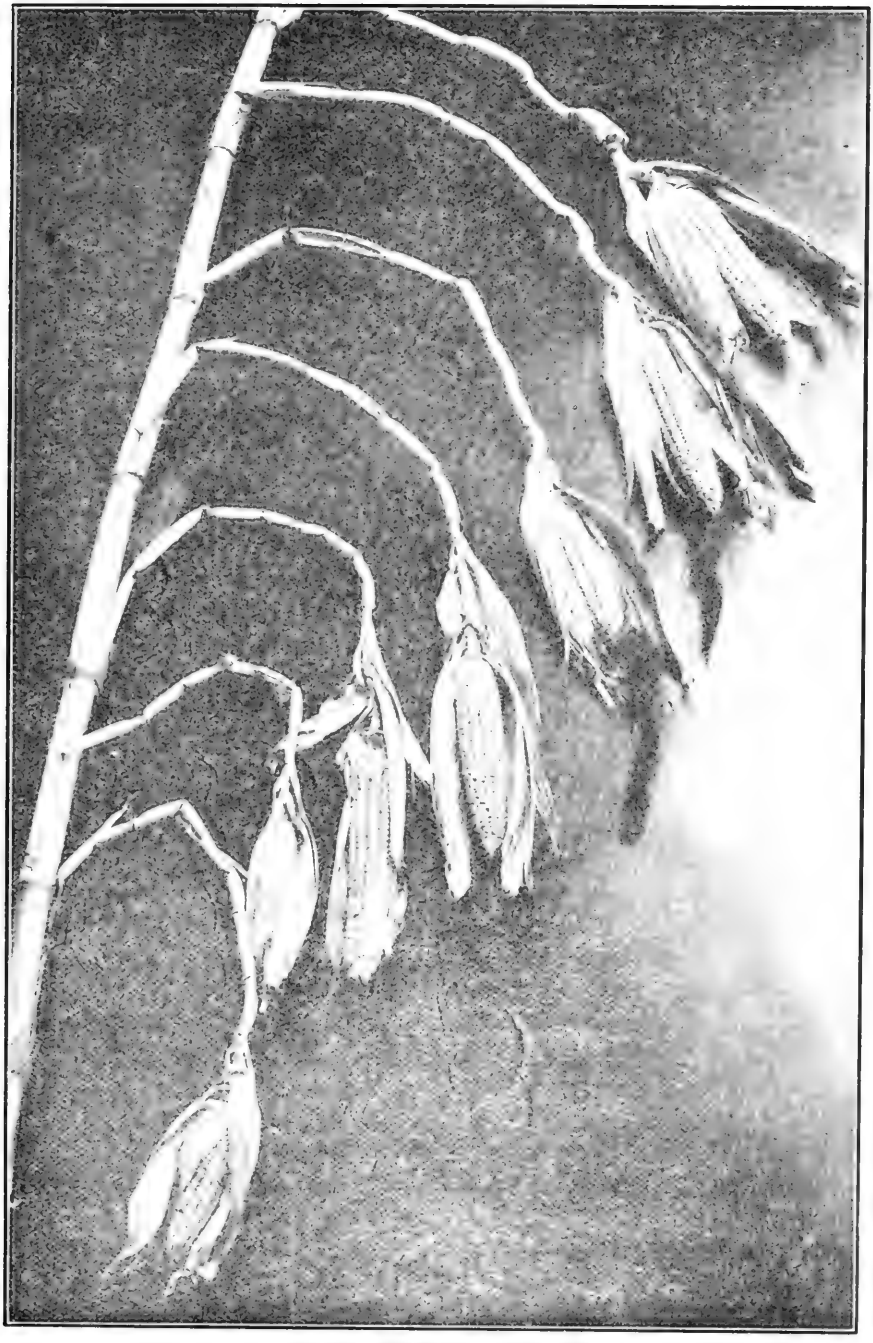
It is of much importance and interest that of all our agricultural crops the one that represents the greatest money value is also one that lends itself readily to improvement by the utilization of its many variations. It matters but little what we call these variations. Whether they be called sports, mutations, individual variations or whatsoever we choose, the fact remains that this useful plant year by year continues to produce them, and that to a greater or less degree they are transmitted and can be perpetuated.

If these variations make improvement possible, why not have as much variation as possible? Why strive for uniformity? As much variation as possible is desired by the one who is striving to originate new types. From this wide variation he can then select those individuals varying in a desired direction. Among these widely varying individuals is one that under the given conditions



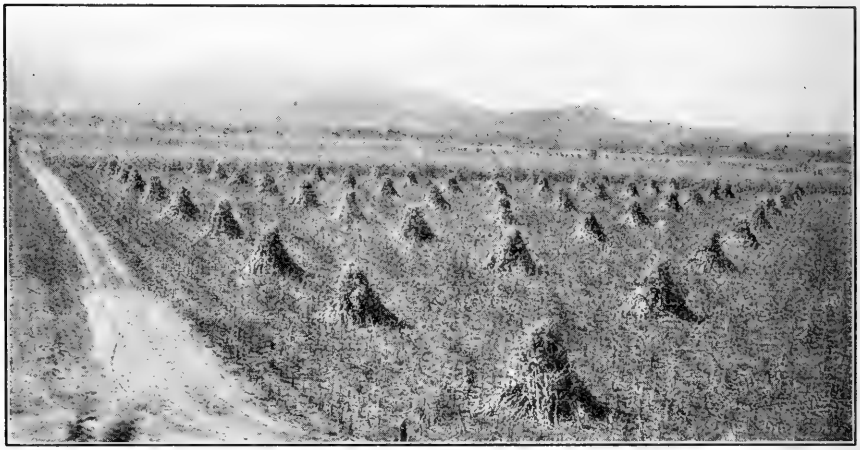


Striking Corn Stalk Variations



Striking Corn Stalk Variations

produces more and better grain than all the others. It also possesses to a greater or less degree the power of transmitting to its progeny this power of great production. It is therefore not the desire of the practical corn grower to grow fields of widely varying individuals, but fields in which every individual will possess this power of great production. Practical agricultural operations demand a certain degree of uniformity and the desire is to have the uniformity approach as nearly as possible the most profitable individual.



Portion of a Southern Ohio Farm Where Careful Systematic Seed Selection And Preservation is Practiced, and Where 700 Acres Annually Yield About 75 Bushels of Corn Per Acre.

"Is there any limit to this improvement?" some ask. After we have obtained a strain of corn that under given conditions will produce 100 bushels per acre, variations will still be found. Some of the individuals will produce more than others. Can we then go on improving till a "200 bushels per acre" strain is produced? Quite likely. Accompanying the increased yield changes in the form of the plant may take place. A stronger root system or a more even distribution of the weight of the ear around the stalk may develop. Whether there is a limit or not, it is clear that as a corn growing state and country we have not as yet arrived half way to the limit and further progress necessitates more work and more careful work.

Corn shows, corn trains, corn bulletins, and corn lectures are good things, but in themselves they do not increase the number of bushels per acre. They arouse interest, but if the actual field work

is not performed the quality of our corn and our yields decline. It is the actual production, selection and perpetuation of the best and the weeding out of the undesirable that will produce profitable results.

The history of methods and operations in general show, that with certain crude methods, a limit of progress may be reached, beyond which further progress is possible by an improvement in methods.

We have improved our methods, further improvement is possible, but the present need is not so much an improvement of our methods as it is a more general application of good methods.

The Large Piles Were Produced by Ears Selected from High Yielding Parents -the Alternating and Smaller Piles by Ears Selected Because of Their Fine Appearance.

At present only a very small percentage of farmers are using any systematic method for improving corn, or bettering the quality of the seed they plant. We can not hope for the general average production of a whole state to be materially increased till a considerable percentage of farmers apply good methods of seed corn production, selection and preservation. Through the efforts of this organization, your State Experiment Station, your University, and the U. S. Department of Agriculture there has been as much effective field work in corn breeding performed per square mile in Ohio as in any state. It is exceedingly encouraging that the yields obtained by the small percentage who are applying corn improvement methods are about double those of the entire State. The

Adaptation to Environment Shown by Southern Ohio and North Dakota Corn Fields

following table shows the yields of three strains the Department is improving as compared with the yields of the entire State for the same years. The figures given are from ten-acre plats characteristic of the surrounding country and which received no fertilizers nor extra culture.

	Average bushels per Acre	
	10 acre plat	Entire State
Corn Selection 77 on river bottom, Ohio		
1903	63	30
1904	90	33
1905	74	38
1906	64	43
1907	85	35
Average	**75.2**	**35.8**
Corn Selection 78 on upland, Ohio		
1903	32	30
1904	49	33
1905	72	38
1906	47	43
1907	65	35
Average	**53**	**35.8**
Corn Selection 133, Wisconsin		
1905	82	38
1906	84	41
1907	100	32
Average	**88 66**	**37**
General Average	**69.76**	**36.07**

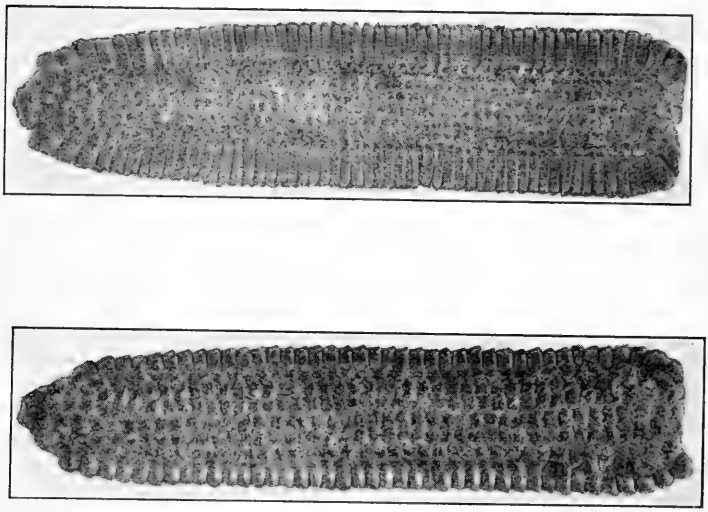
Rows 118-2 and 118-3 Are of the Same Variety. Row 118-2 Was Planted With Seed From an Ear That Was Borne 2 3-4 Feet From the Ground. Row 118-3 Was Planted With Seed From an Ear That Was Borne 7 1-2 Feet From the Ground

It is possible for the average production of corn per acre of every state to be doubled, not only without extra expense, but at a great saving of labor and land. Fortunately this statement is more especially applicable to the principal corn producing states.

When natural selection assists man's efforts the results are more rapidly accomplished, as in case of the northward extension of our corn belt. Some of the northern states have been doubling their total production with each succeeding decade.

On the contrary, when environment favors an undesirable character, such as fertile land and long seasons favoring excessive stalk growth, more diligent work on the part of the corn breeder is necessary, for natural selection does not assist by preventing reproduction of the undesirable.

The wise corn breeder will consider all the visible characters, i. e., those variations that are apparent to the eye, as secondary to the inherent ability of the individual to produce heavily and to transmit its high yielding character to its progeny. Power to yield heavily under normal conditions, coupled with strong prepotency to transmit this power are the most valuable characters an individual corn plant can possess.



Two Cobs of the Same Size, the Upper One Containing 30 Percent More Grain Than the Other

These most valuable characters can be determined only by actual field tests, and it is imperative for purpose of just comparison that these performance records be ascertained under like normal conditions.

Of two ears that look as much alike as it is possible to find two ears, one often produces, under like conditions, fifty or seventy-five per cent more than the other. The producing power of a plant and its prepotency can not be determined by the appearance of the plant, much less by the appearance of a part of the plant. He who selects seed ears because of their fine appearance can in a few years produce a strain of corn in which many of the ears are of fine appearance, but no practical corn grower will plant an unproductive strain of corn solely because of the fine appearance of many of the ears.

Poland China swine breeders bred for short noses, fine bone and smooth form and produced what they worked for, but in the meantime lost the most valuable character, productiveness. Poultry breeders have produced striking results regarding plumage and forms of comb, simply to meet requirements of the show ring and without bettering the breeds in regard to the production of eggs or meat. It is, therefore, wise for us to profit by their mistakes. We must resist the tendency to breed toward artificial standards and must breed corn for the purpose for which corn is grown, namely, profit. We must not be found spending our efforts producing types established by the imagination, but must get started in the right direction and work for what is valuable, letting the form and appearance of the truly valuable individuals fix our standard of excellence. It has been too much the tendency of all classes of breeders to mould or breed to a fancied type, rather than allow the type to be established by individuals of greatest performance records along the desired line. The following table shows the yields of ears bred one year for increased productiveness, in comparison with prettier looking ears of the same corn selected from the general field because of their fine appearance. The fine appearing ears were given Roman numbers and were planted in alternate rows with those taken from most productive rows of the previous year's breeding plat. The arrangement in the table is the same as it was in the field.

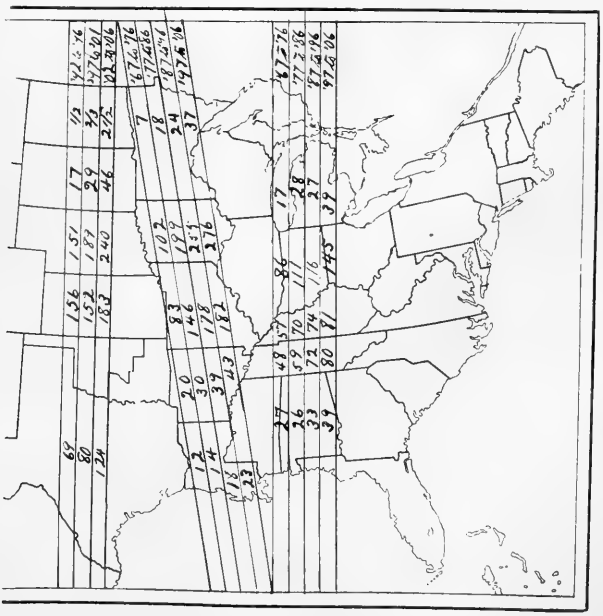
Row Number	Ear Number	Pounds of Ears Harvested	Row Number	Ear Number	Pounds of Ears Harvested
1	XVI-1	170	23	XVI-16	144½
2	1-1	177½	24	8-2	174
3	XVI-4	139½	25	XVI-18	166½
4	1-2	180	26	8-3	176
5	XVI-5	139	27	XVI-19	108
6	2-1	199	28	10-1	193
7	XVI-6	173	29	XVI-20	138
8	2-2	197	30	10-2	177
9	XVI-7	159	31	XVI-21	185
10	2-3	163	32	11-1	181
11	XVI-8	154	33	XVI-25	146
12	5-1	172	34	11-2	136
13	XVI-9	133½	35	XVI-26	165
14	5-2	176	36	11-3	169½
15	XVI-11	156½	37	XVI-28	206
16	5-3	194	38	13-1	181½
17	XVI-12	169	39	XVI-30	92
18	6-2	174	40	15-1	180
19	XVI-13	143½	41	XVI-31	176
20	6-3	186	42	15-2	163½
21	XVI-14	153½	43	XVI-33	136
22	7-2	200½	44	15-3	164½

Cut on page 17 shows the smaller piles of corn produced by the seed ears of fine appearance alternating with the larger piles produced by the seed ears selected from the progeny of high yielding parents. The test gave 18 bushels per acre greater production as the result of one year's selection for higher yields.

It is the accumulation and perpetuation of desirable variations, such as high yielding power, early maturity, proper form, etc., coupled with better cultural methods that has made possible the growing of millions of bushels of corn where 25 years ago it was considered impossible to grow corn. The application of these factors enables one man to grow 100 bushels per acre while his neighbor under the same conditions produces but 25.

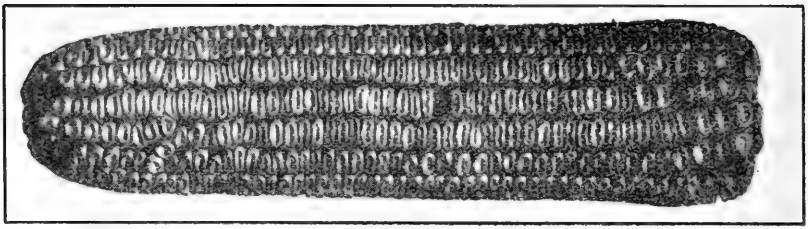
With this proof and these demonstrations of the much higher yields and resulting increase in profits obtained by the few, all should join in the work till none who grows corn will under average weather conditions harvest less than 50 bushels per acre. Let us bring our best methods into general practice. Not till this is done will the state and country averages indicate the value of these methods.

Those who have labored most earnestly have been rewarded by the development of the best strains for their respective sections. For each county one or more high yielding strains of corn should be produced.. It is the best and easiest way corn growers have of increasing the profits derived from their labor.

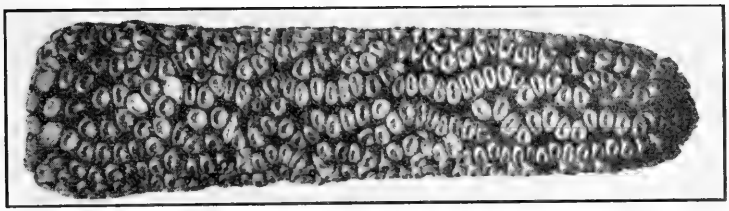


Average Annual Production for Periods Given at Head of Columns. Productions Expressed in Millions of Bushels

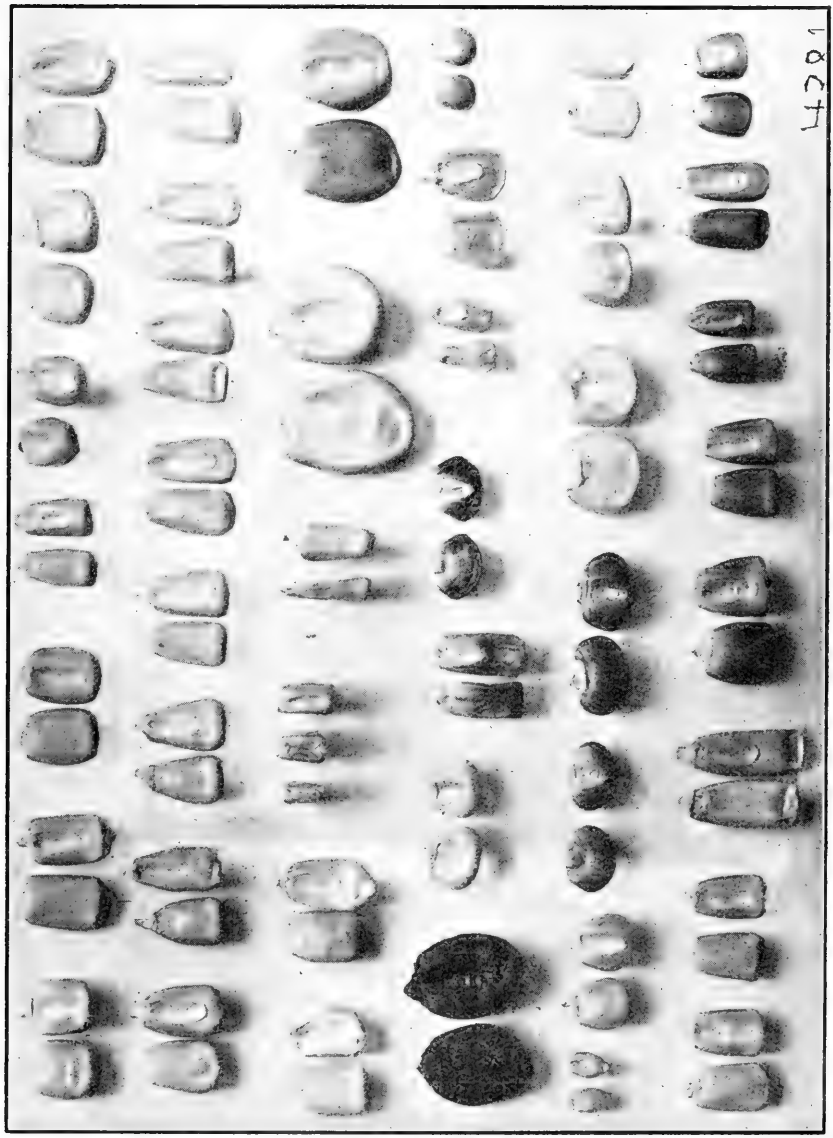
Variation in Vigor Demonstrated by Planting Seed from Each Ear in Seperate Row.



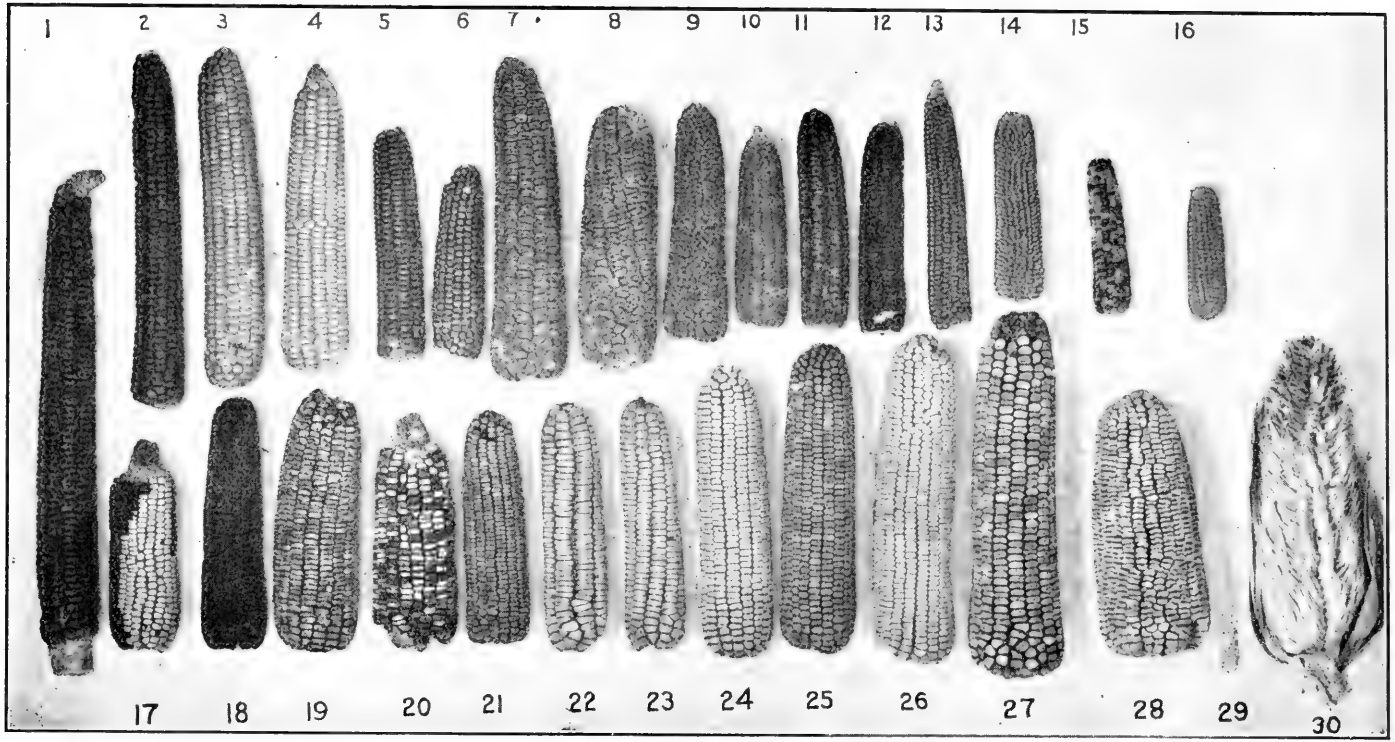
A Straight-rowed Ear and the Crop It Produced, Which Consisted of 78 Straight and 7 Crooked-rowed Ears. (Contrast These Results With Results Obtained from Crooked-rowed Ear)



A Crooked-rowed Ear and the Crop it Produced, Which Consisted of 53 Straight and 47 Crooked-rowed Ears. (Contrast These Results With Results Obtained from Straight-rowed Ear)



Various Types of Kernels



1 Yellow Flint
2 Yellow Flint
3 White Flint
4 Hominy Corn
5 Yankee corn (Yellow Flint)
6 12-rowed yellow flint
7 Mammoth Sugar
8 Stowell's Evergreen (sweet corn)
9 Country Gentleman (sweet corn)
10 Crosby (sweet corn)
11 Red Sugar Corn
12 Black Mexican (sweet corn)
13 Golden Pearl (popcorn)
14 White Rice (popcorn)
15 Pear popcorn with variously colored kernels
16 White Pearl (popcorn)
17 Red Dent with White Spot
18 Red Dent
19 Mixed Dent
20 Mixed Dent
21 Early Yellow Dent
22 Hickory King
23 Mexican June
24 White Dent
25 Yellow Dent
26 White Dent
27 Mixed Dent
28 Gourd Seed
29 Mais de coyote
30 Pod Corn

SOME CORN STATISTICS.

By H. H. Johnson, Special Agent, Bureau of Statistics, U. S. Department of Agriculture.

The United States produces about four fifths of the world's corn. In the last forty years Ohio has raised more than four billion bushels, which is about 5.6 percent of the total production for the United States for the same period. In recent years Ohio has contributed about 5 percent to the total corn production of the United States, although her acreage is less than 4 percent of the total area in corn in the United States. In 1908 Ohio produced practically 5 percent of the corn of the United States, on 3.4 percent of the total acreage.

Ohio has the distinction of surpassing all the important corn producing states in the average yield per acre. Proud of being the Mother of Presidents she has reason to be equally proud of her record in corn production. The only states which produce larger yields per acre are Maine, Massachusetts and Connecticut, and their total acreage is insignificant, being less than 1-17th of the area of Ohio alone; hence, they may be practically ignored.

Seven States, having a larger area, excel Ohio in total production, namely: Illinois, Iowa, Nebraska, Missouri, Kansas, Indiana and Texas. Two other states, Georgia and Oklahoma, have larger areas in corn but smaller total production. Kentucky and Tennessee have, in a number of years, exceeded Ohio in corn area but never in total output.

It may be interesting to note that the first ten states in area of corn are:

Illinois	with	9,450,000	acres	or	9.2	percent	of	the	total	area
Iowa	"	9,068,000	"	"	9.	"	"	"	"	"
Texas	"	7,854,000	"	"	7.8	"	"	"	"	"
Nebraska	"	7,621,000	"	"	7.5	"	"	"	"	"
Missouri	"	7,542,000	"	"	7.5	"	"	"	"	"
Kansas	"	7,100,000	"	"	6.9	"	"	"	"	"
Oklahoma	"	4,929,000	"	"	4.9	"	"	"	"	"
Indiana	"	4,549,000	"	"	4.5	"	"	"	"	"
Georgia	"	4,300,000	"	"	4.5	"	"	"	"	"
Ohio	"	3,550,000	"	"	3.4	"	"	"	"	"

These States contain over 65 percent of the total acreage of the United States and produce more than two-thirds of the entire crop of corn.

The first ten States in production for the year 1908 are:

	Bushels per acre	Total production in bushels
Illinois	31.6	294,860,000
Iowa	31.7	287,456,000
Nebraska	27.	205,767,000
Missouri	27.	203,634,000
Texas	25.7	201,848,000
Kansas	22.	152,900,000
Indiana	30.3	137,835,000
Ohio	38.5	130,900,000
Oklahoma	24.8	122,239,000
Kentucky	25.	84,823,000

These ten States produce a total of 1,793,877,000 bushels or about 70 percent of the total crop for the year 1908, valued at $1,130,000,000.

The average yield per acre in Ohio is about 35 percent greater than the average yield for the United States as a whole. The relatively low average for the United States is due to the small yield in the Southern States. Georgia, for instance, with a larger area in corn than Ohio, produces only about one third as much to the acre. Her ten-year avearge yield is 10.8 bushels, while her yield for the year 1908 was 12.5 bushels per acre.

The ten-year average yield in the United States for the decade ending in 1908 and including the crop of 1908 was 25.6 bushels per acre. The ten-year average yield in Ohio for the same ten years was 35.1 bushels. The preliminary estimate of the yield for the United States for the year 1908 was 26.2 bushels per acre and the yield for the State of Ohio was 38.5 bushels, showing that Ohio more than maintained her reputation for leading the United States.

The highest ten-year average production in Ohio was during the decade ending in 1879, when it was 36 bushels. From 1879 there was an almost steady decline until 1895, when the ten-year average yield was 29 bushels for the period ending in the year 1895.

Since 1895 there has been a steady increase in the average yield per acre in Ohio until, at the present time, the ten-year average yield is almost as high as at any previous period and amounts to 35.1 bushels per acre. And, were it not for the one very poor year in that decade, namely 1901, when the yield in Ohio was 26.1 bushels and for the United States only 16.7 bushels per acre, the ten-year average at the present time would exceed the previous high mark of 36. bushels.

In 1906 Ohio produced her banner crop and by far outclassed all other important states in her average yield per acre. The prospect for a crop at the time of harvest that year was 99 percent of a full normal crop. The average yield per acre that year was 42.6 bushels and the total production for Ohio 141,645,000 bushels on 3,325,000 acres.

The same year Indiana with a prospect at harvest for 96 percent of a full normal crop produced 39.6 bushels. Illinois with a prospect of 87 percent of a crop, 36.1 bushels and the United States average yield for that year reached the respectable figures of 30.3 bushels per acre. It is safe to predict that it will be a long time before a combination of large acreage and almost perfect condition will again occur.

According to the yield of 1906 we would expect a full crop in Ohio to yield better than 44 bushels per acre on an average. It must be remembered, however that the standard of a full or normal crop may and does change. I hope that the time will speedily come in Ohio when a full normal crop, or 100 percent, will mean an average of 50 bushels to the acre.

Improved seed, methods of selecting the same, cultivation, fertilizers and rotation will accomplish this result in time. A neglect of these same things will reduce the average yield of corn and all other crops and with their neglect Ohio would not only lose her proud place in the agricultural world, but the great State of which we are so proud would become a debtor and possibly a bankrupt.

To use a very broad and comprehensive term a conservation of resources is necessary if the productive capacity is to be preserved and improved. The problem of the tenant must be met and attention directed toward future production, and "skinning" the land must be stopped.

During the past ten years there has been a marked decrease in the quality of corn received at our principal markets. There is a great difference of opinion as to the cause of the decline in quality. There are those who say that the seed is too large and produces a variety that will not mature in our average season. The gentlemen who are devoting their time and talents to seed and soils may be relied upon to give you correct advice for your locality.

The quality of the 1908 crop is good; considerably above the ten-year average quality. There is food for thought in the quality of the last crop. It took an unusual season to make the quality of the corn. It is conceded that the dry weather made the quality. Will such weather be necessary in the future to assure a good quality?

The crop of 1907 was the other extreme and after a very wet season we had corn in March and April that was not dry, and much of it never did cure. Both of these seasons were out of the ordinary and cannot be used as examples.

It has been demonstrated that good instruction, good soil, good seed and a proper mixture of brains with the soil, has kept Ohio in the front rank of corn producers. The State which produces the largest average yield per acre in the United States is surely Queen of the King of crops.

The great work of the agriculturist is in its infancy. The splendid work of our Colleges and Universities, Experiment Stations, State Departments of Agriculture, and the United States Department of Agriculture, so ably guided for the past twelve years by Secretary Wilson, will be prosecuted in the future with immense benefits to the progress of Agriculture and to the material prosperity of a great and resourceful country.

By request Mr. Johnson supplemented his remarks by giving a brief synopsis of the methods of gathering crop statistics and issuing reports. Interest in the subject was manifested by the number of questions asked by the audience, at the close of the address, which were answered by the speaker. The lateness of the hour prevented a detailed explanation of the crop reporting methods but enough was said to show the thoroughness with which the work is done and the audience was invited to investigate the work of the Bureau of Statistics and to co-operate in giving information which reverts to the benefit of the farmers of the United States.

REPORT OF COMMITTEE ON IMPROVING CORN VARIETIES

I. S. COOK, JR., CHILLICOTHE
JAMES W. COOK, FOREST FRANK PLESSINGER, VERSAILLES
PHILIP BAER, JR., CANAL DOVER CYRUS LONG, LONDON

The importance of improving corn varieties which the farmers are growing in this state and the question which farmers are asking every day, whether or not they should get seed corn of a different variety from what they are growing by sending out of their county or state for it. necessitates a report and discussion at the state corn meeting upon experiences of farmers along this line of work. Having been set to work by this association our committee has prepared the following report:

In considering the most important and best known varieties in this state we may name the following of the yellow varieties:

Reid's Yellow Dent	Medina Pride
Clarage	Early Huron
Leaming	Darke County Mammoth
Hildreth	Riley's Improved Favorite
Golden Surprise	Farmers' Favorite

We also find a large number of strains, most of which originated by selection and lack of selection, from these yellow varieties. Strains of corn that, doubtless had a common origin, have become so changed that some of them have a growing period sf six months, reaching a height of eighteen or more feet, while others ripen in 90 days, having attained a height of four or five feet. These changes are the result of selection. By selection a strain can be greatly improved in production and at the same time adapted to the soil and climatic conditions of the locality in which it is being improved. Because of differences in soil, climate and length of growing season, a corn, improved in one locality, does not afford the best seed for localities which are unlike it. It is therefore essential that we have breeders in nearly every county in the state.

A few of our best known varieties of white corn are:

Boone County White
Silver Mine
Farmers' Friend
Forsyth's Favorite
Dungan's White Prolific

Now in looking over the yellow varieties, we see a great difference in the time it takes to mature the corn of the Reid's yellow dent variety and the Early Huron. The Clarage corn is a mean between the two, and if the Clarage corn will mature in the central and north central counties, and can be made productive by selection and breeding, why send to some other state for a variety of which we do not know the time it will take to mature in our soil and locality? Do we send away for a variety of corn because we think it will give a better appearance in the show ring regardless of its yielding qualities in bushels per acre? If this is the reason we are hurting our bank account. As a general thing we do not recommend going outside of the state nor even to counties in the state which have a different latitude from the locality in which we are growing corn.

If a farmer cannot decide on a variety of corn to grow, let him take several of the varieties we have mentioned and run a variety test for himself and find out which variety does best for him and

then grow and improve this variety. We also recommend that farmers in a certain locality get together and run a variety test for two or three years in succession and find out who has the most profitable corn for that locality.

If we cannot conduct either one of the above tests, we may set to work to improve the variety of corn we are growing if we believe it is fairly productive without having been improved to any great extent in a systematic way. We recommend that we improve this variety, by selecting in the field from the plant those ears which we believe represent the desired type or the type which suits us best, testing these ears in the ear-to-row test and crossing the highest yielding ears. We believe this method of improving corn varieties is better than introducing other varieties of which we do not know the yielding qualities.

Suppose we had a neighbor who was growing a mixed variety of corn and we were growing a pure variety and trying to improve it by selection and breeding, now what would we do? We suggest that we get our neighbors together and agree to run a variety test and find out who has the best variety of corn and then each one grow and improve that variety.

REPORT OF COMMITTEE ON EDUCATIONAL TRAINS

H. C. PRICE, O. S. U., COLUMBUS
H. W. ROBINSON, GREEN SPRING JOHN CUNNINGHAM, GAMBIER
H. S. GRIMES, PORTSMOUTH J. W. McCORD, COLUMBUS

The first movement in Ohio of agricultural special trains took place in December, 1906, during holiday week. The train was run over the Cincinnati Northern, a division of the Big Four Railway System, and consisted of two audience cars, in which lectures were given on corn and alfalfa respectively. The trip was begun at Germantown and ended at West Unity, covering one hundred and fifty-one miles, making sixteen stops, with audiences that ranged from fifty to two hundred and fifty in number. The trip was highly satisfactory, both to the parties who participated in it and to the railroad officials.

The next trains were run in the spring of 1907, over the Baltimore & Ohio Southwestern and the Pennsylvania Railroads. The trains were made up similarly to the one run over the Cincinnati Northern and the audiences and interest manifested were all that could be expected.

The train on the B. & O. S-W. was started at Columbus on April 2nd., and ran as far as Blanchester the first day; on April 3rd., it covered the territory from Blanchester to Chillicothe; on April 4th., 5th. and 6th., it covered the lines from Columbus to Morrow; from Morrow to New Paris, and from New Paris to Columbus. In the five days the train covered three hundred and ninety miles and made forty-two stops.

During the past year, trains have been run over four different roads as follows: Cincinnati, Hamilton & Dayton, January 2nd., 3rd. and 4th.; Norfolk & Western, March 19th.; Cincinnati & Muskingum Valley, March 20th.; Toledo & Ohio Central, March 26th. and 27th. Nearly nine hundred miles were covered on these four trips, occupying seven days; during this time addresses were made at sixty-two places to about eight thousand people. The interest was good in all cases and the attendance at all stations averaged large.

These trains have enabled the men in the College of Agriculture and the Experiment Station to reach the farmers in larger numbers than they could possibly do in any other manner. The interest that this work aroused in the testing and selecting of better seed corn has doubtless done a great deal for the agriculture of our state and the improvement of the corn crop.

Negotiations were made during the year with the Baltimore & Ohio, Clover Leaf, Nickel Plate and Wabash railroads relative to the running of special trains and some of these negotiations are still pending.

Your committee has found the railroad officials uniformly favorably disposed to this work and glad to do what they can to further it, but, in many cases, the officials who are the most appreciative of the work are not in positions of authority and the officers to whom the decisions in regard to the trains have to be referred are not in position to see their actual value.

Your committee would, therefore, recommend to communities that are desirous of having these trains that the matter should be taken up with your railroad, calling attention to what has been done in other sections of the state, and the need of it in your own community. Resolutions adopted by farmers' organizations, such as farmers' institutes, granges, county corn improvement associations, etc., if forwarded to the proper railroad officials (whose names can be secured through your local railway agent) will receive most respectful attention and probably bring results. If the railroads find out there is a real demand for these trains they will take steps to provide them.

After arrangements have been made for the trains, their success depends upon the local interest at the different stops. One or two good, active, live men, who will do some personal work in advertising the trains, will accomplish more than all the printed material that can be sent out.

H. C. PRICE, Chairman.

REPORT OF COMMITTEE ON MARKETING CORN.

H. W. ROBINSON, GREEN SPRINGS
W. M. HARDMAN, YELLOW SPRINGS T. E. BOWSHER, WAPAKONETA

The true purpose of this association is to increase the revenue to be derived from the corn crop of Ohio, whether it be derived directly by marketing or indirectly by feeding on the farm. In so doing the matters of seed, variety, soil preparation, culture, harvesting and production are indeed important factors, yet we should not overlook the most advantageous means of direct realization from the crop, especially since of the approximate average annual production, which may be placed at 125,000,000 bushels, 25 to 30 percent is emptied into our elevators.

It is of little consequence to the grain merchant or the consumer who buys the corn whether or not the seed from which it was grown tested high in germinating power; whether or not the variety was true to name; whether the soil and preparation were without fault or whether the yield was large or small. Their interest centers in the real value based on quality and condition.

Of the leading cereals handled through the average elevator of the southern states corn has proved the most difficult and uncertain. The chief source of trouble has been the element of moisture. While it is no more within the power of the grower to eliminate excess of moisture in unfavorable seasons and during certain months or periods of curing than it is within his power to regulate atmospheric conditions, yet he must learn that this element goes largely to determining the basis upon which the value is calculated, resting of course upon the prevailing market price.

The degree of its presence has been considered from the earliest period of the corn traffic as a business in the commercial world, but only within very recent years has it been recognized and become a factor in the formation of grades. Science has found and offered the solution, whereby we are able to determine with accuracy the presence of moisture by the moisture-tester today in general use in our markets and in the grain trade. At

the last meeting of the Grain Dealers' National Association, held last month, at which uniform grades of all grain were adopted, we find this test embodied as one of the requisites in establishing grades of corn. For example, the rules specify that No. 1 shelled corn shall not contain more than 15 percent moisture; No. 2 not more than 16 percent, No. 3 not more than 19 percent and No. 4 not more than 22 percent. Moisture thus is the principal element forming the difference in price of different grades. Not only has this test been the means of placing the handling of corn on a safer and more pleasant basis for the grain merchant, but it serves the purpose of making corn a high value collateral.

Another element that goes to make up the grade of corn is color. We find a difference in our markets of from 1 to 3 cents per bushel because of the color alone. In our Northern markets yellow ranks the highest in value, while in the South white corn commands the highest price. It would appear from this that it is not a matter of preference in color but rather of quality, as it seems to be generally true that yellow varieties thrive best in the North while the white does best in the South. Mixed corn, regardless of colors, is always the lowest in market value, and in our leading markets today is from 2 1-2 to 3 cents per bushel lower than yellow. Thus it would seem to be largely a matter of aesthetic taste even though we are slow to acknowledge this as the true reason. Nevertheless it appears to be a fact that the beautiful golden corn appeals to the eye of both the feeder and the miller to the extent of 1 to 2 cents per bushel. However, with a view to justice to the successful grower of white corn, it would be no more than fair to assume that his corn might be of equal value in comparison with yellow if the white varieties were more generally cultivated; but until they are he must be content with second place in the industry as far as marketing is concerned. There is no consolation to offer to the grower of mixed corn. Even though he produce a corn high in quality he must always expect to be seated on the rear benches of our markets and think of his position, as a Greek philospher expresses it, "a delightful prejudice."

Maturity does not necessarily enter into this discussion. It might be well however to urge the necessity of growing corn that will be sure to ripen in the average season, for immature corn can only be of low value and even at its real value it is hard to place in the markets. This leads us to sorting, which should not be overlooked. Regardless of season or care in culture on the part of the grower, there will be found a greater or less number of soft or immature ears. Better leave them in the fiield to rot than

haul them to market. They not only spoil the general appearance of the corn and reduce the grade, but the grain buyer is afraid of them and he not only cuts the price according to the grade but if he has been in business long enough to have paid for his experience in handling unsorted corn by having a crib of it rot in the center or a bin of it burn he will also figure on some insurance as you may call it, which means more cut in the price. The grower should sort his corn then before taking it to market to realize the most money out of it He should also sort his feeding corn or he may lose by heating during the curing process. However the risk is not so great in a small crib. Soft corn may be fed to stock on the farm with some value, while it is not only worthless in the market but reduces the value of the good corn. In sorting it is not necessary to discard ears because they are small provided the kernels are matured. Again a limited proportion of small kernels need not lower the grade if they are sound.

It would seem that our markets might consider the food value, or amount of protein, in arriving at the value of corn. However this point has never gained recognition and we must look for the benefit to be derived from the breeding of corn high in protein to come in the form of a higher general standard of value as compared with other grain.

So much for the corn itself; but since the most of the corn marketed in this state is brought to the elevator in the ear the amount and condition of the cob is also of marked importance. Thus far the grain dealer has found the buying of cobs an unprofitable business, and of course he only wants to buy what is necessary to get the corn. The cob is far more susceptible to change in moisture than the corn. It is unnecessary to state that a large cob is always objectionable to the buyer, because the larger the cob the greater the change in the weight of the ear according to the variations in atmospheric conditions. Two years ago this month a test was made with a new ear of corn having a very large cob which was brought into an office. It weighed 22 ounces. It was weighed each day thereafter for ten days, and at the end of that period it weighed 15 1-2 ounces a loss of 29 1-2 percent. The corn was in average condition and its possible shrinkage was not more than 3 percent making the loss on cob moisture 26 1-2 percent. While this test is extreme, yet it is presented in order to illustrate the possible. Thus we can see that the farmer would better produce 45 bushels per acre of average sized cob than to have produced 60 bushels per acre of such large cob corn. It is of common interest to the grower and buyer to breed a cob no larger than is necessary to produce a good ear, and to produce the greatest number of bushels per acre.

The introduction of the shredder and husker during recent years should divert our attention to the husking of corn. Machine husked corn seldom commands the price of hand husked corn, because there is more or less corn removed from the cob in the process, thus reducing the value of the ear. Again, corn husked in this way generally comes to market in a half husked condition unless the farmer has gone to the labor of rehusking it. From this the waste is increased and with the loss of corn mentioned can but result in a reduction of price. Again, the corn removed from the cob is more or less crushed and broken, making it of a low value and practically unmerchantable. While husking machinery is being improved from year to year, yet these objections have not been overcome. Farmers pronounce it more expensive than hand husking but say they can better utilize the stover, while on the other hand they are driven to it because of the inability to procure labor to hand husk it. Machine husking has been dubbed "hogging" by the grain dealers, and it seems deserving of the name. It should certainly be repulsive to the farmer who takes pride in producing a nice corn to see it coming forth from the machine in a mangled, half husked condition. So far the method has proven unpracticable and unprofitable to the farmer and annoying to the buyer and therefore should not be encouraged.

We would finally call the attention to care in hauling corn to market. Winter being the most convenient time for marketing corn we too frequently see it being hauled in rain or snow without being covered. We should carefully note that corn should receive the same attention in this respect that wheat or any other grain does.

In conclusion we can but urge the necessity of co-operation between the grower and the buyer. In this era of equity and justice what is beneficial to the one in demanding a corn in the market of high quality should be equally so to the other in commanding the highest market price. Harmony of purpose can but result in a mutual benefit.

If for any reason the farmer is unable to deliver good corn to the market he should not expect the highest price. On the other hand the buyer should not pay the top price for it because by so doing he discourages the interest to deliver good corn. We must conclude then that it is within the power of the grain merchant to accomplish much in the way of inducing the grower to produce and market better corn by buying on the merit of the corn. Your committee on marketing would commend to the association a further consideration of this important factor throughout the coming year.

H. W. Robinson, Chairman.

REPORT OF COMMITTEE ON ROTATIONS AND FERTILIZERS.

ALFRED VIVIAN, O. S. U., COLUMBUS
TASSO TERRELL, NEW VIENNA O. H. FAWCETT, BELLEFONTAINE
FRANK BALYEAST, VAN WERT DAN EGBERT, TIFFIN

Your committee on Rotations and Fertilizers has very little to offer at this time in the way of a report. This committee was appointed only a few weeks ago and has had no opportunity to meet and formulate a report. Last evening three members of the committee held a short session in which they agreed on the plan of action herein described for the ensuing year.

This committee does not feel that it is sufficiently well informed regarding the rotations or fertilizers in use at the present time by the farmers of Ohio to be able to make a report on present practice that will be of any value. The committee therefore proposes merely to outline for the Association its proposed line of action for the ensuing year without making any suggestions at this time as to the advisability of any system of rotation or fertilization.

As far as we can find, no very exhaustive study of the rotations and fertilizers used by the corn growing farmers of this state has been made up to the present time. We feel that we can do no more valuable work for the coming year than to attempt to collect somewhat extensive data on this point. In other words we feel that a knowledge of what is actually being done by our corn growers (both good and bad) at the present time is absolutely necessary before we can outline work for the future or make suggestions which will have any likelihood of being practically valuable. For this reason we propose to devote the major part of our time for the coming year to collecting all the data possible regarding the rotations and the methods of fertilization now practiced in the different counties of the state.

The state will probably be divided into sections, each section being the especial object of study for one member of the committee. It will be necessary for us to call on the members of the local associations for aid and we hereby earnestly request their cooperation in what we realize is an undertaking of considerable magnitude. The secretaries of the county associations especially can render us most efficient assistance and we hope that our request for aid which will be sent out in due time will meet with their hearty cooperation. We desire to know just what rotations are used in every county of the state, and if manures and fertilizers are used, what kind, in what quantity and when such fertilizers are applied. If the different local

associations will meet the committee half way in gathering this statistical information we feel sure that we can collect a lot of data that will be valuable not only to this association but to agriculture at large.

While it is not possible to foretell the results of such a study there is no reason to doubt that the facts and figures so acquired will give us a basis for an intelligent study of rotation and fertilization as they exist and will point the way to valuable suggestions as to future policy—suggestions which should lead to better practice.

The committee feels that it cannot leave this subject without recommending to the members of this association that they all make, during the coming winter, a careful study of Bulletins 182 and 183 of the Ohio Experiment Station. These bulletins, epitomizing as they do the many years of investigation carried on by Director Thorne with manures and fertilizers on various crops are replete with information which should be in the hands of every farmer. These bulletins should not be read superficially but should be studied assiduously and be made a part of the very life of the farmer who is trying to make his farm yield him the best profit, and who at the same time desires to maintain and improve the fertility of his soil. The more one studies these bulletins the more he is impressed with the wonderful possibilities of crop production under intelligent handling of the soil. One of the instructive points brought out by this study of the maintenace of fertility is the apparent fact that the soil is the fundamental thing in determining the fertilizer to be used and not the crop grown thereon. In other words that the fertilizer which will produce best results with one crop on a given soil is likely to be the one which will produce best results with all crops on the same soil. The farmer therefore may feel sure that one system of fertilizing may be used for all his crops provided he adopts the system which is most rational for his soil.

These bulletins show also that stable manure is the fertilizer par excellence for corn and, conversely that corn is the crop which gives the most marked returns for the use of stable manure. This fact is borne out by the results obtained at other experiment stations, so that we can safely say that for corn at least stable manure gives better returns than any combination of commercial fertilizers. A study of Bulletin 183 will show that the very largest return on corn was obtained from stable manure reinforced with forty pounds of acid phosphate to the ton of manure. Wouldn't it pay everybody to use a little acid phosphate or floats with the manure?

ALFRED VIVIAN

DONATION OF THE OHIO FARMER TROPHY CUP.

BY JOHN F. CUNNINGHAM, EDITOR OHIO FARMER, CLEVELAND.

I assure you that it gives me genuine pleasure to be able to address this association, and to present the Ohio Farmer sterling silver cup, to be awarded annually for the best county display at the state corn show. Judging from the activity of the men in charge, we all anticipated that this show and meeting would be a great success, and this anticipation is certainly borne out by the unprecedented attendance, and by the great selection of good corn to be seen in the exhibition halls. As for the Ohio Corn Improvement Association, I believe that we are all more than satisfied with its remarkable growth. Most of us were amazed, last evening, when the membership was reported to be something over two thousand. Such a membership, in an organization that is not yet a yearling, not only demonstrates the fact that the association is being managed by hustlers, but also the more important fact that the farmers of Ohio are taking a genuine and active interest in better corn and more of it.

The prizes at the show are a rich lot, and the interest in the competing exhibits is keen, but it is quite essential to the success of the movement for better corn that we all realize that the corn show is not the final result sought. The show is but one of the means used to accomplish the real result, which is to interest every corn grower in improving every stalk of corn to be grown upon his farm. Thus the corn show, with its prizes for the winners, will bring about good results, indirectly, just as did a promise made by an old-time German vineyardist, according to the story. This man, upon his death bed, told his sons that somewhere in the vineyard was buried a pot of gold; if they searched for it they would find it and be richly rewarded. When the aged man had been laid to rest, the sons began to dig about among the roots of the grapevines in search of the hidden treasure. Time went by and still they searched fruitlessly. They never found the gold, but their stirring of the soil made the grapevines take on new life, and the increase in the fruit was worth far more to them, with its attendant lesson, than the pot of gold would ever have been. In the same way, farmers who try to improve their corn so as to win a prize in the corn show will study corn, think corn and talk corn, to the lasting benefit, not only of themselves but of their neighbors also. These trophies then, are intended not only as prizes for the winners, but as an encouragement to all who grow corn.

A city man once decided to go into the poultry business. So he built a fine chicken-house and equipped house and yard with the most up-to-date appliances. Then he went to a fancier to get his stock and was prevailed upon to buy bantams. Much to his disappointment the eggs were small, and, feed the hens how he might, he could not increase the size of the eggs. So, one day, he noticed some ostrich eggs for sale down town, and an inspiration struck him. He bought one of the big eggs, punched holes in either end and hung it up in plain view of his bantam hens, and under the ostrich egg he hung a sign, printed in large letters, which read: "Keep your eyes on this and do the best you can." And so I say to the corn growers of Ohio, keep these trophies in mind, and do the best you can, not only to win the trophies, but to make more and better corn.

Inasmuch as this trophy is a cup, it seems to me that an appropriate toast would be in good taste, so I wish to offer this one, which occurred to me on the train, yesterday:

To Indian Corn —the King of American farm crops. An inspiration to the husbandman when its first green streaks of promise appear upon the fresh ground of the springtime. A solace of the heated season when its rustling blades whisper promises of benefits to come. A reward for industry, diligence and good judgment when the tented fields show that the harvest has been garnered, and the sheltering husk yields forth its treasures of white and gold.

DONATION OF THE NATIONAL STOCKMAN AND FARMER TROPHY CUP

BY E. S. BAYARD, ASSOCIATE EDITOR, NATIONAL STOCKMAN AND FARMER, PITTSBURG, PA.

While I am surprised at being called out to present this cup I must say that the duty is also a pleasure. It is always a pleasure to encourage an association of this kind, and the National Stockman and Farmer is always ready to do it in whatever way it can. But I take it that long speeches are not necessary to encourage any association, and I have known them to have the opposite effect on some, so I shall be brief.

I once heard a story about a Kentuckian of the olden time who departed this life and for whose funeral no minister could be had, so a neighbor was called on to say a few words. He arose and said: "The deceased was a good citizen. He raised good cocks and fought them; he kept good whiskey and he drank it; he bred good horses and he raced them. He was a model citizen." Whether all you gentlemen can qualify under the old Kentucky definition I do not know, but I trust that when the time comes at least it may be said of each of you, "He grew good corn and he showed it," and, judging by the exhibits in these other rooms, it can be said of many.

I am a firm believer in the utility of corn shows. They are good to stir us up, to show us all types and perhaps better types of corn than we have. When you get a thousand or two thousand corn-growers together to talk corn you are bound to do somebody some good and are very likely to do many people much good. But while all this and much more is true of the corn show we must not lose sight of the main object of all this corn work. This object is not corn show, it is not show corn, but it is *more bushels of good corn to the acre*. That is the object, gentlemen, and it should be kept in

mind. The show is one means to that end, these lectures are another, the demonstrations we have in the field are another, but none of these is the chief end or object. More corn to the acre should be the slogan of the corn improver. With these suggestions I leave the cup with you, trusting that it may add some interest to your contests. You have a great show and a great meeting for a first attempt—upon which you should be congratulated and for which I am sure you have your hard-working officers to thank.

DONATION OF THE FARM MANGEMENT TROPHY CUP.

BY W. J. SPILLMAN, U. S. DEPARTMENT OF AGRICULTURE.

This beautiful cup has been donated to the association by friends who are interested in the development of the farm management investigations now being conducted by the Ohio State Experiment Station in cooperation with the Office of Farm Management, which I have the honor to represent. It is appropriate on this occasion to review briefly the origin of farm management investigtions in the Department of Agriculture and to give the history of the establishment of cooperative relations with the Ohio Experiment Station in this work.

In 1894 I assumed the responsibility for the experimental field work of the Experiment Station of the state of Washington, the region being one with whose agriculture I was not familiar. A large number of experiments were put in operation with a view to learning those things I did not know about agriculture in that section. The college farm of 190 acres proved to be too small to hold the experiments that were outlined, nor would the money available suffice. After a few years I had become acquainted with a large number of the best farmers in the state and I found what I might have known before, that these farmers knew more about farming than I did. Something like half the problems I had been experimenting on had already been solved by farmers scattered here and there over the state. Yet it could hardly be said that the farmers generally understood any of these problems, though individual farmers here and there understood one or more of nearly all of them.

It became more and more evident that if the experience of the better class of farmers in the state could be gathered together and interpreted intelligently a great advance in the science of agriculture would be made. The duties of the position I held were so exacting that I could not find the opportunity to make an adequate study of farm practice. In December, 1901, I came to the Department of Agriculture at Washington. There I found I was free to develop my own policy. The study of farm practice, especially on the most successful farms, has been continued since that time, and we now have twenty-seven men engaged in this work.

Unfortunately, the publications we have been able to issue thus far give only the most meager idea of the work we are conducting. It is as if we were prospecting a gold mine. The location and outline of the main paying streaks are beginning to appear. Meanwhile, we have been describing some of the indivdual nuggets we have un-

earthed. These are the individual farms whose system of management has been described in our bulletins. We hope before many more years to begin to publish bulletins dealing with the general principles involved in farm management.

One of the most fruitful lines of work we have undertaken, but about which we have as yet published nothing, is the detailed study of the work on selected farms with a view to finding the cost of every kind of farm operation and the amount of labor required for every department of work on the farm. These studies include also the character and cost of the necessary equipment for farms of all types

and sizes, along with a careful study of the system of management in vogue on the farm. It is this line of work in which we found the Ohio Experiment Station deeply interested and eager to cooperate with us.

Because of the highly satisfactory system of cooperation we have with your State Experiment Station we have been able to institute investigations of this kind on more farms in Ohio than in any other state and with less expenditure of funds. To say that we are highly gratified to be able to make such an arrangement is putting it mildly. We propose to put more energy, time and money into the work in Ohio next year than we are doing this. We have more applications from farmers who want to join in this work than our available help will permit us to accept. We hope next year to be able to extend the work.

This cup is to be given by the association as a prize in a contest for the best records relating to a field of corn. The object in giving the prize is to aid in developing the must practical and useful system of making farm records. Just at a time when the great middle west has been farmed so long that exploitive types of farming are no longer permissible, it is gratifying to see the general interest which has been manifested by the Ohio farmers in the efforts which are being made to work out the general principles involved in farm management. I hope the giving of this prize may stimulate more careful attention to those details of farm management which determine the difference between success and failure. Ohio is already a leader in good farming. The success of this meeting leads me to hope that this state will continue to lead in this good work.

DONATION OF THE AGRICULTURAL COLLEGE TROPHY CUP.

BY A. B. GRAHAM, SUPERINTENDENT OF AGRICULTURAL EXTENSION, O. S. U., COLUMBUS.

When the three cups already presented have been arranged in order of size, the fourth, the Agricultural College trophy, seems so small that it may appear to you as only a model, but I want to assure you that it is the real thing. I am reminded of a story about a lady who had a husband about whom she had often heard the remarks, "He is a model husband; he is a model man, etc." Not being exactly sure that she knew the meaning of the word 'model' she consulted the dictionary. She was somewhat embarrassed when she learned the definition—"A small imitation of the real thing."

The story doesn't exactly apply, for this is the real thing with the true ring.

This cup is to be known as "The Agricultural College Trophy," and is to be awarded annually to the township, village or special district high school whose members raise and exhibit the best corn according to the rules of this association.

The awarding of this cup shall stand for more than mere corn raising; it shall stand for culture quite as much as for agriculture; it is hoped that it may quicken an interest in science that leads the way for the real agriculturist; it should stimulate a community interest in all that stands for the best in the individual to make the best of living and the most of making a living.

Gentlemen, please accept this cup from the Faculty of the College of Agriculture, and award it to the school whose efforts are well directed toward making the active, citizen-artisan on the farm.

REPORT OF COMMITTEE ON SCORE CARD AND CORN JUDGING

C. G. WILLIAMS, O. A. E. S., WOOSTER
H. P. MILLER, WESTERVILLE J. W. McCORD, COLUMBUS
W. M. HARDMAN, YELLOW SPRINGS I. S. COOK, JR., CHILLICOTHE

The very general use of the score card in the final selection of seed corn necessitates the preparation and indorsement of such a card by the Ohio Corn Improvement Association. In preparing this score card your committee feel called upon to say that they have had in mind the needs of the corn grower rather than the professional corn judge. The latter is apt to find any sort of a score card a hindrance, rather than a help.

The aim of your committee has been to include in the Ohio score card only those points which field experiments have shown to have significance in so far as yield and market quality are concerned. They stand ready to make such changes in the future as field tests may call for.

SCORE CARD FOR DENT CORN

1	Adaptability	25
2	Seed condition	15
3	Shape of kernel	15
4	Uniformity	15
5	Weight of ear	10
6	Length and proportion	10
7	Color of grain and cob	5
8	Butts and tips	5
	Total	100

EXPLANATORY NOTES

1 **Adaptability:** Of first consideration in the selection of seed corn. Indicated by the filling out of kernels, by ripeness and by the utilization of soil and climatic conditions.

2 **Seed condition:** Of vast importance, for seed corn that will not grow is worse than worthless. Indicated by solidity of ears and of kernels on the ear; by brightness of color, especially of germ and by plumpness of tip. While the germination test is the final arbiter the trained eye can determine much.

3 **Shape of kernel:** Kernels should broaden gradually from tip to crown, with edges straight so that they touch the full length and should be wedge-shaped without coming to a point. Observed from the edge they should have uniform thickness. Thin, shrunken, sharp-pointed kernels are very objectionable.

4 **Uniformity and trueness to type:** The ears selected should be uniform in size, shape, color, indentation and size of kernel. Uniformity or trueness to the type determined upon is essential to progress in corn improvement. Uniformity of kernels is essential to machine planting.

5 **Weight of ear:** To be determined by the use of scales after corn is thoroughly air dry. Many seasons this is not practical before January. Where the stand and other conditions of growth are equal, weight of ear is a good indication of productiveness.

6 **Length and proportion:** Length will vary according to environment. No standard can be set by the score card save that set by maturity and proportion. Circumference is measured at one-third the distance from butt to tip. It should not exceed four-fifths, nor fall below three-fourths the length.

7 **Color of grain and cob:** Grain should be free from mixture. Uncertain tints in cob and grain, and off-colored kernels are evidences of mixing. White corn should have white cobs and yellow corn should have red cobs.

8 **Butts and tips:** Kernels should extend in regular rows over the butt and against the shank. The shank, however, should have sufficient size to support the ear. Swelled, open or badly compressed butts, as well as those having kernels of irregular size are objectionable.

The tips should have kernels of even size, well dented and preferably in regular rows. An under-sized ear is more objectionable with a completely capped tip than with a little bare cob. A sharply tapering tip is not desirable.

FIELD SCORE CARD.

In answer to a demand for a score card for use in the field, in the plant selection of seed corn, this committee would recommend the following card:

1	Adaptability	35
2	Vigor	25
3	Height of plant, and height and angle of ear	15
4	Uniformity and trueness to type	10
5	Weight of ear (estimated)	15
	Total	100

EXPLANATORY NOTES.

1 **Adaptability** Plants must be adapted to the average soil and seasonal conditions prevailing in the locality. Corn that is too late or too early in maturing, or that shows a lack of adaptability to soil conditions, should be cut accordingly.

2 **Vigor:** Indications of vigor are seen in uprightness of stalk: in a well developed stalk, leaf and ear; in freedom from disease. In marking for vigor note carefully the conditions of growth.

3 **Height of plant and ear:** Cut for extremes in either direction in the case of both plant and ear.

4 **Uniformity:** Uniformity of plant and ear in manner of growth, height of plant and ear, etc., and conformity to the type determined upon.

5 **Weight of ear:** While it can only be estimated at the time selections are made, yet even then it is an important point to take into consideration in selecting for high yield, if the conditions of growth are noted.

VARIETY SCORE CARD.

There seems to be a demand for a score card for use in judging varieties of corn at husking time, as tested both by individuals and by local Corn Improvement Associations. The committee would recommend the following:

1	Bushels per acre. (Uniform moisture test)	50
2	Maturity	25
3	Uniformity and trueness to type	15
4	Color	10
	Total	100

EXPLANATORY NOTES

1 **Bushels per acre:** That which we grow corn for. Theories must give place to facts.

If impracticable to shell all the corn, a dozen average ears of each variety may be shelled, the percent of grain determined and the total yield of grain computed therefrom.

All yields to be reduced to a uniform moisture content.

2 **Maturity:** To be determined by the actual condition of corn. Cut for unripeness.

3 **Uniformity:** Uniform as to size, shape and type of ears, and marketability.

4 **Color:** An indication of purity and market quality.

C. G. WILLIAMS, Chairman.

REPORT OF COMMITTEE ON UTILIZATION

REID CARPENTER, MANSFIELD
G. E. JOBE, CEDARVILLE E. C. DARLING, NELLIE

Extraordinary conditions confront the farmer this year in regard to the utilization of the corn crop. The very fact that the price of corn is high for this season of the year, and that the price of fat live stock is not as compensative in relation to the price of corn as we think it should be, is one cause for so many farmers putting their crops off the farms and on the market in a way that we fear will be detrimental to the best agricultural interests of our country.

Live stock markets are reactory—we always expect prices to depreciate at this season of the year for a short time. We believe they are on the way to become more compensative to the farmers. As we look about us to see what is being fitted for the future markets, this fall and winter, we do not find the feed lots being occupied as in past years. That means better prices in the future, and why should we be so very anxious to dispose of the present crop so soon? We also think it a poor policy to always be changing our farm plans by going extensively into one line of feeding one year and the next year reversing the system so radically that we scarcely know where we are.

We do not wish the important fact to be overlooked that when we sell our corn crop to the elevator we are, in a measure, selling our farms in small doses and robbing ourselves of the fertility that should be kept at home. We do not depreciate the fact that it is necessary to sell a portion of the crop for certain uses, especially as food products in its several and different ways, but the farmer who has the ability and desire to keep and feed his crop upon his farm should by all means do so. If you should ask how, we would say "By the different methods used throughout the country."

It was suggested to the committee on utilization that the method of using the crop of corn produced on the farm of each member of the committee be included in this report. While there is nothing new or novel in our method of using our corn crop, it may be interesting to some members of the Association.

The firm of Carpenter & Ross are breeders of Shorthorn cattle and Duroc Jersey hogs. Manwalton Farm contains in itself 220 acres and in addition 200 acres under lease to the firm. On these farms, we have, the last year, raised about 50 acres of oats, 50 acres of hay, 50 acres of corn, 7 acres of turnips and beets, and 12 acres of barley. Nothing is sold off the land except live stock. This winter there will be fed about 125 head of Shorthorns and about 125 head of

Duroc Jerseys, also 10 head of horses. All hay, straw and fodder are stored in the barns, nothing is left out of doors. Of the corn crop about one-half, or 24 acres, was put in the silo just when it was getting ripe; the balance was husked and shredded and all fodder blown into the various barns. The corn was all cut with a corn harvester just as close to the ground as possible, not leaving in scarcely any case, more than six inches of stubble with the root, and often less.

The largest barn is equipped with a gasoline engine that drives the cutting and grinding apparatus and also does the pumping of water, when this is necessary, from a deep well. All corn fed to the cattle is ground with the cob and fed in the shape of cob and corn meal. When the cob has become too dry to grind, the shelled corn is ground. Up to the first of December there will be no ensilage fed but it will begin to be fed about that time and will be largely confined to cows that are raising calves.

Up until December 1st, abont 15 bushels of cut hay, 15 bushels of corn and cob meal and 15 bushels of ground oats or barley are all mixed together and often an equal amount of alfalfa meal or Alfalimo is substituted for one-half of the cut hay. When the ensilage is fed about three gallons of ensilage and three quarts of corn cob meal are mixed and fed to each cow and the younger stuff in a less measure. At all times the racks are kept full of hay or shredded fodder.

In the above ration the show cattle will be fed ensilage instead of cut hay. As to the amount given to each animal, it is given all it will eat up clean.

During the last eight weeks or more we have been able to feed all cattle on pasture a generous supply of turnips, starting with two wagon loads a day for several weeks, but for the last month they have had four wagon loads each day; during that time it has taken the labor of one man and team most of the time pulling and hauling turnips for the cattle on grass, and lately on account of the exceeding drouth we have been compelled to supplement this feed with shock corn.

It is not to be understood that we are able to keep and feed the number of cattle and other stock on the amount of grain and rough feed we raise on our own land or the land we have under lease. However, the amount of rough feed we are compelled to buy is comparatively small—probably $300 will cover the amount paid out for hay and fodder. The amount paid for corn, oats and other feed between now and May 15th will approximate $3,000. All cattle running in sheds and not on pasture are followed by hogs, and the manure from the box stalls is piled in the barnyard and worked over

by the hogs, and the same system will be followed during the winter. With this system there is as little waste as we conceive possible. All box stalls and stables are thoroughly cleaned every day and generously bedded down with wheat or barley or oats straw and the waste fodder and hay from the racks. There is no patent stock food of any kind ever fed to the cattle or hogs.

This method of utilizing the corn crop consumes it all on the farm; it is fed into cattle of such breeding that will always sell at a fair price. The problem on high priced land today is to so conserve the land as to get the largest yield possible and then to so care for the crops that there will be as little waste as possible.

After the silo is built it costs little if any more to put the whole crop into the silo than it does to husk the corn and feed the fodder. It costs little, if any more, to husk and shred the corn with a husker and shredder than it does to care for the crop in the usual way.

In every manufacturing establishment the elimination of waste is a continuing problem. Every farm that feeds what is raised on the farm is a manufacturing establishment and is subject to the same rules and principles that any other well conducted shop should be governed by. The farm on which the crops raised are sold off the farm is not an agricultural proposition but a mining one in which so much potassium, phosphorus and nitrogen are sold each year and the mine is finally exhausted or mined out.

Some statistician has figured that if the average production per acre over the United States in the corn belt were increased five bushels per acre the aggregate increase would amount to $250,000,000. That would amount to more than all the gold mined in North America and but slightly improved methods would easily accomplish such a result.

On the farm of G. E. Jobe, of this committee, there are raised about 85 acres of corn. This crop is also fed on the farm, which consists of 290 acres. This winter there are being fed 33 head of steers, 60 head of fat hogs for winter markets and there will also be fed about 150 head of lambs for the spring market. There will also be carried on the farm 15 horses, 20 cows and other stock cattle, 90 breeding ewes and 40 yearlings and ewe lambs. Practically no corn is sold by Mr. Jobe off his farm but he is a purchaser of both corn and fodder (stover). He considers it good business to purchase fodder at any reasonable price, for if it is carefully handled there need be no waste, what is not eaten by the stock going to increase the fertility of the soil.

It is the judgment of the Committee on Utilization that the only correct method to utilize the corn crop is to feed it on the farm. When the farmer sells $1,000 worth of corn it is said he sells, or rather gives away, $300 worth of fertilizer, or what would produce that value if fed through his cattle or stock. In the same manner in selling the fodder on an acre of corn ground that has produced a reasonable crop, he is giving away about 70 pounds of potash, beside other minerals that will enrich the soil.

One of the greatest problems with the careful farmer should be to preserve and increase the fertility of the soil. It costs really less to cultivate good ground and produce a crop from it than it does to cultivate poor land and produce half a crop. It costs no more in other words to raise 100 bushels of shelled corn to the acre than itd oes to raise 50 bushels to the acre, and there is no manufacturing business that will compare with the raising of corn on good land. Mr. Beam, of Ansonia, Ohio, reported to this meeting that he has this year raised 104 bushels of corn to the acre. The cost of raising and producing this corn, according to Mr. Beam, was $12.80. The value of the corn produced per acre at 65 cents per bushel, the price it is commanding in northern Ohio, would be $67.60. The net value of the corn alone, not counting the fodder, would be $54.80 per acre. Allowing the value of the fodder and the $4.80 for errors in keeping accounts of costs and taxes, we have this land producing net five percent per year on $1,000 per acre.

But the only manner in which this land can be kept at its present state of fertility is by utilizing every bushel of corn raised on the farm, or giving back to the land its fertilizing equivalent.

REID CARPENTER, Chairman.

REPORT OF THE COMMITTEE ON STATE DIVISION

A. G. McCALL, O. S. U., COLUMBUS
E. J. RIGGS, RACCOON ISLAND G. C. HOUSEKEEPER, BOWLING GREEN

Your committee has collected together a large amount of information bearing upon the relative adaptability of different sections of the state to the growing of corn, but it is not yet in position to suggest a basis upon which such a division may be made.

The Southern, Middle and Northern sections, recognized by the Weather Bureau, do not answer our purpose, neither will any division based on latitude alone. A comparison of the average yields in the Northern and Southern sections will reveal the fact that the climatic or seasonal conditions in the two sections are not the dominating factors in corn production.

The ten-year average July rainfall in the three sections is as follows:

Northern section	4.21 inches
Middle section	4.29 inches
Southern section	3.65 inches
Entire State of Ohio	4.10 inches

It has been shown by J. Warren Smith, Ohio Section Director of the U. S. Weather Bureau, that the yield of corn is very closely correlated with the July precipitation, and that the yield is almost directly proportional to the rainfall. This being true, the Northern section would have a slight advantage over the Southern section so far as rainfall is concerned.

It has been urged that the greater length of the growing season in the Southern part of the state gives that section an advantage over the Northern section with respect to yield and size of ears. When we consider the total amount of sunshine for the entire growing season, however, we find that there are just as many or more possible hours of sunshine in the Northern than in the Southern section.

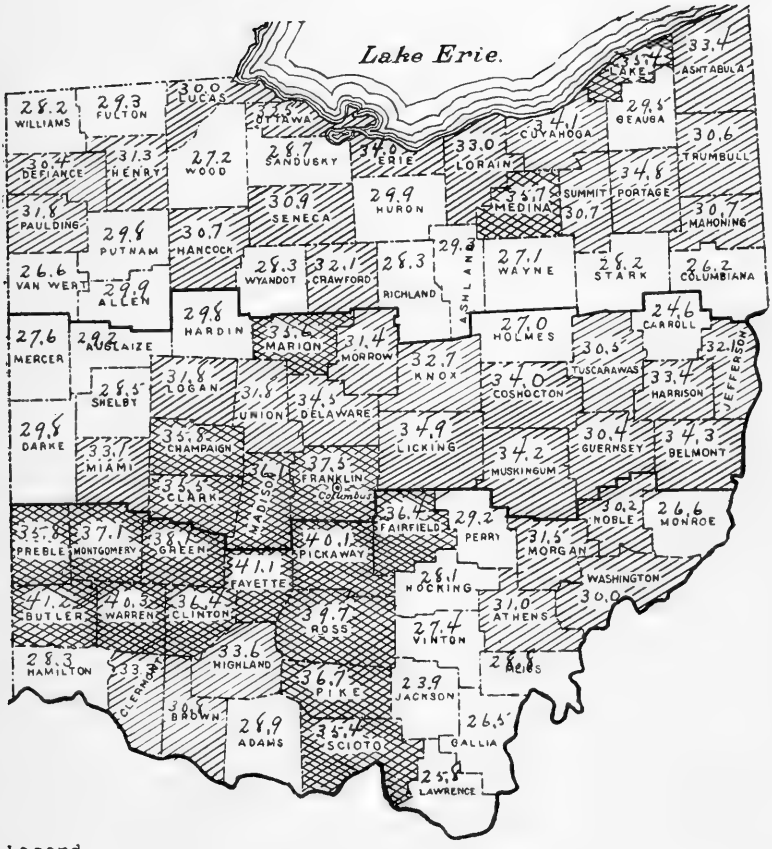
Possible hours of sunshine April to September inclusive		Actual hours of sunshine April to September inclusive	
		Toledo	1606 hours
Cleveland	2559 hours	Cleveland	1466 hours
Columbus	2548 hours	Columbus	1651 hours
Cincinnati	2533 hours	Cincinnati	1713 hours
		Parkersburg	1363 hours

An investigation of the effect of environment upon the growth of the sugar beet has shown that the possible hours of sunshine is more closely correlated with the growth of the plant than the actual sunshine hours. Assuming that this holds good for corn, we cannot say that the Southern section has any advantage over the other portions of the state with respect to this climatic factor—sunshine.

We, therefore, conclude that climatic conditions alone will not furnish the basis for our state divisions.

A large amount of data was examined with a view to classifying and grouping the counties according to a factor obtained by multiplying the average ten-year yield by the average quality, the quality factor being introduced to reflect the adaptability of the corn to the locality. This plan has been abandoned for the present on account of the lack of data relative to quality.

The following maps are introduced to show the change which has taken place in the relative yield of corn in the different sections of the state during the past half century.



Legend.

Less than 30bu. 30 - 35bu. More than 35bu.

MAP 1. Average Yield of Counties for the Decade 1850-1859. Compiled from the County Assessors' Reports.

MAP 2. Average Yield of Counties for the Decade 1890-1899. Compiled from the County Assessors' Reports.

MAP 3. Increase or Decrease in Yield from the Decade 1850-1859 to the Decade 1890-1899.

We will not discuss the factors which have contributed to bring about these changes, except to point out the fact that the decrease has been in the rich river valleys, while the other portions of the state have increased their yield.

We wish to express our thanks and deep obligation to Director Thorne, of the Ohio Experiment Station, for the large amount of data and information which he placed at the disposal of the committee. The committee is also under obligation to J. Warren Smith, Ohio Section Director of the U. S. Weather Bureau, for data and many valuable suggestions.

In conclusion we wish to recommend that a temporary division of the state be made as follows:

NORTHEAST DIVISION

Ashtabula, Trumbull, Mahoning, Columbiana, Stark, Portage, Geauga, Lake, Cuyahoga, Summit, Medina, Wayne, Ashland, and Lorain counties.

SOUTH DIVISION

Monroe, Noble, Morgan, Washington, Athens, Meigs, Gallia, Lawrence, Jackson, Vinton, Hocking, Adams, Brown, Clermont and Hamilton counties.

WEST-CENTRAL DIVISION

All counties not included in the Northeast and South divisions.

The above is to be regarded as a tentative division, pending a more thorough investigation of the subject.

A. G. McCall, Chairman.

REPORT OF THE COMMITTEE ON SILAGE METHODS AND VARIETIES

A. S. NEALE, MACEDONIA
SAMUEL BOGGS, KINGSTON
H. P. MILLER, WESTERVILLE
CHAS. B. WING, MECHANICSBURG
L. P. BAILEY, TACOMA

The economic value of the silo is now a settled question with many farmers. Each year, thousands of Ohio farmers are taking up the production of silage and spending hundreds of thousands of dollars in machinery for handling the same, and in places for its storage. It was formerly thought that only dairymen could profitably feed silage. This idea is fast passing away. Now we find cattle and sheep feeders, lamb growers and general farmers turning to the silo as the most economical method of making dollars out of their corn crop. And it is our opinion that there is a place on every farm in Ohio where live stock is kept throughout the year, and where corn is grown, for the silo.

We know that this statement will be questioned; that there are men here who will say that they cannot afford to haul water from their fields with high priced labor and blow the same into expensive structures. But we would ask them if they could not have used during the present drouth some sort of succulent food to a great advantage in supplementing their dry pastures. It is a fact that the capacity of the stock farms in Ohio is limited very largely by the amount of stock that can be kept during a dry season; that if provision were made for carrying the stock through the dry months of the summer, the amount of stock kept could be materially increased and the value of the same greatly enhanced by having some sort of succulent food to supplement the burned up pastures.

The silo offers the most economical solution of this problem. Soiling is too expensive to be practical in these modern days. Enough food can be placed in the silo in one day to carry the ordinary farmer through the dry months of the season, while with soiling the harvesting must be done each day. Hence, a few acres of corn placed in the silo in the fall will be all that will be needed to enable the ordinary farmer to get through the summer safely, carrying a larger amount of stock than ordinary and keeping the same in much better condition.

There is nothing in the production and handling of the corn crop that offers so many unsolved problems as does the question of silage in its various phases. There is a wide difference of opinion among growers of ensilage and each man thinks he is right. Evidently, some one is wrong. The fact is that every man who tries the silo is so well pleased with the experiment that he fails to study the problem properly and believes that he has found the right thing at the first trial, while some one else very probably has a better method that is worthy of his study.

Of these problems, the variety of corn is one that should be solved more satisfactorily to the ensilage grower. One man favors a large, late maturing, Southern variety, while another man will say that he doesn't want the big, coarse stuff in his silo, but prefers a smaller stalked, earlier maturing, better grain-producing variety of corn. Others prefer a medium sized variety that will produce a good amount of grain and mature fairly well in their locality. It is the opinion of this committee that here is a question our Experiment Station should take up and study thoroughly. What kind of corn will produce the largest amount of food of the highest value per acre to the grower of silage?

Of course, varieties must differ for different localities, but in a general way this question can be worked out so as to place thousands of dollars each year in the pockets of ensilage growers of Ohio.

Another problem is the method of planting. Some growers plant their corn in drills not farther than three or four inches apart in a row, desiring to produce a large amount of forage without regard to its grain value. Others desire to plant their corn thin, in order to produce the largest amount of grain possible, claiming that they prefer *quality to quantity*. Can the farmer profitably grow filler without regard to its contents, or should he rather confine himself to a medium ground where he can produce a maximum amount of tons per acre with a high food value? While it may not be possible for experimenters to take up this subject in an exhaustive manner by carrying on feeding experiments with silage of the different types indicated, it is the opinion of this committee that some investigation should be made to throw more light upon this subject of thick and thin planting for silage purposes.

Along with the question of varieties of corn and methods of planting, comes the problem of breeding a special type of corn for ensilage purposes. We are of the opinion that each locality may develop a type of corn suitable to its needs by judicious breeding. It has been shown that the corn plant lends itself to variations of type very readily, and that it is not a difficult matter to produce and fix a type suitable to our needs. The typical ensilage corn should have a stalk of medium to large size, it should be an erect grower, capable of standing heavy windstorms, with a large percentage of grain, an ear placed low, and should be of a variety that will mature under ordinary circumstances in the section in which it is grown. The placement of the ear on ensilage corn is a matter of very great importance in facilitating harvesting. The majority of our ensilage varieties have an ear placed very high, thus making the bundle unwieldly with a tendency to breaking over and tangling of stalks. With a low placed ear, the bundle is much more easily handled and the stalks remain more largely unbroken. The width of blade is considered by some to be of great importance in the variety of corn for ensilage purposes. However, the fact is that the precentage of blades to stalk and grain is so small that the size of blades is practically unimportant from the feeding standpoint, although it may have a very important influence upon the growth and development of the plant.

While it probably is true, that the best results in corn production for grain purposes can be secured by growing seed corn in the locality in which the crop is to be grown, there are many that hold to the idea that they can get better results, in the northern section of the state especially, with ensilage varieties, with seed grown further south. For example, a favorite on the Western Reserve is the Virginia White Ensilage, hundreds of bushels of which are shipped from that state for planting in this section. This seed is believed to have greater vitality than any other planted in northeastern Ohio. The breeding of this particular variety for silage purposes might well be considered by Prof. Hartley in his work.

The time of cutting is still an open question. While the maximum food value is reached at the shocking stage, the question of whether the crop can be allowed to mature to this point and still produce the best quality of silage is important. Can water be added as the dry corn is being run into the silo, and thus produce a silage equal in palatability and keeping quality to that of corn cut a little before maturity is complete?

To what shall we feed ensilage? To dairy cattle, of course. To beef cattle? Some say, yes; others, no. Some sheep feeders want silage; others, do not. It is said by some to produce disease in sheep and horses, while others are of the opinion that this is merely a coincidence and that the diseases attributed to silage feeding are as prevalent among stock not fed on this food.

Handling the ensilage crop is an expensive proposition. What improvements can we make? Objections are made by some to the corn harvester. Can these machines be perfected so as to overcome these objections, such as tangled corn, unwieldly bundles, etc., or would we better breed a variety of corn that will not present these difficulties to the machine? What are the best methods of loading, cutting and putting the feed into the silo? What type of silo is the most economical? We have many different styles. Of the new types, the most desirable are probably those built of blocks, either concrete or tile. The farmer contemplating building a silo should consider the type well before erecting the structure.

These are a few of the problems that have presented themselves to this committee. There are doubtless many others of importance that should be considered. The committee would be glad to have any other questions brought to their notice for consideration and investigation the coming year, and invite a general discussion on the silage problem at this meeting.

A. S. NEALE, Chairman.

REPORT OF COMMITTEE ON TOOLS AND METHODS

H. C. RAMSOWER, O. S. U., COLUMBUS
W. J. EDGERTON, BARNESVILLE H. C. GEORGE, O. A. E. S., WOOSTER
HARRY TAYLOR, WASHINGTON C. H. J. W. LINEBAUGH, GROVE CITY

PRELIMINARY PROGRESS REPORT

OBJECT

It is the object of this committee to give this association and the farmers of Ohio as complete a report as possible on the most useful and economic machinery equipment that is now used or should be used in Ohio in the production of our corn crop, together with a discussion of the most practical, up-to-date and scientific methods that are practiced or should be practiced in connection with the same.

In more detail, it is our object:

1 To determine the present status of work done along this line.

2 To determine problems worthy of further investigation.

3 To proceed with such investigations in the best manner possible.

4 To announce our results to the farmers of the state as opportunity permits.

METHOD OF PROCEEDURE

1 **Status of affairs:** In the spring of 1908, at the instance of the Secretary of this Association, a list of questions regarding the tools and methods used in producing the corn crop was prepared by the Office of Farm Management, United States Department of Agriculture, and the same was published as a joint circular of the Ohio Agricultural Experiment Station and the U. S. Department. This circular has been sent out judiciously and many replies have been received at the Experiment Station. From the character of the reports already received it is thought that a fairly complete survey of the equipment used in the state can be had, together with some adaptation of the various existing tools. The questions were prepared with a view to obtaining equipment information rather than that relating to the use of the tools and the methods employed throughout. If the expectations are realized, the summary of these reports will indicate the amount and character of equipment best adapted; the cost of same per year and per acre of crop, and the conditions under which each implement becomes a profitable investment. The few questions relating to methods were inserted rather as a means of securing an outline for further investigation as to methods. These were added largely for the benefit of the Ohio Corn Improvement Association, since the Official from the Office of Farm Management is confining his attention to the equipment phase of the work. It is the intention to put forth the summary of information on tools in the shape of a joint publication of the Ohio

Agricultural Experiment Station and the United States Department of Agriculture, thus making it available to the farmers of this state.

This investigation regarding tools and methods does not render further work by this association unnecessary. Additional and specific information regarding certain implements would be valuable, and the methods have scarcely been touched upon. Further cooperation of the members is needed to secure the missing details. The Office of Farm Management has one official devoting his entire time to a study of farm equipment, and investigations covering the entire outfit on the farm have been arranged for in Ohio at an early date. The results of these studies, including further data on corn equipment, will be available for the benefit of the members of this association and the farmers of the state in general, and the cooperation of the members is earnestly requested in aiding the Experiment Station and the National Department in securing the necessary information.

2 **What this report lacks:** Evidently but little is required by this set of questions and hence but a slight amount of information will be collected on the subject of methods.

3 **How this deficiency is to be made up, will constitute a large part of our work:** The committee is composed of members scattered about over the state. Some of these members, in connection with their duties at the Experiment Station, are traveling about over the state more or less during the whole year. Their business will be to collect all the information possible by means of a set of questions which we hope to prepare in order to have the work proceed with some system, which questions will cover not only the methods used in corn production, but they will also cover any deficiencies which we may discover in replies to the former circular mentioned.

In connection with the individual work of the committee, we hope to have the cooperation of the United States Department Office of Farm Management in its work along this line. This office is devoting much attention to the subject of tillage. Its representative, who has this work in charge, has volunteered his assistance in furthering the work of this committee, to the extent of aiding in the outline of a set of questions on tillage methods and submitting a resume of available information on this subject compiled from various reference works. Further attempts to reveal the prevailing tillage methods in Ohio will be made a feature of the study of farm management in the state by all three agencies: the Experiment Station, the National Department, and this Association.

H. C. Ramsower, Chairman.

REPORT OF COMMITTEE ON INSTITUTES AND EXPOSITIONS

V. M. SHOESMITH, O. S. U., COLUMBUS
HOWARD McCUNE, WILMINGTON WM. SPRENGER, WASHINGTON C. H.
CHAS. McINTIRE, CHANDLERSVILLE D. M. WEAVER, LEIPSIC
F. H. OWEN, MARION L. B. BAILEY, TACOMA

We beg leave to report that at the State Corn Show held November 23rd, 24th and 25th, 1908, under the auspices of the Ohio Corn Improvement Association, the total number of exhibits exclusive of class H (Sweepstakes) and class K (county exhibits) was 639.

The following table shows the number of exhibits in each class:

Class	A, 10 ears yellow corn	316
"	B, 10 ears white corn	59
"	C, 10 ears any other variety	53
"	D, best 10 ear sample grown with potash fertilizer	3
"	E, best individual ear	97
"	F, best 30 ears any variety	49
"	G, best 70 ears any variety	26
"	I, yield per acre contest	9
"	J, farm management contest	11
"	L, high school contest	3
"	M, club exhibit	8
"	N, grain dealers' display	5

The number of counties represented was 57, the number of entries in each county being as follows:

Fayette	54	Preble	13	Gallia	3
Licking	41	Washington	12	Logan	3
Ross	35	Hardin	11	Wood	3
Darke	34	Harrison	10	Allen	2
Franklin	33	Stark	10	Clark	2
Champaign	26	Madison	9	Jefferson	2
Delaware	24	Belmont	7	Muskingum	2
Fairfield	23	Butler	7	Lake	2
Mercer	19	Henry	7	Perry	2
Montgomery	18	Medina	7	Trumbull	2
Hancock	17	Seneca	7	Williams	2
Marion	17	Summit	7	Cuyahoga	1
Pickaway	17	Athens	6	Lorain	1
Van Wert	17	Tuscarawas	5	Lucas	1
Clinton	16	Erie	4	Miami	1
Coshocton	15	Meigs	4	Pike	1
Morrow	15	Adams	3	Portage	1
Union	15	Ashland	3	Wayne	1
Greene	13	Columbiana	3		

There were several other exhibits with insufficient data so that they could not be classified, and several shipments were received too late for entry.

This classification of the entries will doubtless be of some advantage in arranging the premium list next year.

While the committee feels that on the whole the show was a successful one, considering the fact that it is the first that Ohio has held, there are doubtless several features which may be improved another year. Certainly no effort should be spared to make the show as educational as possible.

FINANCIAL STATEMENT

Statement of Finances by Committee on Corn Institutes and Expositions:

Receipts

Cash contribution from Grain Dealers	$500.00	
Advertising (Premium list)	135.00	
Entry fees	156.23	
Busy Bee	5.00	
228 dinner tickets at 75 cents	171.00	
Total		$967.23

Expenditures

Paid in cash premiums	$450.00	
Watch fob trophy	35.00	
Printing 10,000 copies premium list, with watch fob inserts	135.00	
Printing entry tags, premium cards and dinner tickets	21.75	
Badges	19.00	
Hotel (Hartley)	2.50	
Postage	42.30	
Postage (Owen)	3.80	
Engraving	8.50	
Express	4.35	
Multigraph	10.90	
Caterer	115.00	
Milk and butter	3.89	
Pumpkins	1.50	
16 tickets returned	12.00	
Students' help	15.00	
Total		$880.49

Total Income	$967.23	
Total Expenditures	880.49	
Balance		$ 86.74

Following is a list of awards in the several classes:

AWARDS

CLASS A. (Yellow Corn.)

Prize won	Entry No.	Name and Address
1st	40	G. O. Vanorsdall, Jeffersonville
2nd	393	Mell Parrott, Mt. Gilead
3rd	239	J. E. Briggs, Martinsville
4th	283	Tasso Terrell, New Vienna
5th	91	Roy B. Fultz, Jeffersonville
6th	281	George Brackney, Wilmington
7th	279	James F. Bennet, Wilmington
8th	98	C O. Ervin, Jeffersonville
9th	37	Albert Vanorsdall, Jeffersonville
10th	521	K. E. Michel, Paulding
11th	394	Mell Parrott, Mt. Gilead
12th	112	O. O. Zehring, Germantown
13th	97	J. H. Fultz, Jeffersonville
14th	3	Chas. S. Neer, Woodstock
15th	479	J. L. Keckley, Marysville
16th	77	B. F. Hawley, Woodstock
17th	151	A. H. Powell, Newark
18th	387	S. P. Leist, Amanda
19th	460	C. N. Price, Radnor
20th	514	A. Philpot, Paulding
21st	200	A. J. Wilson, Wilmington
22nd	520	Chas. H. Graves, Paulding
23rd	175	L. J. Nold, Leetonia
24th	381	D. E. Phillips, Circleville
25th	53	I H. Carmen, Selden
26th	319	Earl House, Greenville
27th	307	J. H. Bishop, Hamler
28th	11	Glenn Hinton, Woodstock
29th	507	Elmer E. Thomas, Newark
30th	517	Ed Delaet, Paulding

CLASS B. (White Corn.)

1st	100	W. E. Jeffers, Guysville
2nd	59	Paris J. Custer, Jeffersonville
3rd	631	Jos. I. Vause, Chillicothe
4th	256	J. L. Keckley, Marysville
5th	4	Chas. S. Neer, Woodstock
6th	54	I. H. Carmen, Selden
7th	552	James Strother, Venedocia
8th	197	J. Arthur Coon, Ashville
9th	83	Byron Staley, Woodstock
10th	243	C. S. Hunter, Seven Mile
11th	482	J. H. Higby, Higby
12th	257	J. L. Keckley, Marysville
13th	214	Geo. W. Warner, Jr., Harshman
14th	56	Paul R. Carmen, Selden
15th	454	Samuel Taylor, Grove City
16th	76	B. F. Hawley, Woodstock
17th	480	Jas. C. Foster, Higby
18th	12	Glenn Hinton, Woodstock
19th	635	George Kuntz, Chillicothe
20th	152	A. H. Powell, Newark

CLASS C. (Any other variety.)

1st	654	G. O. Vanorsdall, Jeffersonville
2nd	258	J. L. Keckley, Marysville
3rd	44	Jake Flax, Jeffersonville
4th	152	A. H. Powell, Newark
5th	259	J. L. Keckley, Marysville
6th	195	J. O. Ferneau, South Salem
7th	400	Lee LeVan, Osborn
8th	512	G. L. Flemming, Amesville
9th	115	Isaac Swartzel, Germantown
10th	92	Roy B. Fultz, Jeffersonville
11th	38	Albert Vanorsdall, Jeffersonville
12th	464	C. N. Price, Radnor
13th	194	A. E. Putnam, Lyndon
14th	193	W. S. Wright, Lyndon
15th	294	Mrs. Anna E. Collier, London

CLASS D

1st	647	A. H. Powell, Newark

CLASS E. (Individual Ear.)

Prize won	Entry No.	Name and Address
1st	244	C. S. Hunter, Seven Mile
2nd	260	J. L. Keckley, Marysville
3rd	93	Roy B. Fultz, Jeffersonville
4th	57	A. S. Booco, Jeffersonville
5th	272	T. Hollon Orcutt, London
6th	266	C. N. Price, Radnor

CLASS F. (30 Ears.)

1st	262	J. L. Keckley, Marysville
2nd	79	B. F. Hawley, Woodstock
3rd	343	Chas. Selby, Ansonia
4th	30	John Lamb, Carroll
5th	397	Mell Parrott, Mt. Gilead
6th	592	Tasso Terrell, New Vienna
7th	124	O O. Zehring, Germantown
8th	629	Lloyd Reiterman, Chillicothe
9th	219	Roscoe I. Straley, Jeffersonville
10th	273	T. Hollon Orcutt, London
11th	58	A. S. Booco, Jeffersonville
12th	280	James F. Bennett, Wilmington
13th	344	Frank Baker, Greenville
14th	36	Frank P Miller, Lancaster
15th	470	C. N. Price, Radnor

CLASS G. (70 Ears.)

1st	42	G. O. Vanorsdall, Jeffersonville
2nd	61	Paris J. Custer, Jeffersonville
3rd	189	F. W. Cline, Bloomingburg
4th	278	Howard and T. T. McCune, Wilmington
5th	86	Byron Staley, Woodstock
6th	398	Mell Parrott, Mt. Gilead
7th	95	Roy B. Fultz, Jeffersonville
8th	125	O. O. Zehring, Germantown
9th	274	T. Hollon Orcutt, London
10th	220	Roscoe I. Straley, Jeffersonville
11th	471	C. N. Price, Radnor
12th	408	G W. Scott, Lancaster
13th	641	Russell Woodyard, Delaware
14th	661	Harry D. Taylor, Washington C. H.
15th	418	Will E. Miller, Thurston

CLASS K

Licking County

CLASS L

1st	656	New Holland High School

CLASS M

1st	348	R. K. Beam & Sons, Greenville

CLASS N—Club Exhibits

1st	120	Sharritt, Swartzel, O. O. Zehring, E. L. Zehring, and Felton, Germantown
2nd	157	A. H. Powell, Howard Powell, Arlo Powell, Thos. Powell and Mrs. A. H. Powell, Newark
3rd	472	C. N. Price, exhibitor for club, Radnor
4th	172	Coyner, Watt, Stinson, George Tudor, Floyd Tudor, Lyndon

SWEEPSTAKES

	40	G. O. Vanorsdall, Jeffersonville

V. M. SHOESMITH, Chairman.

REPORT OF SECRETARY

When the Ohio Plant Breeders' Association was organized in 1906 it was hoped by those interested that it might be able to give much attention to the more homely questions regarding plant growth as well as to those regarding breeding. It soon became manifest, however, that all the time available would be required to solve the problems arising in connection with an entirely new line of work, and that the Plant Breeders' Association must be a record association and nothing more.

Recognizing this fact and also that Ohio needed badly an association which would give its entire time to the consideration of all questions connected with the corn crop such as rotation, uses of manure and fertilizer, preparation of seed bed, care of seed, cultivation, harvesting, utilization, etc., as well as to corn breeding, the Plant Breeders' Association in June 1907 appointed a committee with instructions to undertake to bring about such an organization. This committee issued a call for an organization meeting to be held at Columbus January 15, 1908. To this call 161 delegates representing 54 counties responded and duly organized the Ohio Corn Improvement Association.

The Constitution and By-laws as adopted contemplated that membership of the State Association should be limited to Local Associations, that the only way to become connected with the work should be to join a Local Association and that voting in the State Association should be limited to delegates elected by the Local Associations—one delegate or vote for each ten members in the Local represented.

By the time of the first annual meeting held November 1908 there had been organized 47 of these Local Associations with a membership of 2007. At the end of the year there were 57 associations with a total membership of 2324. From this it will be manifest that the people of the state have already decided that through this organization much good can be done and accordingly are uniting their efforts to see what can be done.

Furthermore the work of the association is not restricted to increasing its membership. A statement of the work that has already been taken up by these Local Associations together with that for which plans are now being made would make still more clear the fact that they are determined to try to live up to the motto—"Better corn and more of it." There is scarcely an association in the state that has not taken up some special line of work which can not fail to benefit to a greater or less extent the corn crop of its county and section.

The work of the State Association is left largely in the hands of the Executive Committee which consists of the officers elected at the annual meeting. With but slight exception, however, every action of the Executive Committee must be submitted promptly to the Secretaries of Local Associations for nullification, before it becomes effective. This committee is authorized to appoint sub-committees to take up any phase of work that seems worthy of consideration.

These sub-committees have already done much good work and are now preparing for work in 1909 that will without question be of great value to the state. A list of these committees is given on page 73. Communications regarding any line of work may be addressed directly to any member of the proper committee or to the Secretary of the State Association to be turned over to same. It is hoped that each Local Association will do all in its power to assist these committees in their work, and that no member of any association

will fail to realize that he must do all he can to raise the standard of corn growing in his community if Ohio is to improve the quality of her corn and at the same time maintain her position as the highest yielding state in the corn belt.

A statement of the membership in the local associations for the year 1908, a copy of the constitution and by-laws and a list of sub-committees for 1909, so far as appointed, are included in this report.

L. H. GODDARD, State Secretary.

OHIO CORN IMPROVEMENT ASSOCIATION
STATEMENT OF MEMBERSHIP FOR THE YEAR 1908

Association	Secretary	Address	Members Apr.	July	Nov.	Jan.	Total paid to date	Over-paid
Ashland	W. G. Miller	Jeromeville				25		
Athens	W. R. Goddard	Amesville				28		
Auglaize	T. E. Bowsher	Wapakoneta	49	49	49	*49	5.00	1.32
Belmont	W. J. Edgerton	Barnesville	27	33	33	43	2 70	—.03
Butler	C. L. Young	Collinsville			21	23	.57	
Clinton (Wayne, Wilson & Richland Tps)	Jno. P.Langdon	Sabina				23		
Clinton	J. E. Orebaugh	Wilmington	36	36	57	57	3.76	
Columbiana	C. S. French	Salem				39		
Coshocton	Ed. LeRetilley	Coshocton	38	38	38		2.00	.10
Crawford	Homer B. Crall	Bucyrus	20	25			.50	—.12
Darke	Frank Plessinger	Versailles	34	34	37	*37	3 30	.60
Delaware (Olentangy)	H. M. Cowgill	Delaware	30	30	30		1.50	
Delaware (Sunbury)	Chas. Fredericks	Sunbury	25	28	33	34	2.37	
Fayette	Wm. Sprenger	Washington C. H.	27	28	28		1.40	
Franklin (Farmers)	D. G. Boyer	Carroll				57		
Franklin (Pleasant & Jackson Tps)	J. W. Linebaugh	Grove City	25	25	25	39	2.50	.28
Gallia	W. C. Mills	Gallipolis			24	34	3.40	2.55
Greene	O. A. Dobbins	Cedarville	62	62	62		3.10	
Guernsey	F. C. McMunn	Lore City	13	13	13		.65	
Hamilton (Anderson Township)	C. Bart Chapman	Madisonville	20	20	20	20	1.50	
Hancock	A. E. Kerns	Findlay	21	21	136	136	7.32	
Hardin	F. B. Rarey	Kenton	212	213	261	261	18.38	
Holmes	Jno. F. Myers	Millersburg				39		
Jefferson	P. B. Floyd	Steubenville	13	14	14	14	1.05	
Knox	Jno. Cunningham	Gambier				9		
Lake	A. M. Thompson	Perry				15		
Licking	Chas Bone	Utica	27	39	52	52	3.58	
Logan	E. F. Miller	Bellefontaine	53	53	53	*53	3.99	
Lorain Carlisle Tp)	W. H. Hart	Oberlin	11	11	11		.56	
Madison	E. D. Orebaugh	London	12	12	*12		.60	
Marion	F. H. Owen	Marion	63	63	63	63	4.73	
Medina	Will Shank	Wadsworth			10			
Meigs	F. W. Nelson	Dexter	25	35	45	60	3.51	.02
Mercer	G. S. Nuding	Mendon			75	85	5.00	2.88
Montgomery	O. L. Shank	Germantown			20	20	.50	
Morrow	Horatio Markley	Mt. Gilead	10	12	18	18	1.20	
Muskingum	Victor Herron	Chandlersville			22	22	2.20	1.65
Noble (Jackson Tp)	J. A. Wagner	Dexter City	14	16	16	17	1.30	.08
Paulding (Payne)	W. E. Smiley	Payne	57	57	57	57	4.29	
Paulding	Elmer Jameson	Haviland	36	36	41	45	4.20	1.16
Pickaway	C. H. Niles	Circleville	105	105	104	104	7.83	
Preble	Clem McKee	Eldorado			13			
Putnam	W. H. Tobias	Gilboa	81	80	80	80	6.00	
Richland	J. E. Lawrence	Lexington	42	42	42	42	3.15	
Ross	H. S. Boggs	Kingston	59	59			1.45	—.02
Sandusky	E. W. Roush	Lindsey				14		
Seneca	R. H. Crum	Tiffin	45	51	53	54	5.30	1.35
Stark	C. N. Dewalt	Osnaburg	30	33	34	*34	2.53	
Summit	W. E. Bradley	Kent	36	36	52	52	3.48	
Trumbull	S. N. Kerr	Hubbard			38	53	1.33	
Tuscarawas	H. S. Bartles	New Philadelphia	21	23	29	29	2.04	
Union (York Tp)	J. S. McGinnis	Richwood			15	25	.50	—.12
Van Wert	H. W. Walters	Van Wert	27	32	32	40	2.60	
Warren	H. M. Dill	Lebanon				26		
Washington	S. W. Harvey	Fleming	11	11	11	11	1.10	.28
Wayne	D. W. Galehouse	Marshallville	12	12	12	37	1.48	—.04
Wood	Chas. LeGalley	Bowling Green			32	32	3.20	2.40
		Totals	1429	1487	1923	2107	$138.65	$14.34
Number members in good standing because of having been reported the previous quarter					84	217		
Total members in good standing			1429	1487	2007	2324		

*No report recieved for this quarter but dues paid in advance.

It will be noted that no dues are paid by Local Associations to the State Association until the end of the quarter next succeeding that in which the association was organized. Thereafter dues are 2 1-2 cents per member per quarter.

All of the above amounts collected from the Local Associations ($138.65) has been turned over to the State Treasurer in whose hands it now remains, no accounts having as yet been approved for payment, by the Executive Committee.

I hereby declare the above statement to be correct to the best of my knowledge and belief.

Signed,

L. H. GODDARD, State Secretary.

OHIO CORN IMPROVEMENT ASSOCIATION

Constitution and By-laws

Adopted January 15, 1908. Revised November 24, 1908.

Article 1—Name

The name of this organization shall be the Ohio Corn Improvement Association.

Article 2—Purpose

The purpose of this Association shall be to discover, develop and introduce better methods and practices for the improvement, production and utilization of the corn plant in Ohio.

Article 3—Members

Any person over fifteen years of age interested in the purposes of this Association may become a member by the payment of the prescribed annual fee.

Article 4—Voting

The right to vote shall be limited to accredited delegates present from local Associations. The delegation from any local Association shall then be entitled to as many votes as that local Association has multiples of ten members for which it has paid dues to the state Association. Delegates present from five counties shall constitute a quorum for the transaction of business.

Article 5—Organization

The officers of this Association shall consist of a President, a Vice-President, a Secretary, a Treasurer and three District Vice-Presidents to be elected from the district which they represent. All officers shall be elected annually and shall constitute the executive Committee of the Association.

Article 6—Meetings

The date, place and arrangement for the annual meeting and for any called meetings shall be determined by the Executive Committee without being submitted to the local Associations. Special meetings must be called upon written request of local Associations representing five counties.

Article 7—Elections

The election of officers for the ensuing year shall be held at next to the last session of the annual meeting.

Article 8—Amendments

Amendments to this constitution may be made by a two-thirds vote at any annual meeting.

By-Laws

Section 1—Dues

The annual dues of all members shall be not less than twenty-five cents per year, payable in advance to the local Association. Local Associations shall pay to the state Association ten cents annually for each member on their rolls, settlement to be made at the end of each quarter. Local Associations in arrears for dues for more than one quarter shall be dropped from the rolls, but may be restored to membership by the Executive Committee by payment of all arrears.

Section 2—Officers

It shall be the duty of the President to preside at all meetings of the Association and Executive Committee, and to countersign at his discretion all orders on the Treasurer.

The Vice-President shall preside in the absence of the President.

The Secretary shall keep the records of the Association and Executive Committee. He shall receive all money due the Association, shall turn the same over to the Treasurer within thirty days, and shall issue orders upon the Treasurer for the payment of expenses, when so instructed by the Executive Committee or the Association. He shall receive such remuneration as may be determined upon by the Executive Committee.

The Treasurer shall hold all moneys of the Association and pay out same upon orders from the Secretary, when properly countersigned by the President. Before entering upon his duties he shall execute a bond to the Association in such sum as may be determined upon by the Executive Committee conditioned upon the faithful performance of said duties. He shall receive such remuneration as may be determined upon by the Executive Committee.

The several officers shall serve until their successors are elected and installed, and shall then turn over to them all books, papers, money or other matter connected with their offices. They shall make an annual report and shall perform such other duties as are ordinarily required of such officers.

The Executive Committee shall execute the instructions of the Association, shall have authority to take up any phase of work that it deems for the best interests of the Association and may call to its assistance such sub-committees as it wishes. It shall have authority to fill all vacancies.

Every action of the Executive Committee which is not submitted to the Association within three days, and except as noted in Article 6, must be submitted by mail to the Secretary of each local Association, which is in good standing with the state Association, within thirty days, and such action may be nullified by a majority negative vote of these Secretaries within ten days after such notice is mailed to them.

Section 3—Amendments

Amendments to these By-laws may be made by a majority vote at any annual meeting.

OHIO CORN IMPROVEMENT ASSOCIATION

SUB-COMMITTEES FOR 1909

Constitution and By-Laws

S. N. Kerr, Hubbard.
J. S. McGinnis, Richwood.
D. M. Weaver, Leipsic.
C. Bart Chapman, Madisonville.
J. Ernest Hutchins, Macksburg.
F. C. McMunn, Lore City.
F. B. Headley, Pataskala.

Improving Corn Varieties

I. S. Cook, Jr., Chillicothe.
Jas. W. Cook, Forest.
Philip Baer, Jr., Canal Dover.
P. D. Leaming, Wilmington.
Clem McKee, Eldorado.
F. C. Snyder, Fremont.
Frank Oliver, Versailles.

Local Associations

W. A. Martin, Kenton.
W. E. Bradley, Kent.
G. Roy Crumrine, Nova.
Wm. Sprenger, Washington C. H.
W. R. Goddard, Amesville.
P. B. Floyd, Steubenville.
H. M. Cowgill, Delaware.

Rotations and Fertilizers

Alfred Vivian, O. S. U., Columbus.
N. C. Frost, West Mentor.
C. O. Snyder, Millersburg.
J. S. Brigham, Bowling Green.
Isaac Sollars, Washington C. H.
Jno. I. Wentz, Bucyrus.
Chas. Bone, Utica.

Silage Varieties and Methods

A. S. Neale, Macedonia.
Dillwyn Stratton, Winona.
Saml. Boggs, Cicrleville.
Jesse Bailey, Tacoma.
Jno. B. Peelle, Sabina.
C. W. Lease, Dola.
T. P. White, Hooker.

Utilization

G. E. Jobe, Cedarville.
Reid Carpenter, Mansfield.
E. C. Darling, Nellie.
Jno. P. Langdon, Sabina.
F. I. Heim, Wooster.
Frank Balyeat, Van Wert.
Dillwyn Stratton, Winona.

Credentials

T. Hollon Orcutt, London.

Institutes and Expositions

V. M. Shoesmith, O. S. U., Columbus.
F. H. Owen, Marion.
L. P. Bailey, Tacoma.
Howard McCune, Wilmington.

Marketing

H. W. Robinson, Greenspring.
E. A. Peters, Groveport.
O. O. Zehring, Germantown.
W. J. Mathews, McGuffey.
W. A. Starbuck, Wilmington.
O. H. Fawcett, Bellefontaine.
Elmer Jameson, Haviland.

Score Card and Corn Judging

C. G. Williams, O. A. E. S., Wooster.
Dan Egbert, Tiffin.
J. W. McCord, Columbus.
I. S. Cook, Jr., Chillicothe.
V. M. Shoesmith, O. S. U., Columbus.
C. M. Myers, Lockbourne.
W. M. Hardman, Yellow Springs.

State Divisions

A. G. McCall, O. S. U., Columbus.
E. J. Riggs, Raccoon Island.
G. C. Housekeeper, Bowling Green.
A. G. Abbott, Sharon Center.
Jno. S. Myers, Millersburg.
L. P. Clawson, Hamilton.
Horace Ankeny, Xenia.

Educational Trains

H. C. Price, O. S. U., Columbus.
H. W. Robinson, Greenspring.
John Cunningham, Gambier.
W. K. Orr, Chillicothe.
Austin Herrick, Twinsburg.

Legislation

R. W. Dunlap, State House, Columbus.
W. A. Martin, Kenton.
C. A. Pontius, Canton.
S. J. Vining, Celina.
W. G. Castor, Point Rock.
Horatio Markley, Mt. Gilead.
H. M. Snook, Lebanon.

Public School Work

A. B. Graham, O. S. U., Columbus.
H. D. Bowsher, Wapakoneta.
S. W. Harvey, Fleming.
C. H. Allen, Paulding.
Victor Herron, Chandlersville.
L. S. Ivins, Lebonan.
C. S. French, Salem.

Selecting and Introducing Varieties

H. C. George, O. A. E. S., Wooster.
D. B. Cross, Racine.
Ira L. Graham, Payne.
H. M. Dill, Lebanon.
G. S. Nuding, Mendon.
F. C. Murphy, Sunbury.
W. H. Hart, Oberlin.

Tools and Methods

H. C. Ramsower, O. S. U., Columbus.
H. C. George, O. A. E. S., Wooster.
L. W. Ellis, U. S. D. A., Washington D. C.
J. W. Linebaugh, Grove City.
W. J. Edgerton, Barnesville.
Frank B. Rarey, Kenton.
O. L. Shank, Germantown.

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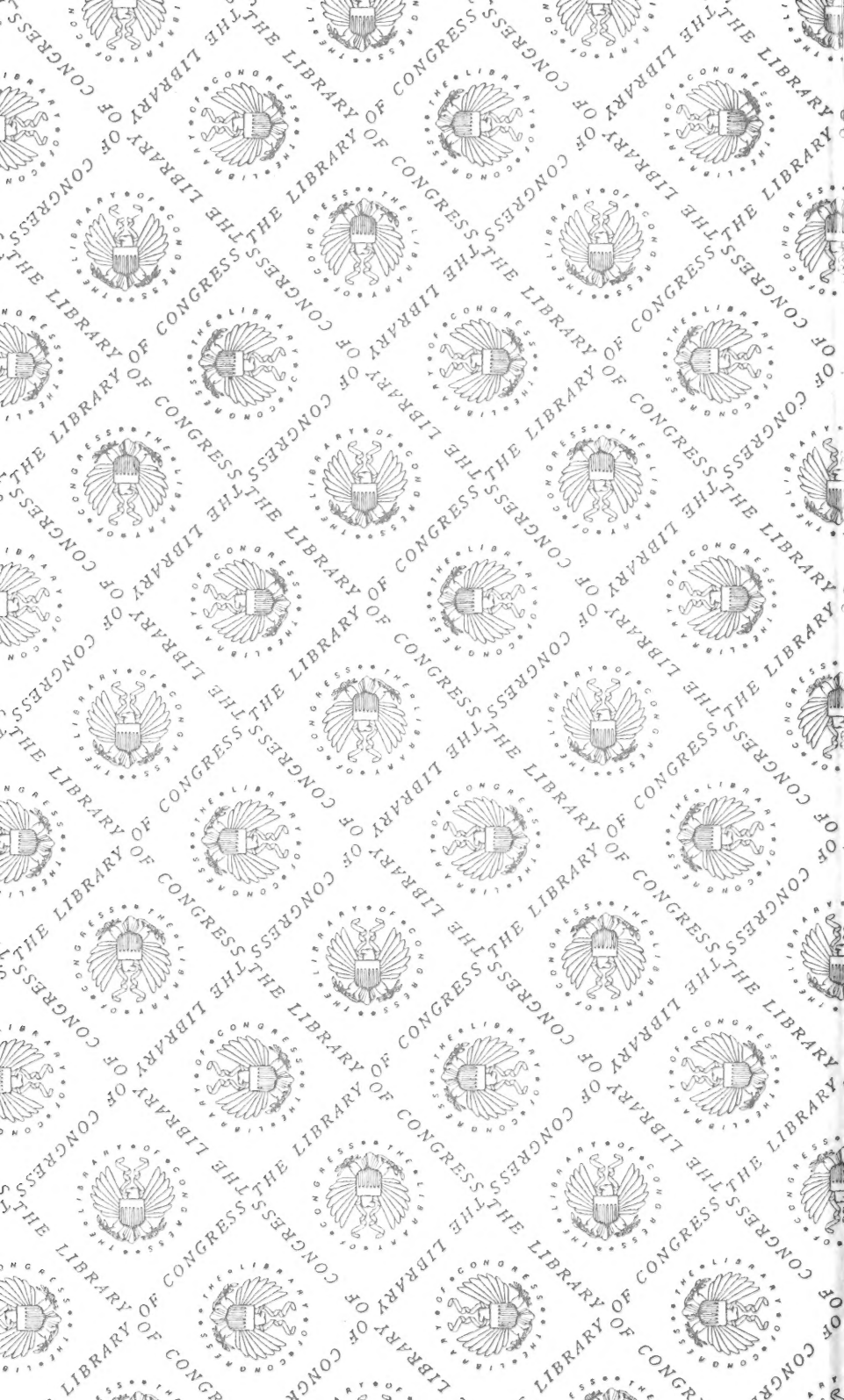
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