FOUR BURBANK PLUMS, AND HOW THEY WERE MADE

METHODS WHICH BROUGHT UNPRECEDENTED SUCCESS

NATURE tells every secret once," says Emerson.

And this, after all, is only the poet's way of saying that there must always be someone who is first to *listen* to the secrets that Nature is *telling* every hour.

Once in my life, if I mistake not, I was privileged to listen to a secret that others had refused to hear or had heard but vaguely. Doubtless it had been whispered or half-whispered in many another ear. But in my ear Nature chanted this secret perpetually, insistently, and in compelling measure.

She told and re-told it to me until I had no choice but to listen.

The secret was this:

New species of animals and plants originate through the hybridization of old species.

Stated otherwise, this means that so-called "spontaneous" variation, which Darwin found mysterious, is really due, or for the most part due, to the bringing together of diverse ancestral strains through cross-fertilization.

It is varieties thus developed that furnish material for the operation of Natural Selection, through which—as Darwin taught us—new species have been evolved in the past and are still being evolved.

I think I had more than half fathomed this mighty secret before I had made extensive experiments in plant hybridization. But in any event I had not gone far with my experiments in plant development before I found evidence piling up on every side to reassure me that what I had heard was no illusory voice but the voice of Nature herself.

Doubtless no single tribe of plants served me better in this connection, or were more obviously the medium through which Nature's great secret was revealed to me and corroborated, than the tribe of plums. And in the forefront of the company, in this connection, must be named the twelve little seedlings from Japan.

If I had entertained any doubt as to the correctness of my premonitions, the results achieved when these Japanese plums were allied with other

Plums of Chinese, Korean, and Siberian Types

Encouraged by his early success, Mr. Burbank kept on importing Asiatic plums. He found these for the most part inferior in size and in quality to the American wild plums, but they furnished the bases for further experiments. The plums at the bottom of the picture represent improved varieties of the original type; and the larger plums above are accidental hybrids produced from pollenization effected by the bees with neighboring species.

species from different parts of the globe would have settled the matter forever in my mind.

For when I mated these immigrants from the Orient with European stock, I saw produced "spontaneous" variations from the ancestral type of either parent in endless profusion—just such material as would be available in a wild stock for the operation of natural selection.

And ultimately, as will be told more at length in another connection, when I made still wider hybridizations, in which the apricot was one member of the alliance, there was produced in my orchard a new plant so widely divergent from either of its parent forms that few botanists if any would be disposed to deny it the rank and title of a new species.

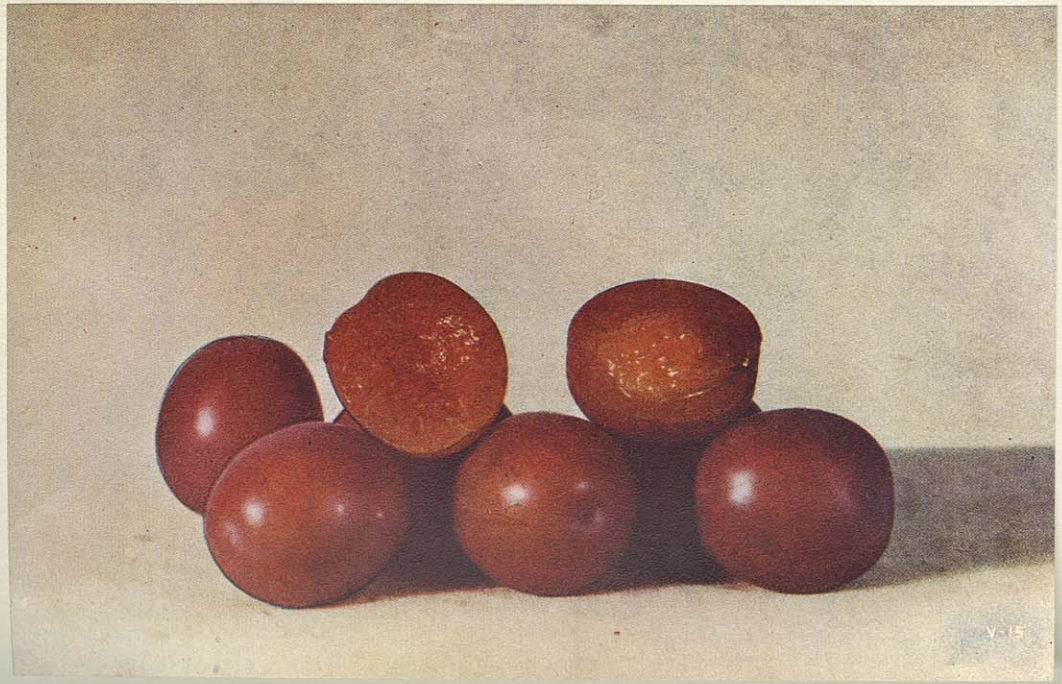
I refer of course to the plumcot.

Having been, as it were, the agent of Nature in the development of this new species, I could never in future question the method through which species are commonly produced.

I applied the method in numerous other cases with corresponding results, as will appear in due course; but for the moment the plums have the platform and we are chiefly concerned with their share in the interesting and important revelation.

Why Individuals Vary

Doubtless I should never have been led to



Typical American Wild Plums

The American wild plum varies a good deal in different regions, out those here shown are typical—reddish in color, small in size, yellowish flesh, attractive though slight bloom, small stone clinging vigorously to the flesh. These plums possess a rich, characteristic flavor which has been introduced into many cross-bred new varieties by Mr. Burbank.

hearken to Nature's voice in regard to the development of species, notwithstanding its insistence, had it not been my good fortune to be passing through the most receptive period of adolescence just at the time when the new teaching of Darwin created a turmoil in every field of thought.

To me, from the outset, the teaching of the evolutionist carried absolute conviction.

Having no preconceptions to overcome, I was receptive to a point of view that to older men schooled in another line of thought seemed repellent or difficult. To me it seemed almost axiomatic that Darwin's teaching about the flexibility of species and the evolution of one form from another expressed the simple truth; for I had not been trained to observe Nature from the opposite point of view, as most of my elders had been trained.

So I cannot recall the time when the word "species," as applied to any animal or plant, was for me anything but a convenient symbol to designate a more or less transitory condition in which a particular family of organisms chanced at a particular time to find itself.

Following the teaching of Darwin, I could readily perceive that no two individuals of any species are alike; but that, on the contrary, variation is the universal rule in nature. And it was

in following up the clues thus suggested that I came to believe that the explanation of this variation must be sought in heredity. .

I reflected that each normal organism has an ancestry that takes in vast numbers of individuals if we go back only a few generations—eight great-grandparents, thirty-two in the generation before, and more than a thousand within ten generations.

How then could the descendant of such a galaxy of ancestors, carrying the potentialities of all their traits, be otherwise than a complex organism not only different from either of its parents, but different also from any single member of its entire ancestral clan?

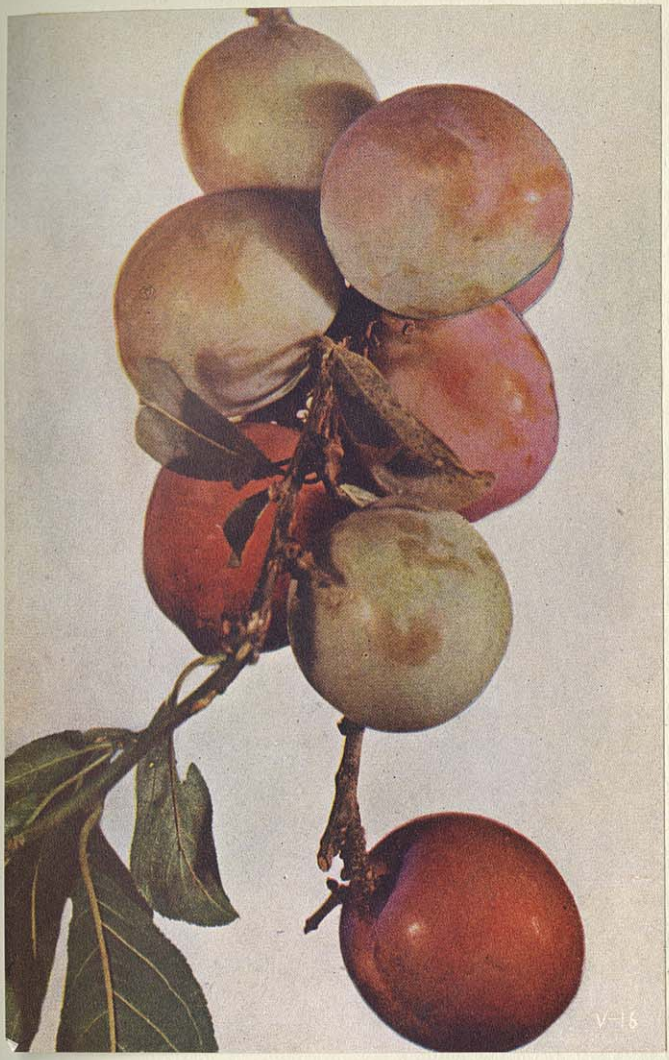
It seemed also a reasonable enough assumption that, where such a multitude of more or less divergent traits are brought together and put in conflict, the exact combinations of traits would be different in the case of each successive offspring of any given pair of parents; so that no two individuals of the same fraternity would be precisely alike, any more than any one of them would be precisely like any individual ancestor.

In a word, then, it seemed obvious to me that the individuals of a species constitute a variable and plastic race, in virtue of their diversified ancestral strains.

And if such variations are the natural result of the operation of the laws of heredity when closely similar individuals, ranked as of the same kind or species, are mated, it seemed reasonable to expect that still wider divergencies and diversities must be brought about in the offspring of a union between individuals so conspicuously dissimilar as to be ranked as members of different species.

Part of this, to be sure, was matter of common knowledge; for certain examples of the hybridizing of species in the animal world has long been familiar, the case of the mule being perhaps the most striking one under every-day observation. But this particular case illustrates the union of species that have become so widely divergent that nature appears to put a ban upon their union; permitting, indeed, the birth of offspring, but condemning the offspring to infertility. The inference that this case typifies the result of the interbreeding of species is utterly misleading.

To be sure, the tendency to erect barriers between species is obvious enough, for everyone knows that most of the others among our domestic animals cannot interbreed at all. But, on the other hand, if species are really only races diverged from a common origin, as Darwin thought, then there must have been a time when those



The Giant Maritima

The Maritima, colloquially known as the Beech Plum, is an American wild species, growing abundantly along many of the Eastern seaboards. The wild plum is very small and so acrid as to be almost inedible unless cooked. Mr. Burbank has greatly increased the size and quality of the fruit by selection, and he has also used it in highly interesting crossbreeding experiments.

that are now widely separated were nearer together and hence capable of interbreeding.

And as there are infinite gradations as to the amount of the divergence between the extant species of to-day, might we not reasonably suppose that there are many of these extant species that have not yet diverged beyond the point of hybridizing with the production of fertile offspring?

Testing the Theory

Just how far I had been carried along such lines of reasoning before I undertook to put the matter to a test, it would perhaps be difficult or quite impossible at this remote day to say with certainty.

But in any event my premonitions in the matter were sufficiently tangible to lead me, even when scarcely more than a youth in Massachusetts, to attempt hybridizing experiments. And the results of these experiments were sufficiently encouraging to give me early assurance that I was on the right track.

So it was with a very definite purpose in view that I began sending to the remotest regions for specimens of different species or varieties of garden or orchard plants, having full confidence that when I brought together these remote cousins I should find some at least that were still near enough to their common ancestral stem to be mu-

tually fertile; and being further assured that in such cases there would appear offspring in which the conflict of tendencies would produce wide variations, giving precisely the materials that were sought for such further selections and hybridizings as would result in the development of new and improved varieties.

At first the experiments were carried on in connection with the nursery business.

But about 1884 the work had developed to such an extent that I determined to devote the tract of eight acres purchased in Santa Rosa wholly to experimental work. Experiments had been conducted with garden vegetables, plums, apples, berries, nuts, and numberless flowers previous to this time, but generally on a small scale. Now, as I cast about for the most practical lines of procedure I was impressed with the demand all about me for better varieties of plums and prunes, especially for drying and shipping purposes.

My work as a nurseryman had taught me how urgent was this demand. I determined to undertake to meet it on a broad and comprehensive scale.

To lay the foundation for the real work in plums—to get the stock together, gain experience and knowledge as to the different species and va-

rieties, and test out their possibilities—was the work of twelve or thirteen years. Indeed, I may say that the work is still going on after the lapse of almost thirty years.

Yet I began to get conspicuous results almost at the outset, as will appear presently.

The Plum as Schoolmaster

In order that the work should be carried out as conceived, it was necessary that the various plums and prunes of the world should be brought together and, as it were, put into one melting-pot, in which a vast number of hereditary tendencies could be combined and re-combined. The right characters must be selected and wrong ones rejected. Out of the melange would arise new varieties better fitted to meet the old requirements, or adapted to meet altogether new requirements.

Here on my experiment farms the re-combination was to be effected, and the new products were to be sent forth to benefit not merely the home of their adoption but the world at large.

So well have we succeeded that to-day the sun never sets on these new productions. They are growing in every temperate zone of both hemispheres.

There is no country where the direct influence of these products is not felt in greater or less degree. But not alone as material products have

The Late Shipper

This is a Burbank cross between the Chinese and the Japanese plums. The Chinese parentage is shown in the short, thick, apple-like stem, clinging to the fruit, and the yellowish flesh. The influence of the Japanese parent is shown in the form of the fruit and in the stone, which inclines very strongly to the Japanese type.

they been important. An educational influence has radiated from these experiments, as performed here on my farms at Santa Rosa and Sebastopol. It is not too much to say that they have had a leading share in disseminating new views regarding plant evolution—and, reasoning from analogy, animal evolution as well.

The new varieties of plums have largely modified and expanded an extensive industry, making plums of the finest quality an every-day food for the masses instead of a luxury. The lessons inculcated by the experiments in hybridization through which these new races have been developed have served as a guide to countless other experiments in plant breeding, and have made views that seemed heretical thirty years ago seem commonplace matter of fact to-day.

They have almost revolutionized the work of plant improvement.

The materials through which this really significant modification both in the practice and the theory of plant development was brought about were drawn from five great divisions of the globe —five regions with different soils, climates, and natural conditions, and with a human population of correspondingly divergent habits and tastes.

And in return the new races of Burbank plums, prunes, and plumcots are being sent back

vastly modified and improved to the diverse regions from which their ancestors came, and in addition are making their way in some regions where no plum could be grown on a commercial scale before.

Material from the Orient

Clearly to apprehend the conditions of the problem that confronted me when I first undertook on a comprehensive scale to put my ideas as to plant development into execution, it is desirable to note very briefly the characteristics of the different races of plums that were brought to the Santa Rosa melting-pot. Let me outline them.

Reference has already been made more than once to the Japanese seedlings. The plums from this source, like those from every other, typify in many respects the people among whom they were developed. Modified to meet the needs of an island people occupying a relatively small territory which nevertheless compasses many degrees of latitude, the Japanese plums differ a good deal among themselves as to their hardiness. But in general they are rapid growers, with early and abundant bearing qualities, and unusual adaptability to wide ranges of climate. The fruit is unique in form. It averages large in size, with a high percentage of flesh to stone, and with both skin and flesh of high color.

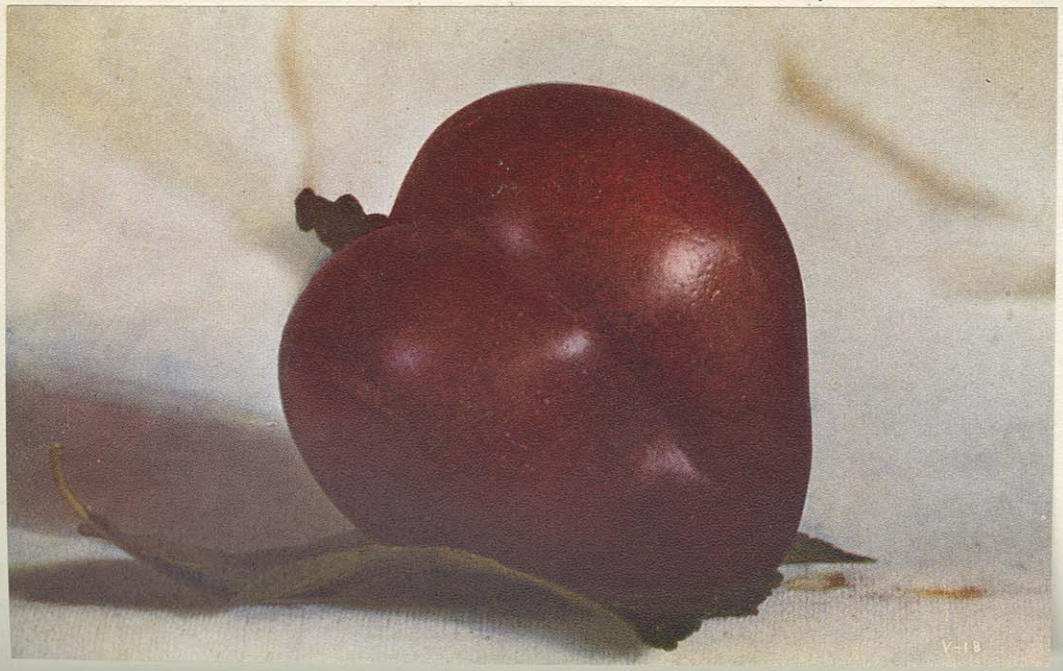
The brilliant purple, crimson, and pink shades shown by some of the modern hybrids are a tribute to the Japanese members of their ancestral stock.

But while the Japanese plums have these signal merits they are not without their faults. Many of them are small and most of them lack flavor. Freestone qualities have not been developed in the slightest degree. Many of them lack timeliness of bearing; others bloom so early that the crop is often destroyed by late spring frosts or heavy rains.

Moreover the Japanese often eat plums that are hard and green, preserving them by pickling; therefore they sometimes neglect to appreciate the sweetness and flavor of the fruit.

These, obviously, are defects that the plant improver must bear constantly in mind when he sets out to separate and recombine the traits of his company of plums.

The Chinese, near neighbors of the Japanese, developed plums of a different type. The Japanese plum is known as *Prunus triflora;* it perhaps originated or was developed in Korea, Southern Siberia, and Northern China. But the Chinese apricot-plum, known to the botanist as *Prunus simonii,* must have originated in some semi-tropical climate. It has form and color sug-



A Kelsey-Satsuma Hybrid

The Kelsey is an Oriental plum, not imported by Mr. Burbank, but used by him in hybridizing experiments. The hybrid here shown resembles the Kelsey in form, but shows the influence of the other parent in the matter of color. It is an interesting product, but was not thought worthy of introduction.

gestive of a tomato. It perhaps originated near the native home of the apricot, to which fruit it appears to be somewhat more closely related than to other plums.

The fruits of China, apparently, have not been greatly modified for many centuries. They therefore tend to fixity. Indeed, they furnish a typical example of the way in which the conservatism of a race may be stamped upon its fruit. Or is it that people and plants alike are conservative because of the climatic conditions that environ them?

In any event, the Chinese plum, when hybridized with other species of plums, brings to the union characteristics that are highly important.

Thus the Chinese plum has a delightful aroma, it is of unique form and rich color, and the stone is very small in proportion to the flesh.

On the other hand this plum is chiefly adapted to arid, semi-tropical climates; the fruit is likely to remain bitter, and it may crack so badly as to be utterly worthless.

Fortunately the merits may be retained, and the faults eliminated, in the hybrid progeny.

Materials from Europe and America

The European plum manifests no less markedly than the oriental one the tastes of the people by whom it has been developed.

Jordan Plum

Fruits

This variety is remarkable because it is the only Japanese plum having snow white flesh, instead of the yellowish or reddish flesh that characterizes other varieties. It has been used in hybridizing experiments.

European fruit growers have had in mind many and diverse qualities of fruit, and they have developed diversified races of plums. The original species from which these have grown is known as *Prunus domestica.*

Doubtless at a time sufficiently remote this plum was of the same ancestral stock with the Japanese and Chinese species. But many centuries of modification to meet the tastes of the Caucasian races have so altered it that it would be difficult to say what were its original characteristics.

The Western races, carrying the plum with them to different regions, developed widely different tastes and inclinations, and the plums that were ultimately grown to meet the tastes are of course equally diversified in quality. Some are large and some small; some exquisitely sweet, others relatively sour. Some are adapted to eating while fresh; others are most useful for drying or for canning.

In a word, the races to which the western plum has catered are of complex lineage; they live in widely varying climates and under greatly diversified conditions.

The Caucasian lives everywhere and his fruits have adapted themselves to his condition.

Summarized in a few words, the advantages

Tri-Parental Seedlings

This crossbred plum has the color of the Satsuma, the general appearance of the Burbank, and the shape and form of the Kelsey; and these are the parental strains which are represented in its heritage.

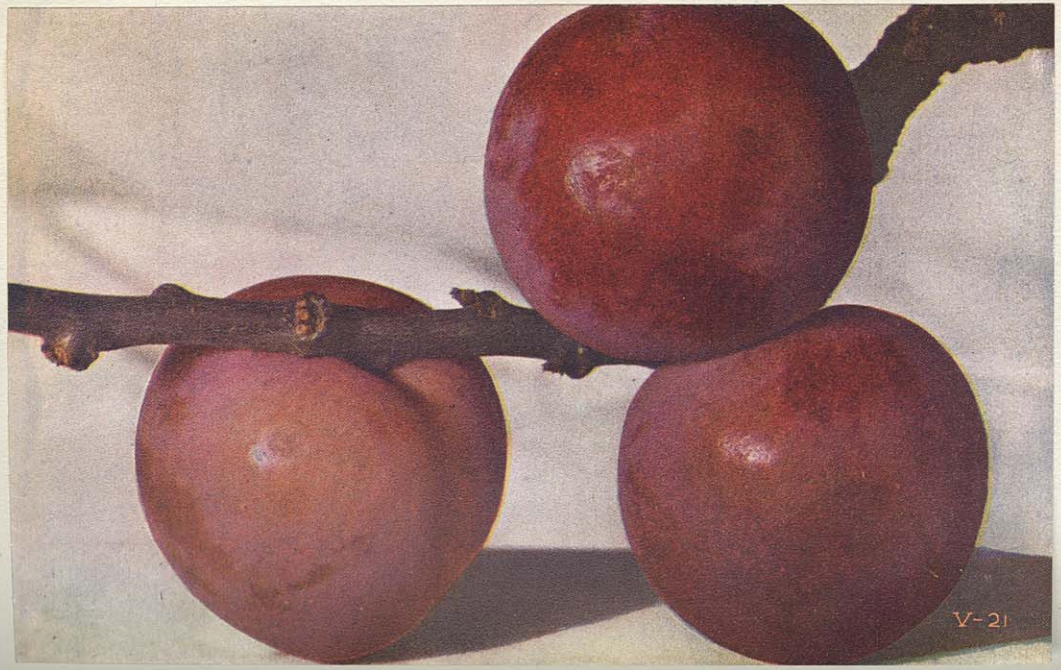
of the European plums are: wide diversity as to colors, qualities, and flavors, and adaptability to a wide range of climate.

The faults of the European plums are these: the stone is quite generally too large for the size of the fruit; the fruit itself in most cases is too juicy—sometimes absolutely watery—and there is a wide range of textures to be avoided, including stringiness, brittleness, and sponginess. Moreover, large size and exquisite quality are seldom combined. The green gage, the standard of excellence among the hardier European plums, is quite small, and the tree is unproductive. And the large European plums are quite often lacking in texture and flavor.

Size and quality are not correlatives in the case of these plums.

It must be especially noted, however, that it is the European plum, in some of its varieties, that has the qualities of large sugar production that permits it to dry readily in the sun without fermentation. This variety of plum, known as the prune, has been the means of building up a great world industry. At the moment, however, we are chiefly concerned with the plums in general rather than with this particular race.

There remain the American plums—that is to say the plums that were found growing in Amer-



The Challenge Plum

This crossbred plum shows the influence of its Chinese parents in the remarkably short stems; in fact, as will be seen, it is almost stemless. This is a great merit, keeping the heavy fruit from swinging in the wind and perhaps breaking loose.

ica at the time of European discovery.

There are several quite distinct species of these indigenous plums. They grow far to the north, and perhaps their most important characteristic is their hardiness. Some of them resist the scorching heat of tropical America; others thrive and bear in the short seasons of the snowy north. With hardiness of tree has been developed a strain of productiveness. Various wild plums often cover the ground in the fall with layers of ripened fruit.

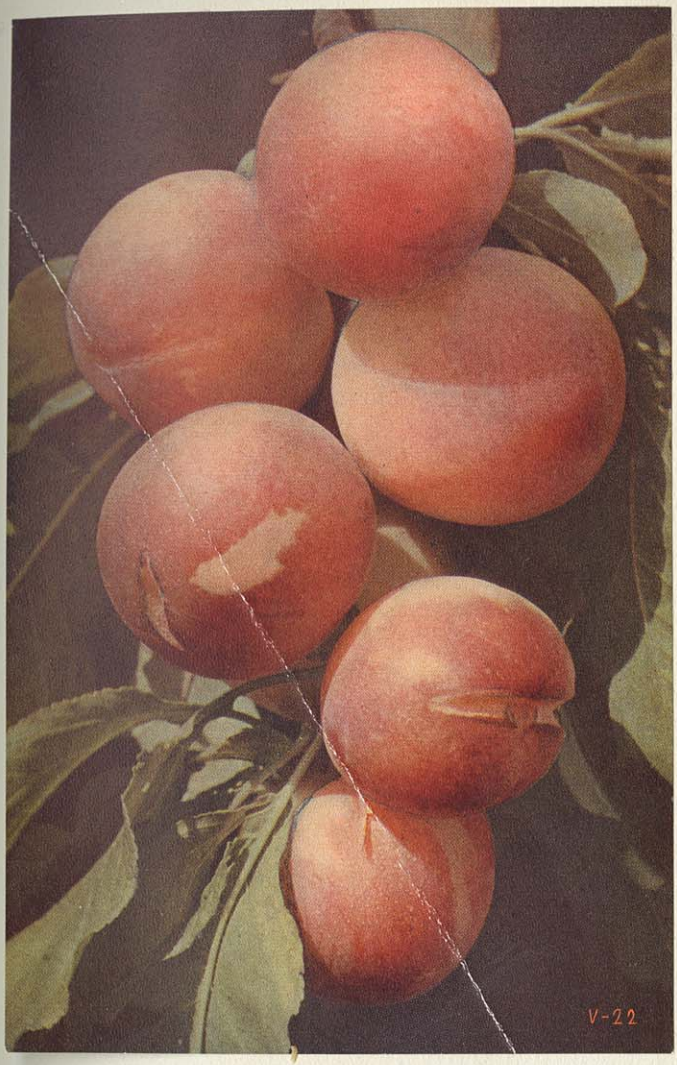
Notwithstanding this, however, the crop is uncertain, some of the thriftiest trees proving unproductive in certain seasons, and the fruit is always inferior in size.

Many of the American plums are of fine quality, even in the wild state. Yet their faults are almost as numerous as their virtues. The trees are generally small, not usually large enough to make good commercial orchard trees. In form, too, the trees are defective. And the fruit, notwithstanding its excellent flavor, is often soft and watery, quite lacking shipping quality.

In the Melting Pot

Obviously, then, the plums of each country offer certain good qualities and present certain defects.

To take the characteristics from the plums of



A Faulty Beauty

This fruit is a Blood Plumcot; the plumcot being, it will be recalled, a cross between the plum and the apricot. This particular variety shows its Chinese parentage in its faulty habit of cracking; which renders it utterly useless for marketing purposes, notwithstanding the lusciousness of its flesh.

each country and combine them in different varieties; to eliminate the faults as far as possible; to select and test the best among the millions of seedlings produced from the various combinations; to redistribute these fruits when produced and thoroughly tested, sending them back greatly improved, their good qualities retained and others added—this has been the work of the plant originator in the attempt to produce an ideal plum.

Having for working material plums in which different combinations of qualities have been developed for the most part unconsciously from different races, our task was a consciously scientific selection.

We must strive to produce, in a few decades, changes comparable to those that had been wrought in the course of centuries through unconscious selection by many peoples under widely diversified climates and conditions. Conscious systematic selection was to amalgamate all the best qualities of plums and plum-like fruits; those that bore the imprint of the conservatism of the Chinese race, the insularity of the Japanese, the diversity of the European, the nomadism of the Persians, the hardiness and variability of the American.

The best was to be taken from each, and the good qualities developed in five widely varying

Santa Rosa Plum

This remarkable fruit is considered by Mr. Burbank to be one of the four best plums that he has developed. It is an exceedingly intricate cross-bred plum, combining the traits of ancestors from three continents. It is of comparatively recent origin, and will play a much more important part in the future, after its merits have come to be generally appreciated.

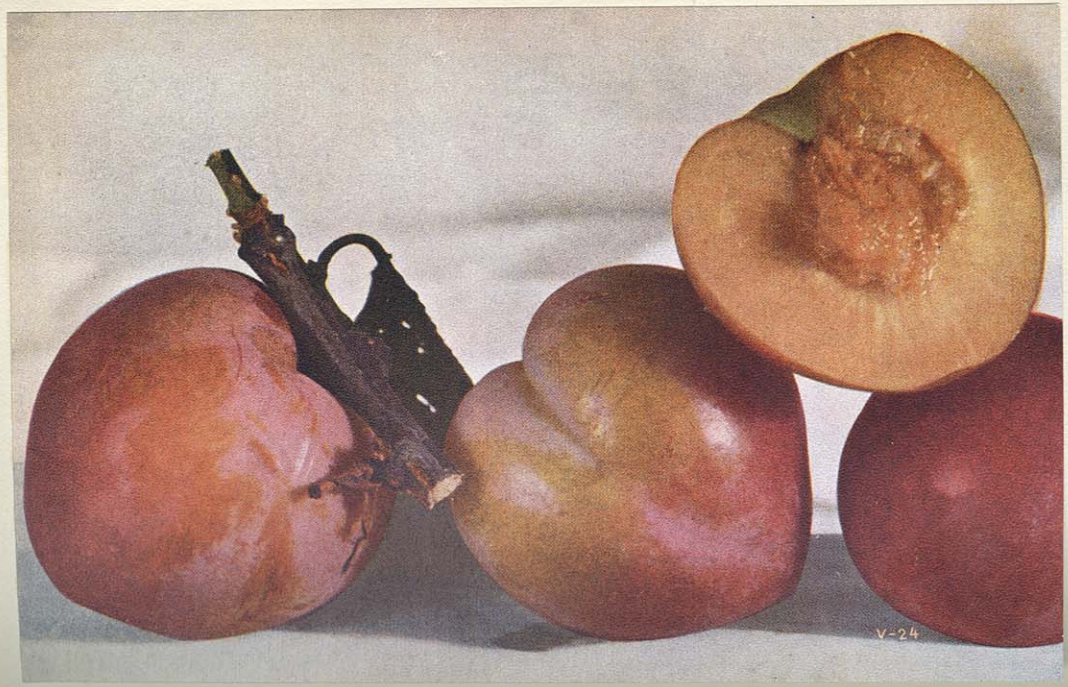
geographical territories were to be assembled, combined, sifted, and selected to produce fruit having the stability, novelty, variety, piquancy, hardiness, beauty and shipping qualities, and adaptability to new conditions and uses of the races that had left their imprint in varying measure on the ancestral stocks.

Viewing the work in retrospect, I assuredly have no cause to regret that it was undertaken, yet it has been a most laborious task.

Doubtless the time expended on the plum has been at least as great as that devoted to any other single line of my investigations. The labor, especially in grafting, budding, testing, and selecting, has probably been greater than that devoted to any other plant origination, with the possible exception of the spineless cactus.

Roughly speaking, I might perhaps say that the plum experiments represent, first and last, something about one-tenth of the total expenditure for my experimental work.

In importance, up to the present time, judged by results, the work with the plum may represent perhaps one-sixth of all my work; in extent and variety, perhaps one-tenth of the total. In commercial value, up to the present, perhaps the plums may be credited with one-third; but they will rank by no means so high when the final



Formosa Plum Fruits

This is another of Mr. Burbank's quartet of best plums. Like the one shown on the preceding plate, it is of mixed heritage. Formosa plums are surprisingly uniform in size, averaging about six inches in circumference. They are exceedingly attractive in appearance, assuming a rich red color on ripening. The juicy yellow flesh is almost free from the stone.

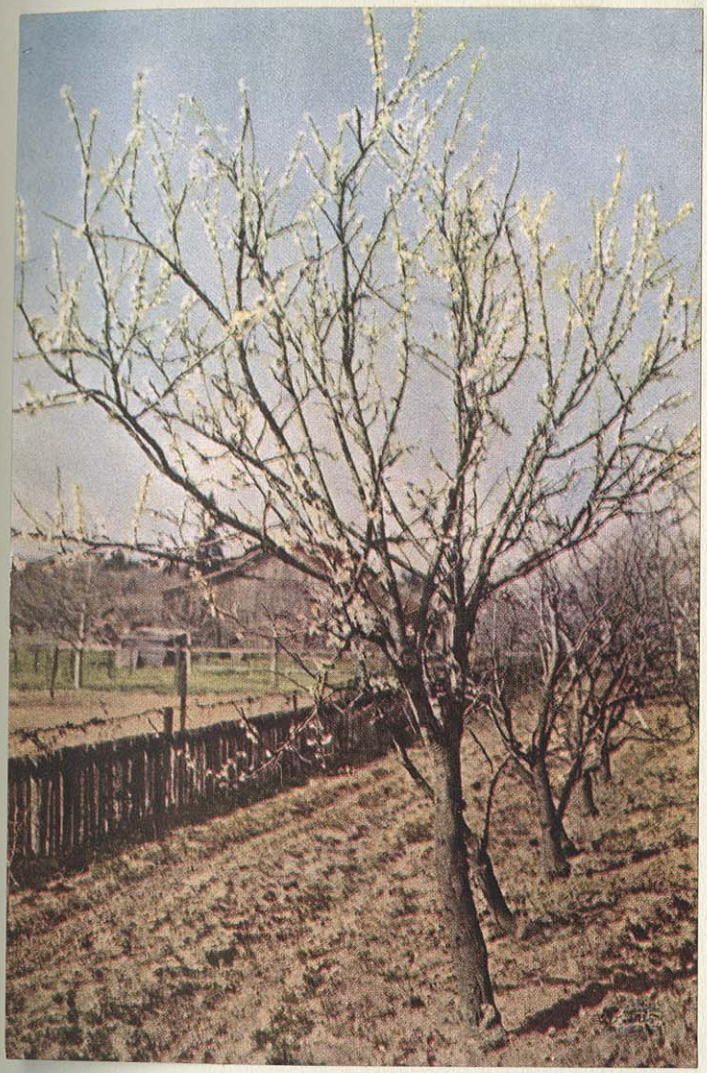
ledger is balanced, for there are other productions, among them the cactus, that loom large in prospective value.

So in the end perhaps the economic rank of the plums, among the total of my plant productions, will not be more than one-twentieth.

Yet when I state that from among the almost countless new varieties that have developed in my plum orchard, sixty-two have been thought worthy of introduction, and that some thousands of races are still undergoing tests, an inkling of the work involved will be gained. And when I add that the Burbank plums make up about one-third of the total export of the plums from California year by year, and that my proteges are as popular in South Africa, in Australia, and in numerous other remote regions of the globe as they are in the state where they originated, something of the economic importance of the experiments in plum development will be revealed.

Specific Results

Some glimpses have been given in earlier chapters of the methods of experimentation through which particular races of new plums have been developed; and fuller details of the methods and results will be given in subsequent chapters of the present volume. Here let me briefly outline some of the earlier results of my



Formosa Plum Tree in Bloom

This plum shows the influence of its Japanese parents, among other ways, by the habit of bearing fruit on the new wood as well as on the old.

effort at hybridizing the diversified races that were brought together for the purpose of these comprehensive experiments.

I have said that some notable results were obtained almost from the outset.

As illustrating this, it may be recalled that, whereas the first hybridizations between the Japanese seedlings and plums of European and American stock were made in 1888, there were no fewer than six varieties of hybrids in my orchard in the season of 1893, only five years later, that were considered worthy of introduction and that were able to take rank at once as superior in some regards to any plums at that time known.

Two of these, named respectively the Delaware and the Hale, were hybrids of a double oriental stock, one parent being the Kelsey, a Japanese plum introduced by the orchardist whose name it bears, and the other my Japanese Satsuma.

A third was a hybrid between a Japanese plum named the Sweet Botan, or Golden, and the Robinson, an American plum of the Chickasaw race.

Two others were crosses of the Robinson and Abundance.

The sixth was a cross between the Kelsey and the Burbank, its ancestral strains being therefore Japanese. This plum was first named Perfection,

but it was afterward renamed the Wickson, in honor of Professor Edward J. Wickson of the University of California.

All these are exceptional plums, but the Wickson is pre-eminent in virtue of its combination of good qualities. The tree grows upright, largely in vase form. It branches gracefully, and it is productive almost to a fault. The fruit is large and handsome. From the time when it is half grown to a few days before ripening it is pearly white in color, but all at once numerous pink dots appear, and in a few days it has turned to green flushed with crimson with a heavy white bloom. The stone is small and the flesh of fine texture, firm and sugary and delicious. It will keep two weeks or more after ripening; or it can be picked when hard and white, and will color and ripen almost as well as if left on the tree.

The general excellence of this fruit may perhaps best be gauged by the statement that last year more than one hundred carloads of this variety alone were shipped from California to the eastern markets.

Difficulties Overcome

But while these notable successes attended the earliest hybridizing efforts, it must not be supposed that the experiment was carried out without difficulty.

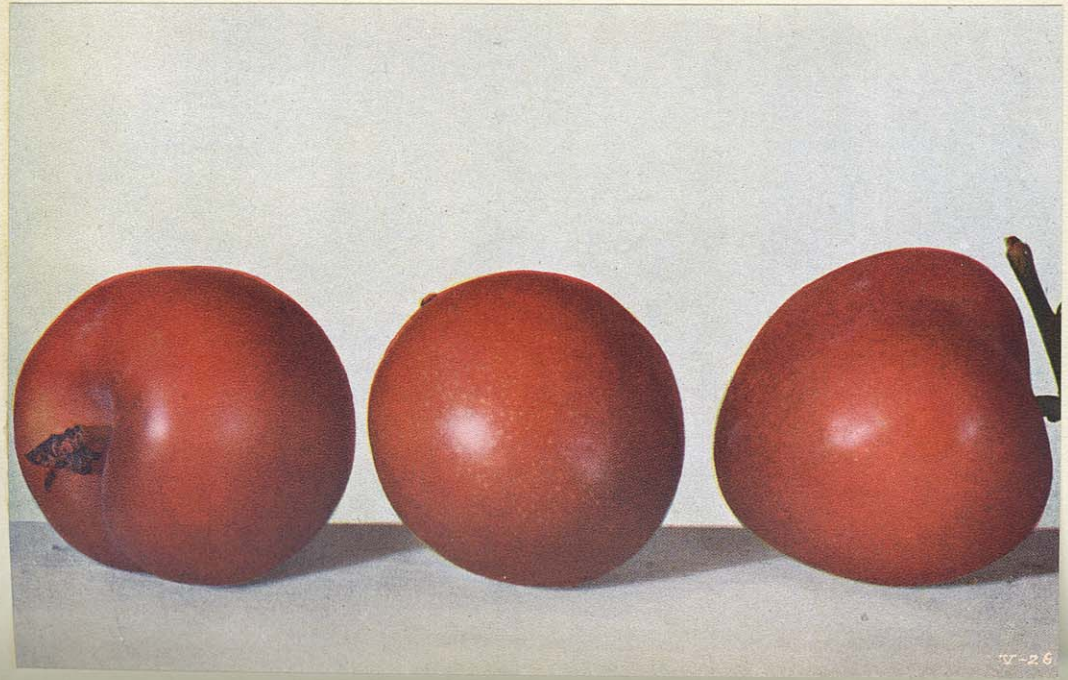
In point of fact it was not easy to effect the cross between the Japanese plums and the European varieties. Some varieties refused to combine; and probably not more than one in a hundred of these crosses proved in any way satisfactory.

When a hybrid is produced, the traits of the Japanese plum usually seem prepotent, though in some cases the balance between the two is fairly good.

Whereas the hybrids of the first generation sometimes produce fairly good fruits, as a rule their fruit is rather soft and acid. The full possibilities are revealed only in later generations, and in particular after other species and varieties of plums have been brought into the combination.

As rapidly as possible the hybridizations were extended, until forty-three races of plums had been used. In successive generations the various strains were intermingled until they were complex beyond computation or accurate recording.

The original seedlings were used as stocks for grafting the cions of new seedlings year by year. To this day they stand in the original rows, although little is left of the original trees except the trunk and the bases of the branches. Each season, the grafts that have been proved to be of



Beauty Plum

Fruits

This is still another of Mr. Burbank's four best plums, and like the ones previously shown it is of comparatively recent origin and of very complex heredity. The Beauty is noted for the even ripening of the individual fruit; this insures good keeping quality, for a fruit that ripens unevenly starts to decay first at the point of ripening. The Beauty is also admirable in flavor.

no value are removed and cions from new seedlings are put in their place.

Most of the trees have borne from ten to twenty sets of grafts.

Details given in other chapters will enable the reader to follow in imagination the process of blending and selection through which, on the average, year by year a better and better combination of qualities was effected among my plum proteges.

Almost as a matter of course, there ultimately appeared individuals that far surpassed most of the earlier hybrids in one or many desired qualities.

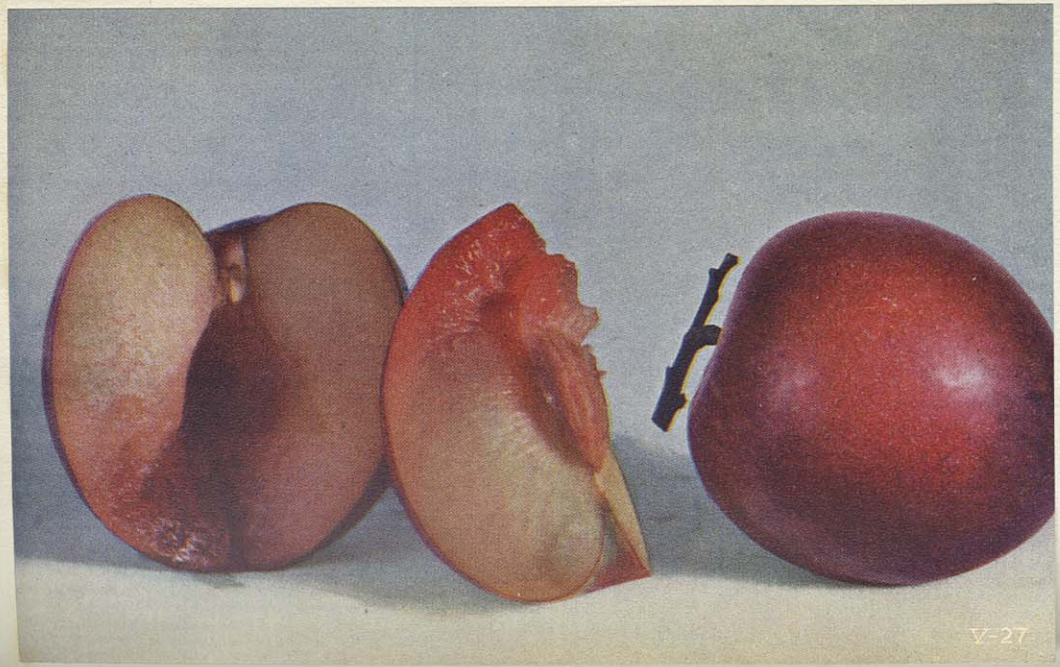
The Quartette of "Best" Plums

And in the course of years there were found at least three new varieties, all of the most complex ancestry, that excelled any of their forerunners with the single exception of the Wickson.

The three new claimants, which stand as the finest products of plum development up to date, have been named the Santa Rosa, the Formosa, and Beauty.

These with the Wickson may be listed as unqualifiedly the best products of the experiments in plum hybridization up to date—a quartette of plums of matchless quality.

It must be understood, however, that there are



The Wickson Plum

This is the fourth member of Mr. Burbank's famous quartet of plums. Unlike the others, it was developed many years ago. Its ancestors were the Kelsey and the Burbank. The plum was first named the Perfection, but was subsequently rechristened the Wickson, in honor of Professor Edward J. Wickson, of the University of California. This plum has extraordinary shipping qualities, and has attained great popularity.

unfulfilled possibilities of future development among the hybrids of my plum orchard. Selection has gone on year after year until the plums that remain are all of complex ancestry and of fine individual quality. New crossings between the almost numberless varieties, or even new seedlings without further crossing, may result any year in producing a better plum than any hitherto produced. Indeed, this is to be expected, for in a sense the work is only begun.

Even by hastening the time of fruiting through grafting seedlings on small limbs in the way already detailed, it is impossible to test any given seedling as to its fruit possibilities in less than two or three years. So there are only twelve to fifteen generations at most between my first hybrids and the seedlings of the present year.

It is not to be supposed that all the possibilities of the multiple ancestry will be realized in any given individual within that comparatively short number of generations.

So, notwithstanding the notable results of the experiments up to the present, I have every expectation that the real greatness of my plum colony is yet to be revealed.

Meantime it is gratifying to record that unprejudiced witnesses in many parts of the world have declared the members of the quartette just

A Wickson Hybrid

The plum here shown duplicates in many ways the appearance of the Wickson parent, although it shows perhaps a greater tendency to assume the form of the Kelsey. It is not as palatable as it looks; it is shown as illustrating how a crossbred fruit may simulate the appearance of its most valuable parent, and yet have no commercial value.

named to be each in its way without a rival. Each of the four has certain points of excellence, to meet the requirements of a different market. But, as a group, the four stand in a class by themselves.

And in token that this is not a matter of accident, let me recall that in the production of these four plums selection has been made, in the course of successive generations, from not fewer than a million seedlings. Perhaps this bald statement will serve, in connection with what is elsewhere told of methods, to give a fairly vivid impression of the work involved in the attempt to develop a perfect plum.

—We must strive to produce in a few decades, changes comparable to those that had been wrought in the course of centuries t h r o u g h unconscious selection by many peoples under w i d e l y diversified c l i m a t e s and conditions.