# AW of HYBRIDIZING

# THE LAWS OF HYBRIDIZING

DISCOVERED BY
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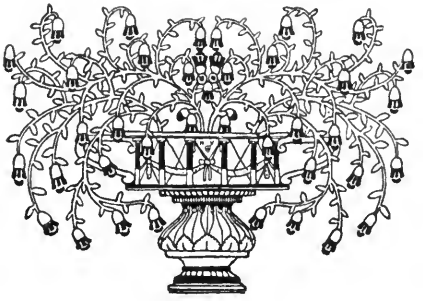
IN PUBLISHING THIS DISCOVERY I WISH TO DEDICATE IT TO HON. WILLIAM KENT OF CALIFORNIA, WHO BACKED AND AIDED THE WORK IN THE PUBLIC INTEREST



With the author's kind regards
Richard Diener

Richard Dionor

# WHAT PLANT LIFE IS

PLANT life is a chemical process by which the sun's rays are caught through the chlorophyll of the leaves and deposited on the earth's surface as carbon. Since the beginning, untold numbers of plant life have been created continually by the sun's rays in water or moist places where conditions are favorable. But of those untold numbers only such as had the ability to sport could climb the ladder of evolution.

In their early stages it was their habit of life to float in moisture, and propagation was accomplished by splitting apart. This was the sexless state.

In later stages, growing in the marshes, they commenced to develop root systems, and finally developed varieties growing outside the marshes; sex developed, and eventually reached the stage of seed production. After they had reached the stage where they reproduced themselves from seed they developed all kinds of forms which were necessary in dryer conditions.

They then developed faster—from grasses to shrubs, from shrubs to bushes and from bushes to trees.

Under whatever condition they were living at this time their object was to catch the sun's rays, make carbon out of them and deposit them as solid matter on the earth's surface.

Take for instance our California redwoods, which are Nature's highest development on earth to-day. Billions of years since a thousand ancestors of these very redwoods could be held in a drop of water. Some trees, like the California live oak, or many varieties growing in the tropics, show the wonderful result of Nature's intention in a very striking way. If the leaves of a single tree of this description were laid side by side they would cover the greater part of an acre, yet the tree occupied only a small part of the earth's surface. In order to build themselves up in their evolution the roots had to take material from our earth, as lime, to strengthen their structure, and many other chemicals

necessary for the same purpose, just in the same fashion as the animals do to build up their skeletons.

Now the carbon will remain on the earth's surface till some day fire is set to it, which is still another chemical process, and release all that came from the sun in gas. The gas will disappear from the earth but all material which was used from the earth for building up the structure of plants will remain as ashes.

When we look over the earth and see only a few thousand plant and animal families, it means that from the untold numbers of embryonic life that the sun created through the billions of years only those upon which Nature bestowed the ability to sport have survived.

## SPORTS

A sport is an individual outgrowth of a variety; in most cases with characteristics so markedly different from the original as to attract attention. It is the nucleus of a new cycle in the variety and may appear as bud, branch or seed, without cross pollination.

Prior to the acquisition of sex, when the propagation of plant life depended entirely upon the splitting-apart process, any variety which did not produce a sport during its cycle of existence was doomed to extinction.

These cycles differ in length from a short period in fast-growing ones to a term of a thousands of years in the slow-growing.

As an example of the first we have the Sagina Supulata which spreads like a carpet on the ground in its moss-like growth. The original color of the plant is dark green, while the sports, which can be discerned easily, appear in light green, yellow and brown.

In the germ form of animal and plant life where the growth is so rapid that a cycle of life comprises but a half hour we see the most rapid sporting, as in diseases like colds, flu, cholera and typhoid. The cycle of a variety here is composed of a term of from a few months to a few years, so that when they reappear after a certain period they will show different habits and characteristics from their progenitors which the new sport has taken on.

## ANIMAL LIFE IN RELATION TO PLANT LIFE

Originally plants and animals came from the same source, but in later developments of early germ stages some species acquired the habit of plant eating, and thereby losing their chlorophyll. Animal life became Nature's maw which, whether carried by an elephant or the smallest microbe, performs the function of transforming plant matter into plant food upon which the new plant forms thrive.

If it were not for the existence of animal life the leaves, bark and general residue of vegetation would, in a period of twenty-five years or thereabouts, cover the ground to such a height that no new vegetation could spring up and plant life would annihilate itself, there being no decay.

## CROSS-BREEDING—WHAT IT IS AND MEANS

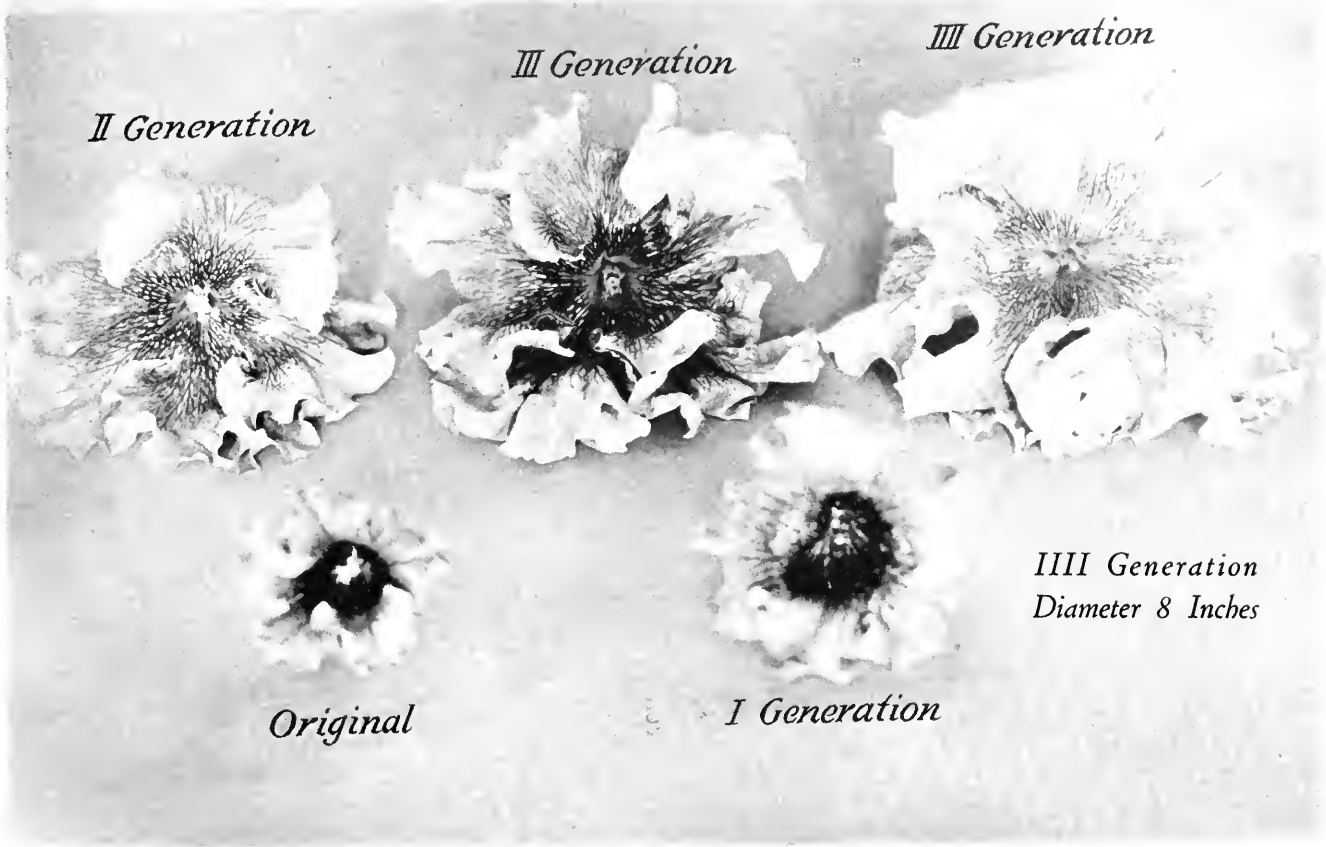
Cross-breeding can only be accomplished within family lines.

Take for instance the lines of Solanum and Pirus, which are widely distributed over the earth, and have acquired, through many sportings, re-sporting and varied climatic conditions, very many varied forms.

One cannot cross a Solanum with a Pirus, or vice versa, but must conduct the crossing between the two members of a single family, a Solanum with a Solanum, a Pirus with a Pirus, in order to develop new hybrids. The rule would hold the same with the Gladiolus or Erica families.

Ever since boyhood I have been interested in plant life in general and anxious to delve into the secrets of plant growth. Cross-breeding at that time was just being seriously entered upon, and consequently I adopted it as my hobby. When seventeen years of age, happening to cross some tuberous Begonias, I found, when the seedlings flowered, that a great many had doubled the size of the parent flower. This set me to thinking that there might be natural laws existing of which we have no

# PETUNIA


II Generation
III Generation
IIII Generation
IIII Generation
Diameter 8 Inches
Original
I Generation

knowledge. From this time onward I worked systematically with crosses, making an endless number, and carefully preserving records of the sizes of plants and flowers used. As the seedlings bloomed they demonstrated more and more clearly that I was on the right path, and certain of the crosses gave me an inkling of the method used for increasing size, though it took thousands of crosses and about fifteen years of time to perfect the actual laws I herewith submit; *these laws accomplish by short, direct method what it would take Nature thousands and hundreds of thousands of years to do in a natural way.*

## EXPLANATION OF DIAGRAM

Sizes A and B in Figures 1, 2 and 3, are intended to represent the comparative sizes of sex parents of flowers, fruit or grain concerned in fertilization. Size C represents the size of the resulting offspring. Each figure represents but one fertilization; by using new parents derived from the offspring C the process can be continued indefinitely.

The first or declining way: reduction of size.

Size A Figure 1 shows a small pollen parent, one-half the size of the ovule parent B. Under such a condition the resulting offspring C will be one-half the size of the pollen-bearing parent A.

It is to be noted that in case the pollen-bearing parent A were smaller than the ovule parent B, but more than one-half its size, the offspring C would be proportionately larger; on the other hand, if A is less than one-half the size of B, then C will be proportionately smaller than shown in the diagram. Consequently, if smaller sizes than the current normal size of a given plant are desired, any amount of reduction can be secured by continuing the process illustrated in Figure 1.

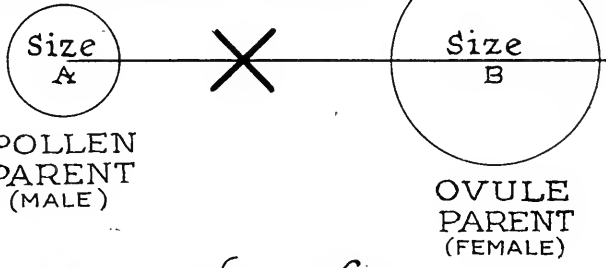
The second or enlarging way: increase of size.

For the purpose of increasing the size the best results will be obtained by using pollen- and ovule-bearing parents of exactly the same size, as shown in A and B of Figure 2. If the sizes are the same an actual doubling of size will be secured in the offspring C.

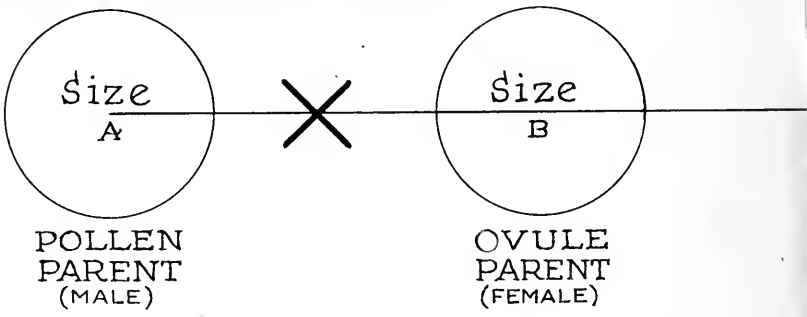
# KEY to the LAW

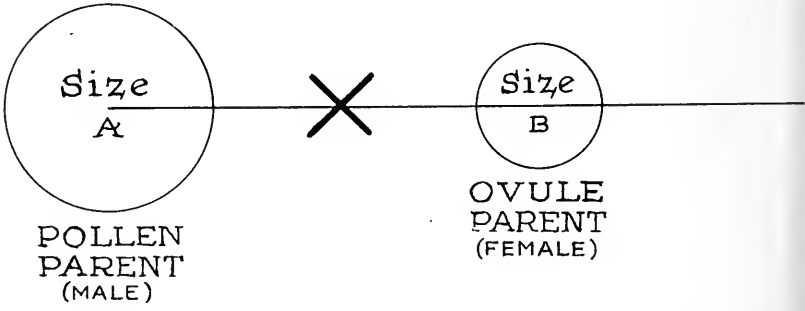
## Discovered by —

### A. DECLINING WAY



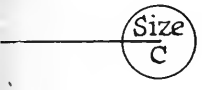

### B. ENLARGING WAY



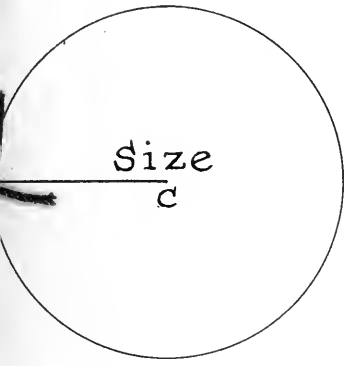
# f HYBRIDIZING

## RICHARD DIENER



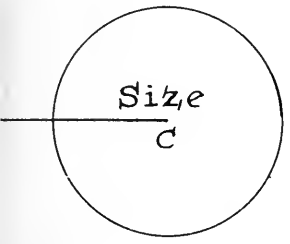

RESULT:
1st. GENERATION

FIG. 1.




RESULT:
1st. GENERATION

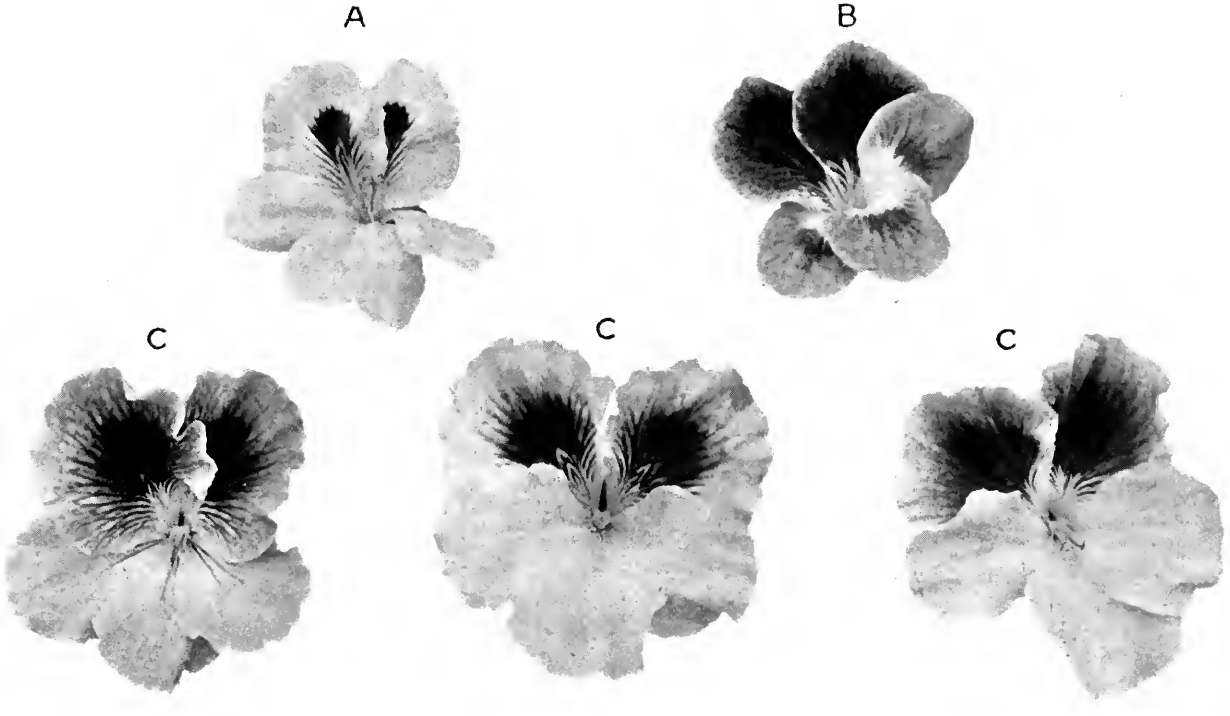
FIG. 2.




RESULT:
1st. GENERATION

FIG. 3.


A
B
Parents.
Meteor
Queen Olga
C
C
C
Result.
No. 1.
Mr. Plath
No. 8


A
B
C
C
C

It is to be understood that not every individual represented by C will be doubled even if A and B are precisely the same size. In the first generation the average number of C individuals of maximum size will be 12 out of 100 under conditions stated. The remaining 88 in 100 will all be larger than either A or B and will range in sizes between the size of parents and the maximum size of offspring illustrated. As for the second and later generations derived from C, since the A and B of subsequent fertilizations are more closely related than were the original A and B, the percentage of maximum results runs up as high as 40 per centum, as I found in my Petunia crossings. This will happen only in case of close relationship between A and B.

The third:

Figure 3 illustrates the result when the ovule parent B is one-half the size of the pollen-bearing parent A. In this case the offspring C will be slightly larger than the pollen parent A, but no great increase in size can be expected from this method.

By observing the results obtained under the conditions represented by Figures 1, 2, 3, one can determine exactly what to expect out of material on hand, whatever the relative size of the plants A and B may be. Size comparisons are made between parent blooms when pollinating for the purpose of increasing the size of blossoms; between fruits by increasing the size of fruit, and between kernels by increasing the size of kernels.

## MODIFICATIONS OF COLOR OR FORM OF FLOWERS

The pollen-bearing parent is always the dominating factor in changes of form or color. For instance, if one desires to increase and accentuate incipient ruffling or frilling which may occur in the petals of a given plant, A and B parents already having some marks of the nature desired should be chosen; but the pollen should be taken from the individual which shows the desired feature most strongly.

Likewise, in modifying colors to increase the intensity of a given color, choose two colors of the same shade but take the pollen from the one which shows the most pronounced coloring of the shade desired.

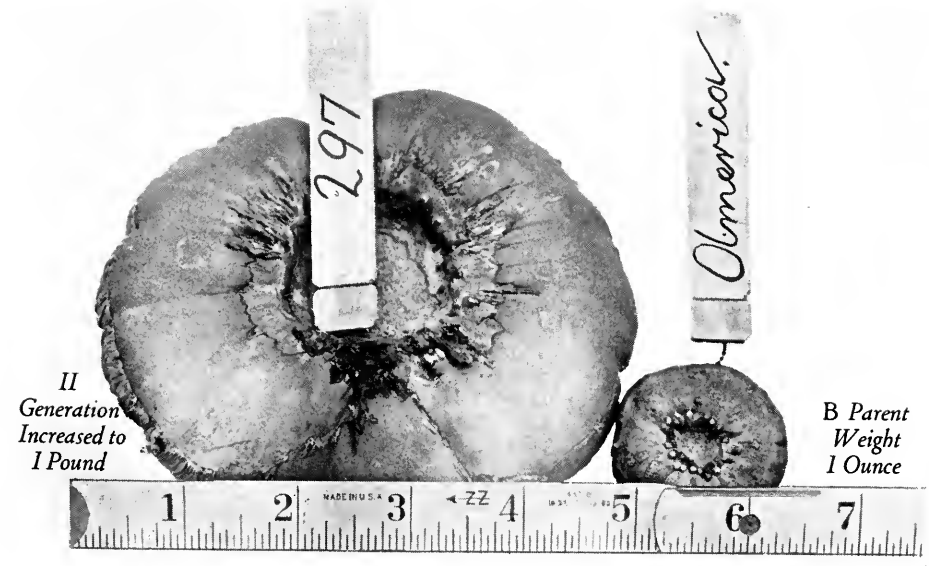
On the contrary, if lighter shades are desired, select colors as before but take the pollen from the plant which has the lighter shade.

Further, in attempting to derive new colors always use a white flower as a B parent with which to break up colors. This will work to absolute perfection. This method of mixing colors works the same when applied to plants as the actual mixture of colors on an artist's palette.

## RESULT OF ANIMAL CROSSES
### (EXEMPLIFIED BY CHICKENS)

On account of the sexes being in different individuals it takes two crosses to reach the same result that is obtained by a single fertilization in the case of plants where both sexes reside in the same individual. First two individual chickens are selected. The female offspring C from the resulting fertilization is then mated with the original A parent. Of the offspring from this second fertilization about one-third are double the size of the original parents. This high proportion of larger sized individuals is due to the fact that the A parent was a sport of white leghorn and was mated with the same flock from which it originated and consequently very closely related. The same idea has been used in carnations where the sports of the carnation Enchantress as A parent and Enchantress as B parent with very striking results as the high quality of plants is intensified in this case. The same result can presumably be obtained by taking male offspring C of the first generation and securing fertilized eggs by mating with the original B parent.

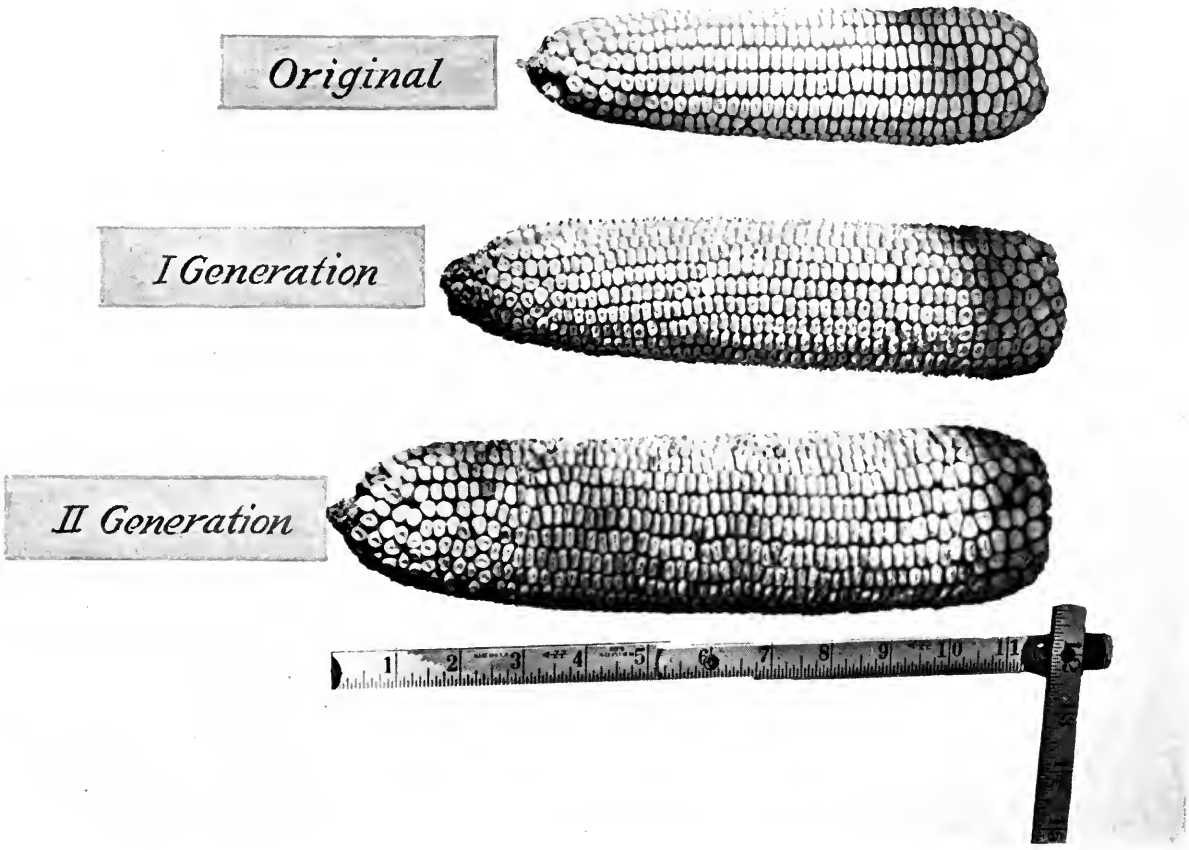
The fact that both animals and plants respond to this law is a proof of their common origin.




*II Generation Increased to I Pound*

B *Parent Weight 1 Ounce*


B *Parent*


Original
I Generation
II Generation
1
2
3
4
5
6
7
8
9
10
11
12

In concluding I want to say that few people at the present time realize the immensity of this discovery to mankind. It is equal to the discovery of electricity, if not greater. It means that the farmer and horticulturist will get three to four times the amount of fruits and grains from the same land without any additional fertilizer or expenses, simply by using varieties developed higher through these laws from the varieties in use now. Not only is the size of fruit and grain doubled, but the yield per plant also.

The common wheat with which I started brought only twenty-five to thirty bushels per acre while in the third generation of the same wheat some varieties produced one hundred and fifty bushels to the acre. The same increase in quantity I found in tomatoes, beans, corn, Sudan Grass and many other things I worked on.

By the proper application of these laws almost any degree of improvement can be obtained in a few crossings as I have proven to everyone's satisfaction with my gladioli, petunias, wheat, tomatoes and corn.

PRESS OF THE HANSEN CO. S. F