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1880

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POTATO

HOW TO CULTIVATE.

CHEMISTRY OF THE POTATO. PREMIUM CROPS AND HOW TO GROW THEM. ILLUSTRATIONS OF THE LEADING VARIETIES. BEST VARIETIES FOR SEED.

Centennial Collection of 500 Varieties.



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NEW YORK.

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Our Potatoes at the Missouri Agricultural College.

Since going to press with body of our Catalogue, we have received a report from Prof. Tracy of Missouri Agricultural College, giving these results of his experiments in Potato planting in the spring of 1878, from which we make the following extracts: 177 varieties were planted, 140 being selected from 196 varieties tested in 1877, 27 being unnamed seedlings from B. K. Bliss & Sons of New York, sent to the College for trial. They were planted on rich Clover Sod, ground plowed early in the spring, thoroughly pulverized with a rolling harrow. Potatoes were cut in pieces of about two eyes each, and planted four inches deep in drills four feet apart, and eighteen inches apart in the drill. No manure was applied and only ordinary field culture was given. The date of ripening is the date when the stalks appeared dead.

Bliss' Seedlings F. & G., ripened July 15, yielding respectively 139 and 104 bushels to the acre. Seedlings N. & B. 1, ripened July 20, yields 151 and 68 bushels. Three seedlings ripened during the latter part of July, the balance scattering.

The largest yield per acre was Early Vermont, 270 bushels, ripened August 25, next largest, Bliss's Seedling B. 4,* 269 bushels, ripened August 5. Of all the varieties tested but five yielded over 200 bushels to the acre, all but one variety being our Seedlings or varieties introduced by us; 28 varieties yielded over 100 bushels to the acre, all but 9 being our Seedlings or varieties of our introduction. Prof. Tracy adds: "The season was a very unfavorable one and the crop suffered severely from the intensely hot and dry summer. Among the seedlings sent here by B. K. Bliss & Sons are several of great promise.

These varieties we shall test another season, and if they continue to maintain their good qualities, we shall probably select from the most desirable and offer them another spring.

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BLISS' BULB CATALOGUE (Illustrated).—Published September 1, containing a Choice Collection of DOUBLE AND SINGLE HYACINTHS, arranged in their several colors; TULIPS in many varieties, both double and single; POLYANTHUS NARCISSUS, CROWN IMPERIALS, JONQUILS, SNOW DROPS, LILIES, etc. 10 cents.

*This variety has since been named "Pride of America," and is offered by us for the first time this season. See page 12.

ILLUSTRATED AND DESCRIPTIVE
CATALOGUE
—OF—
POTATOES FOR SEED,

FOR SALE BY

B. K. BLISS & SONS,

At their Seed and Horticultural Warehouse,

No. 34 BARCLAY STREET,

P. O. Box 4,129.

New York.

THE POTATO.

THIS valuable and well-known esculent, now so widely cultivated, is a native of the mountainous parts of tropical America, and was taken to Spain and Italy by early adventurers in the sixteenth century, for we read of its cultivation in those countries in the year 1550. The usual size of the potato in its wild state is rarely more than an inch in diameter, and the flavor very insipid and almost unpalatable.

When first introduced into Europe it created great excitement, of a similar nature to that caused by the introduction of tobacco and coffee; for many years it was only to be found on the tables of the opulent, where it was used as a dessert either in the form of a sweetmeat or as a fruit. The first varieties grown in the United States were brought from Europe. The quality was very poor, and not a variety then in use would at the present time be deemed fit for the table. It is only within a comparatively recent period that it has found its way into both continents as a general article of food for man and beast, or has received attention from agriculturists. Many of our most practical and foremost gardeners are now directing their attention and energies to its improvement and propagation.

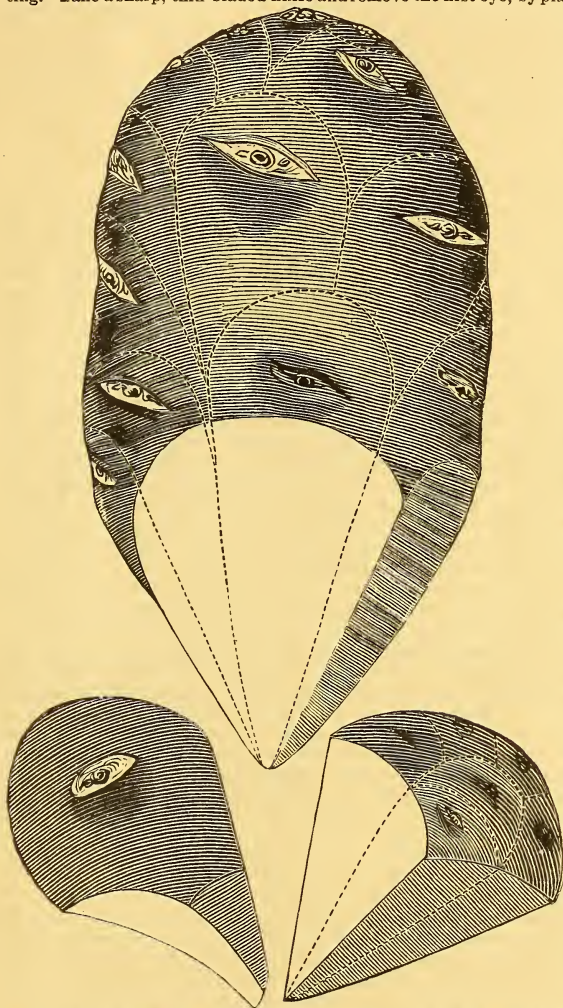
In the year 1844, the disease known as the rot appeared and nearly destroyed the whole crop. About this time a few persons, among others the late C. E. Goodrich, of Utica, imported a lot of the wild varieties directly from South America, and proceeded to raise seedlings by crossing with the various kinds then in use. Many thousand seedlings were then produced, but few of them were ever brought to any state of perfection.

One of the principal sorts saved was the Garnet Chili, which had a great reputation, and is the parent of many of our new sorts which are now attracting so much attention. Twenty-five years ago, a farmer who raised one hundred bushels of potatoes was looked upon as having an enormous stock; while to-day, many growers in the vicinity of our large cities raise from ten to twenty thousand bushels, without exciting any unusual attention. Within this period nearly all the numerous varieties with which we are now acquainted have been brought to notice, and every year adds its score of new seedlings to the already overgrown lists. Hundreds of millions of bushels are now raised annually in this country, and the demand is always greater than the supply—the crop of this State alone being twenty-five million bushels, raised on a little over two hundred and fifty thousand acres of land.

The uses of this tuber are numerous, aside from their principal use as an article of food. Thousands of bushels are annually manufactured into starch, and alcohol is distilled from its juices. Even sugar has been made; but with so much competition in this line, it has never proved a great success. Too much cannot be said in favor of this valuable staple, and we shall endeavor to instruct our readers in these few pages as to the methods used to increase the supply, without increasing the expense of its cultivation.

HOW TO CUT TO A SINGLE EYE.

Take any potato and hold before you, with the stem end (the place where it was joined to the vine) down. It will then be noticed that the eyes are arranged around the tuber in regular ascending rotation from the bottom to the top, similar to the thread of a corkscrew, each eye being a little above and further around the side than the one next below it. Now take the potato in the left hand, with the stem end down, keeping it in a perpendicular position throughout the entire cutting. Take a sharp, thin-bladed knife and remove the first eye, by placing the knife about equally



distant between it and the eye next in rotation above it, sloping it to the indenture left by the stem (see dotted lines in center cut), removing the flesh with it. When the first eye is removed, turn the potato around in the hand until the next eye above appears. Remove this one in the same manner, and keep on turning the potato, removing each eye as it appears in exact rotation, always sloping the knife to the stem. After three or four eyes are thus removed, the bottom part of the tuber will have a somewhat pyramidal form (see center cut). It will be noticed that each eye removed has a similar form to that represented by the cut on the left, and has its proportionate share of the flesh attached.

After the first two eyes are removed no further trouble will be found until the seed end is reached, and only a little extra care will be required to remove these closely clustered eyes. The cut on the right represents what remains of the potato after all but the small eyes are removed, while the dotted lines show how to separate each of these. It will be noticed that the base retains the same form throughout, and by sloping the knife each time, and cutting down to the apex of this inverted pyramid (which is the center

of the tuber), each eye will be supported by an equal amount of the flesh which is to start it into a strong, healthy growth. With common varieties, where seed is cheap, many will think this manner of cutting too troublesome. But if every farmer should save one-half his seed, as he easily could do (for it will only require two barrels of sets for an acre, instead of four, as is usually planted, the increase being equal), thousands of bushels would annually be saved, worth many thousands of dollars. But to those who wish to obtain a large increase from a small quantity of seed, as is necessary to those who buy the new and valuable varieties, this manner of cutting so that every eye is saved will prove invaluable.

CUTTING.

This is one of the most important subjects to be considered in the propagation of potatoes, and there is such a diversity of opinion regarding the manner and method of cutting, that many pages could be filled in giving the different experiences of the professors in this art. While we do not attempt to decide this question to the satisfaction of every one, we shall give our own views, and claim that in our method an enormous quantity of the tubers now annually planted may be thrown into the market, causing a reduction in the prices charged for this common and necessary crop. Without discussing the respective merits of planting whole potatoes, or half a dozen pieces, each piece containing three and four eyes, in a hill, we shall state, what has been proven by so many cultivators, that two good eyes are ample for one hill, and the yield of large, marketable potatoes is larger than when more are planted. With the aid of the cut and remarks on page 3, we trust our readers may be enabled to understand our method.

HOW TO RAISE FROM CUTTINGS.

For this purpose any ordinary hot-bed may be used. About the 1st of March take the potatoes to be propagated, dividing them lengthwise, and laying these pieces with the cut side down upon the soil of the hot-bed. Keep them perfectly dry until the cut part has healed over and the sprouts have commenced to start. When the sprouts reach the height of three or four inches, cut them off about half an inch above the eye, and insert the end of the cuttings thus obtained into the soil of the hot-bed. Shade them from the sun, and water carefully until they are well rooted and the leaves begin to develop. The old pieces of the potato will continue to throw up shoots to an almost incredible number, and these are all to be removed as soon as strong enough in the same manner as the first ones. In order to increase the crop still more, as soon as these cuttings have reached the height of eight inches, their tops may also be removed and planted in the same manner as the slips from the potato. As soon as the ground becomes warm and can be worked, prepare it as is usual in planting the tubers, and set out these young plants. It is best to transplant them on some cloudy day or towards evening, as the hot sun withers them and destroys many if planted in the hot part of the day. These plants will be found to grow very rapidly, and can be propagated indefinitely from cuttings of the older plants. No cuttings should be taken after the 1st of August, as they will likely be destroyed by the cold weather before the crop is matured. The immense increase of stock by the use of this method may be illustrated as follows: A pound usually contains four medium-sized potatoes, and there are from twelve to twenty eyes on each tuber. When cut and sprouted they will give, at least, five hundred plants. From each of these plants *three* cuttings may be taken, which gives a total of two thousand plants to be set in the ground. With the ordinary yield, each hill, at the lowest estimate, would give one and one-half pounds, or three thousand pounds; in all making about eighteen barrels of good, sound potatoes, or a year's supply for a large family. We do not claim that this is either profitable or advisable with the common sorts of potatoes; but with the many new and high-priced varieties which are now being disseminated at the prices of one, two, or three dollars a pound, it is almost invaluable, as for a slight expenditure a large stock may be obtained, paying to the propagator a thousand-fold. This is no new experiment, but has been practiced by the initiated for the last few years, and has ever proved a success. It is not confined to hot-beds, but many of our most prominent nurserymen have devoted whole greenhouses to this use, and we would confidently recommend it to our readers.

TWO CROPS A YEAR.

Take good, sound, early potatoes, and cut them into single eyes, as is shown in the article on cutting. Allow these pieces to dry for a day or two, and then plant as early as the ground can be worked (a slight frost will not injure the potato after being well planted). With ordinarily favorable weather the new crop of tubers will mature in from eight to ten weeks. As soon as they are ripe, dig them, and after remaining a day or two in some dry and warm place, proceed to cut them into single eyes as before. Place the pieces thus obtained into pans or boxes containing dry plaster or gypsum. This absorbs the abundant moisture, which would otherwise greatly check the growth if it did not destroy the sets entirely. Allow them to remain in the plaster for ten or twelve days, or until the eyes commence to start, when they are to be taken out and planted as before. In the latitude of New York this is only applicable to early varieties, like the famous Early Rose, or Extra Early Vermont, which are of quick growth, and early maturity; but in many parts of the South, where the growing season is long, it may be practiced indiscriminately upon all varieties. A gentleman has raised *two* crops of Early Rose, a short time since, in this vicinity,

the two crops yielding an aggregate weight of twenty-five hundred pounds. He planted his pound, cut into single eyes, early in March, and dug his first crop about the middle of May. These were then treated as above described and planted the 10th of June, and the second crop dug the 1st of September. The yield from the one pound at the first digging was fifty pounds, and the second crop of this increase was twenty-five hundred pounds, or over forty bushels. This method is within the reach of all, and there is no extra expense incurred for hot-bed sashes or any other forcing requisites.

HOW TO RAISE SEEDLINGS.

Save any well-ripened seed-balls from a good variety, and plant in early Spring, in well-drained boxes of sandy loam. Sow the seed on the surface, and sift fine soil over them to the depth of one-quarter to one-half an inch; water sparingly, and when the seedlings are three inches high, remove them from the seed box without disturbing the earth around them more than is necessary, and plant in more roomy quarters. Many successful growers, however, prefer sowing the seed in open ground, when a partially shaded spot may be selected, and the seeds may be sown in drills about ten inches apart; cover with half an inch of soil. When the plants are strong enough, transplant in rows three feet apart, two feet in the rows, and keep down the weeds until the tubers ripen. Some few strong growing varieties, will form tubers weighing from six to eight ounces the first year. As a general rule they will be about the size of a walnut. The seed we offer this season, "**Pringle's hybrid**," is far in advance of any hitherto offered, as will be seen by referring to the description on page 32. Store the tubers carefully until the next season, keeping them as cool as may be without freezing, when they may be planted in the same manner as any mature potato.

It usually takes three years to ascertain the true value of a seedling, and if a person is favored by finding one really good variety among the many seedlings, he may feel well repaid for his time and trouble. Many new varieties are raised by hybridization, which is a more difficult method, although it generally secures a greater number of good varieties. The manner of procedure is as follows: Remove all flowers excepting those you wish to hybridize, then with a pair of sharp scissors remove all the anthers from the stamens in the flowers to be impregnated, just before they commence to discharge their pollen. When the flowers are dry, shake the flower containing the stamens of the variety which you wish to cross with it, being careful to do it when they are ready to discharge their pollen. Fit a piece of fine netting over the impregnated flower, to prevent the bee and other insects from leaving the pollen of other varieties upon the exposed pistil. The covering may be removed after two or three days. Do not disturb them again until the seed-ball has ripened, when the treatment as given in the first part of this article may be applied.

Instances have been known, though rare, where one potato would produce two distinct sorts from its different buds or eyes. The White Peachblow, for example, has been found growing on the same stalk with the Jersey Peachblow. As so much interest is now excited in the growth and propagation of new seedlings, and many of the new varieties command such high prices—it behooves our farmers and amateur gardeners to avail themselves of the latest and, by actual tests, the best method of producing new varieties.

HOW TO STORE AND KEEP.

It is a matter of no small importance to the farmer to be able to keep his crop of potatoes in good condition through our long Winters, and to present them for sale, free from blemish or mildew, in the Spring. A well-kept potato brings three or four times its value in market in early Spring than the same stock will if sold in the Fall, paying an extra profit over and above the cost of storing, handling and care required.

Of the three methods of storing in general use, each has its champions. They are: storing in barrels, bins, or heaps or pits. The advantage of placing in barrels is, they can be easily handled, do not suffer from abrasion, can be readily looked over, and if *disease presents itself* it can be checked or removed.

When thousands of bushels are raised on one farm, this method cannot be followed on account of the time and expense involved. Bins are largely used by our fore-handed farmers, especially those near large cities, as the roots can at any time be reached and got ready for market. A dry, cool, well-ventilated cellar, with the light excluded, is the best place to store potatoes. It has been found very advantageous in preventing decay to sprinkle lime in the barrels or bin at the rate, say, of one pound to each barrel. It acts as an absorbent and neutralizes the earthy odors, thus directly acting as a preventive of decay to the roots.

The importance of excluding light from potatoes and keeping them as cool as possible, cannot be over-estimated as means of preserving the crop.

The Chemistry of the Potato.

The Variations in its Composition, Average Analyses according to standard authorities.

Dr. Voelcker, on Differences of Composition, especially in proportion of Starch.

Manurial requirements: Action of Potash in Potato Culture. Quantity of Nitrogen, Phosphoric Acid and Potash required to produce 100 bushels; also one bushel of Potatoes.

Commercial Sources of Fertilizing Materials required, etc., etc.

The importance of the Potato (*solanum tuberosum*) as one of the most valuable and profitable of the staple food-crops, entitle it to much more attention than it has heretofore received at the hands of agricultural chemists. In England and Germany, where the potato has been made the subject of considerable study and of numerous analyses, it has by no means had the benefit of the exhaustive investigations accorded to the grain and root crops. While much valuable information has been gained, as will be hereafter seen, as the result of these researches, yet there is much to be learned, especially among our own farmers, of the relative values of the new varieties, so popular among us, their capacity for improvement in quality for food, more economical culture, etc. It is to be hoped that the system of experiments so successfully started last season by Professor W. O. Atwater, among farmers, will include trials on the different varieties of potatoes.

The variations in the composition of the potato, as shown by hundreds of analyses made or endorsed by such standard authorities as Voelcker, Johnston, Fresenius, Payen, Wolff, Knobbe and S. W. Johnson, are sufficiently great to even lead these chemists to differ somewhat as to what fairly represents an average composition of this important vegetable. As will be seen by examining the data hereafter given, there are large differences in the percentage of the most important ingredient contained in the tuber, namely, the starch, and this difference will be found in the same variety of potatoes grown upon different soils, as well as in different varieties grown upon the same soil.

The feeding value of the potato, to the extent of producing the animal heat of the body and of the formation of fat, is almost entirely due to the amount of starch it contains—and it is equally well known that it is owing to the presence of starch in greater or lesser quantity that some potatoes are, when cooked, *white, mealy and fine flavored*, and others, deficient in starch, are unattractive, waxy and soggy.

When the conditions of growth are favorable and the variety a good one, the percentage of starch in the potato tuber is **twenty per cent.** and upwards, while inferior specimens are found to yield less than eleven per cent. One hundred pounds of the former, when thoroughly dried, would contain over **eighty pounds** of starch, and the latter some forty-four pounds. In other words, the good potatoes quoted are nearly or quite twice as valuable as food for man or stock as the poor variety.

The variations in the albumen, casein and fibrin are by no means so great as with the starch. The total quantity of these ingredients (called the albuminoids) found in an average healthy potato, is only some two pounds in every one hundred pounds of tubers, in the air-dry or natural state; and it is due to this fact that potatoes, while they have but few superiors in power to maintain life in man or beast, possess so little power in building up the solid tissues of the body, muscle, flesh, etc.

The ability of the farmer to increase the feeding value of the potato, in this direction, by any process of manuring is probably very limited, as the formation of the albuminoids (albumen, casein and fibrin) is due to the presence of **nitrogen** in the plant, and as the potato seems to have the power of deriving, under ordinary circumstances, through its full leaf and vine development, much of the entire supply of nitrogen it requires or can use advantageously, **any addition** of this ingredient in considerable quantity, as in the form of **nitrogenous or putrescent manures**, invariably results in developing an **undue growth of vines** at the expense of both the **quality and quantity of the tubers**. In any but a dry season the entire plant is almost sure to

become in an abnormal condition, and prove a prey to attacks of fungus, resulting in disease or "rot." The attempt, on the other hand, to improve the quality of the potato as food, so far as depends upon the presence of starch in the tuber, will be found to be more encouraging when the action of potash in potato manure is considered. As will be seen further on, potash **invariably increases the starch formation**, and without its presence **no starch can be found**. When grown upon newly recovered forest land, or upon any land of suitable mechanical texture, containing available potash, or supplied with the same in the form of unleached wood ashes or potash salts (of proper kinds) **potatoes are invariably of superior quality**.

The variations in the ash or mineral constituents of the potato are remarkable, and probably exceed those of any other crop. With the exception of phosphoric acid and potash in the tubers, and lime, magnesia and sulphuric acid in the vines, the mineral ingredients, soda, iron, pure silica, chlorine, etc., vary to such an extent that they almost seem to be taken up by the roots for convenience rather than for any actual needs of the plants. Soda is found to exist in the ash of the tubers in quantity quite or next to nothing, up to twelve per cent. Oxide of iron from nothing to six per cent. Silica from nothing to over six per cent. Chlorine from nothing to nearly nine per cent.

In all these ash analyses, however, the proportions of potash and phosphoric acid are uniformly large; in the case of potash, from forty-two to seventy-three per cent., while the phosphoric acid is found to rarely fall below twelve per cent., and often rises to over twenty-seven per cent. (average say twenty per cent.).

We are thus enabled to see, so far as the development of the tuber of the potato is concerned, that notwithstanding the large variations in the proportions of its ash constituents, the presence of potash and phosphoric acid, but particularly the former is *essential*. Practice fully corroborates this view, for the good effects resulting from the use of wood ashes and bone, (well known sources for these ingredients,) have caused their almost universal adoption as special manures for potato culture.

The increased yield per acre from the addition of **potash alone** has been, in several cases, from 150 to 200 bushels in excess of the quantity produced on another portion of the same land to which the potash was not supplied, but otherwise well manured.

The potato vines, as indicated by their analyses, seem to require full supplies of lime and magnesia as well as of sulphuric acid, and as these ingredients are generally found to exist in the vines in **increased proportion** as the season advances towards October, it would indicate that they are required more particularly for use by the vines themselves. The remaining ingredients found in the vines at the end of their growing season, show, on the contrary, a **decreased percentage**. This is particularly the case with the **potash** and phosphoric acid, showing that these ingredients, so important in the growth of the potato, have been transmitted from the vines for use by the tubers.

ANALYSIS OF POTATO VINES (WOLFF).

	AUGUST. OCTOBER.	
	Per 100 lbs. of ash.	
Potash, - - - - -	14.50	6.30
Soda, - - - - -	2.70	0.80
Magnesia, - - - - -	16.80	22.60
Lime, - - - - -	39.00	46.20
Phosphoric acid, - - - - -	6.10	5.50
Sulphuric acid, - - - - -	5.60	5.50
Silica, - - - - -	8.10	4.20
Chlorine, - - - - -	4.60	3.00
Percentage of ash, - - - - -	8.90	5.12

The benefit arising from the use of plaster (sulphuric acid and lime) so successfully practiced by potato growers, as well as from magnesia salts, is probably due to their effects upon the vines, in increasing their power to sustain the entire plant in sufficient strength and vigor to enable it to withstand, especially during seasons of sudden and extreme changes of temperature and moisture, all parasitical attacks or fungus growth. It has been stated that a strong healthy vine is not liable to become affected even when brought into actual contact or rubbed with a diseased plant. The *predisposition* towards disease, *through impaired vitality*, must exist before there is danger of "rot."

The success claimed for the good action of common salt (chlorine and soda) on potatoes can hardly be due to any direct manurial action on the plant, but rather to its **indirect action** in aiding in rendering soluble and available the other ingredients on the soil. As Professor S. W. Johnson states: "Soda is an extremely variable ingredient of the ash of plants, and though gen-

erally present in some proportion, has been observed to be absent in weighable quantities in the seeds of grain and in the tubers of potatoes."

The evidence of the importance of the presence of potash in the soil for potato culture, as given by the fact of its uniform presence in large quantities in the tubers, as well as by the good effects that always attend its use in a fertilizer for potatoes, is made even much stronger when it is remembered that *without the presence of potash in the leaves of a plant no starch can be formed*. Starch, as we have stated, forms from nearly one-half to over two-thirds the entire weight of air-dry tubers.

The following interesting summary of the experiments, made by Dr. Nobbe and others in Germany, is taken from a lecture recently delivered by Professor W. O. Atwater, before the Connecticut State Agricultural Society, and will be found to fully cover the importance of the presence of potash for starch formation.

"If we examine a green leaf with a microscope, we may find in it thousands of minute sacs or cells as they are called. Some of these contain the green substance called chlorophyll. Inside these grains of chlorophyll appear still smaller grains of starch. Starch is composed of the elements carbon, oxygen, and hydrogen. It is produced inside the leaves. The carbon is taken from the carbonic acid of the air by the agency of the chlorophyll, is united with hydrogen and oxygen, the elements of water, and thus starch is produced. After the starch is so formed, it is conveyed to the other parts of the plant, and either stored away, as in potatoes or grain, which consist largely of starch, or transformed into the other materials of which the plant is made up. And this formation of starch in the chlorophyll grains, and transportation, transformation and storage to build up the plant is going on continually as the plant grows. If then, no starch is formed by the chlorophyll in the leaves, normal growth is impossible."

Now, in every one of Dr. Nobbe's plants grown in artificial soil without potash, after the starch of the seeds was used up, no more appeared in the leaves. As Dr. Nobbe says at the conclusion of over a hundred pages of description of his experiments, "**without potash the plant cannot assimilate** (the materials needful for its growth) and shows no increase in weight, because, without the co-operation of potash in the chlorophyll grains, no starch is formed."

The extent of the variations of the leading organic ingredients in potatoes, and some of the reasons for the same as given by Dr. Voelcker of England, are here given as comprising some of the most reliable data offered at the present time.

"The variation in proportion of starch in different samples of potatoes are chiefly caused by the variety cultivated, by the soil upon which and the locality where the plants were grown, and by the time during which the tubers have been kept. Thus the following varieties grown in Scotland yielded respectively of starch:"

Connaught Cups, - - - - -	21 per cent.
Irish Blacks, - - - - -	16½ " "
White Dons, - - - - -	13 " "
Red Dons, - - - - -	10¾ " "

The influence of soil and locality in affecting proportion of starch in the same variety of potato is seen from the following determinations, according to which

Buffs gave in Mid Lothian, - - - - -	14.89 per cent.
Buffs gave in Forfarshire, - - - - -	20.71 " "
Cups gave in Argyleshire, - - - - -	15.14 " "
Cups gave in Mid Lothian, - - - - -	23.82 " "

On **keeping**, the proportion of starch diminishes in potatoes. Thus Payen found the same variety of potato to yield in

October, - - - - -	17.2
November, - - - - -	16.8
December, - - - - -	15.6
January, - - - - -	15.5
February, - - - - -	15.2
March, - - - - -	15.
April, - - - - -	14.2

"The amount of the albuminous or flesh forming constituents of potatoes, according to Bousin-gault, is greater in newly dug potatoes than in others which have been kept some time. Thus in newly dug potatoes he found them to amount to 2¼ per cent., and in long kept potatoes to only 1½ per cent. of their weight. The first, according to this determination, when dried, contained 9 and the latter only 6 per cent. of albuminous substances."

"In diseased potatoes the proportion of albuminous matters is smaller than in healthy, as the disease primarily attacks the albuminous matters, which, when once attacked are readily decomposed, and changed into ammonia and other compounds."

Dr. Voelcker also states that the analysis of the ash of a diseased potato failed to show any material difference from that of a healthy one. A small increase in the amount of silica in the diseased potato was the only noticeable difference.

PROXIMATE ANALYSIS OF THE POTATO.

Potato Tuber (air dry).

	Average Composition (100 lbs.), as given by					Extreme percentages. (Various authorities.)	
	Voelcker.	Johnston.	Fresenius.	S. W. Johnson.		Lowest.	Highest.
Water,	75.	75.52	71.	76.		68.94	77.
Starch,	15.	15.72	15.	20.		10.75	21.
Albumen, } Gluten, } Casein, }	2.	2.20	2.43	3.		1.50	2.85
Fat,	.24	.24	.20			.10	.42
Fibre,	5.	2.47	7.			3.	7.
Sugar, Gum, etc.,	1.76		3.40				
Ash,	1.		.97	1.		.651	22.

1 Maximum percentage of water in 27 varieties Young Potatoes was 82 per cent. (Voelcker.)

2 Calculated on basis 75 per cent. water in air dry potatoes; from 2.60 to 8 per cent given as ash in potatoes (dried).—(How Crops Grow.)

THE VARIATIONS IN THE ASH INGREDIENTS OF different varieties of Potatoes grown upon the same soil and precisely similar circumstances are shown in the following analyses by Herapath.

	White Apple.	Prince's Beauty.	Axbridge Kidney.	Magpie.	Forty-fold.
Potash,	69.7	65.2	70.6	70.	62.1
Chloride Sodium,	-	-	-	-	2.5
Lime,	3.	1.8	5.0	5.	3.3
Magnesia,	6.5	5.5	5.0	2.1	3.5
Phosphoric Acid,	17.2	20.8	14.9	14.4	20.7
Sulphuric Acid,	3.6	6.	4.3	7.5	7.9
Silica,	-	-	0.2	-	-

The extreme variations in the ash ingredients of Potatoes of different varieties and grown upon various soils may be seen in the annexed table, taken from Prof. Johnson's standard work, "How Crops Grow." (page 156).

Per cent. of ash,	Lowest Percentages. Highest Percentages.	
	38 Analyses.	39 Analyses.
Potash,	2.60	8.05
Soda,	42.9	73.60
Magnesia,	0.0	12.80
Lime,	2.5	6.60
Oxide Iron,	0.5	6.20
Phosphoric Acid,	0.0	6.
Sulphuric Acid,	11.2	27.10
Silica,	0.4	18.00
Chlorine,	0.0	6.50
	0.0	8.70

Average composition of 1000 lbs. of Potato Tubers, natural condition (air dry); also of 100 bushels and one bushel.

	1000 lbs.	100 bushels. 6000 lbs.	1 bush. 60 lbs.
Water,	750.00	4500.	45.
Starch,	150 to 200.00	1200.	12.
*Albumen, Casein, Fibrin,	20.00	120.	1.200
Fibre, fat, etc.,	70 to 20.00	120.	1.200
Ash, 9 to 10 lbs. containing—			
Potash,	5.60	33.60	.336
Soda,	.10	.60	.006
Magnesia,	.40	2.40	.024
Lime,	.20	1.20	.012
Phosphoric Acid,	1.80	10.80	.108
Sulphuric Acid,	.60	3.60	.036
Silica,	.20	1.20	.012
Chlorine,	.30	1.80	.018
Sulphur,	.20	1.20	.012
	.60	3.60	.036
	1000 lbs.	6000 lbs.	60 lbs.

*Nitrogen exists to the extent of sixteen per cent. (about one-eighth entire weight) in these albuminoids. Therefore 1000 lbs. potato tubers would contain 3.20 lbs. of nitrogen.

MANURING OF POTATOES.

The supply of lime and sulphuric to potatoes is cheaply given in the form of plaster, which as before stated, serves an excellent purpose in practice in protecting vines against extreme changes

in weather, liability to rot, etc. Soda and chlorine, if found to act well, will cost but little in the form of refuse salt or brine. The main fertilizing ingredients, however, with which the potato-grower, need concern himself are the following: **Nitrogen, Phosphoric Acid and Potash.** The following gives the quantity of each contained in 1,000 pounds, as well as in 100 bushels, and a single bushel of tubers:

Contained in - - - - -	1,000 lbs.	6,000 lbs. †100 bushels).	60 lbs. (Single bushel).
Nitrogen, - - - - -	3.20	19.20	0.192
Phosphoric acid, - - - - -	1.80	10.80	0.108
Potash, - - - - -	5.60	33.60	0.336
	10.60 lbs.	63.60 lbs.	0.636 lbs.

To supply *all* the phosphoric acid and potash required for the growth of **each 100 bushels** of potato tubers (the vines supposed to remain on the land) without exhausting the soil of any of its resources in these ingredients, would therefore require say 11 pounds of phosphoric acid, and say 34 pounds of potash, and for *continued potato culture* an application of an equal quantity for *each crop*. In the case of nitrogen, however, the quantity may safely be reduced to 10 pounds, instead of using nearly 20 pounds, as called for by the composition of 100 bushels of tubers. The reasons for this reduction in the quantity of nitrogen in the manure are as before explained, viz.: The natural power of the potato plant to derive nitrogen from the air, (a cheap source,) the tendency as shown in practice, of nitrogen to induce, except when used in very limited quantity, an **over-rank vine-growth** and a **poor quality** and a **limited quantity of tubers**, besides an almost certain tendency on the part of the potato crop towards "disease."

Taking the quantities of nitrogen, phosphoric acid and potash, as above advised, we have the cost of the same at the current rates, furnished in the best known forms, (Peruvian Guano, blood or flesh, dissolved-bone and potash salts), as follows:

For 100 bushels of potatoes:

	Pounds.	Price per lb.	
Nitrogen, - - - - -	9.60	21¼c.	\$2.05
Phosphoric acid, - - - - -	10.80	9c.	.97
Potash, - - - - -	33.60	7½c.	2.52
Cost for 100 bushels, - - - - -			\$5.54

Equal to a cost for single bushel, 5½ cents.

To grow 300 bushels of potatoes, irrespective of resources of the soil, would require of:

Nitrogen, - - - - -	29 lbs.
Phosphoric acid, - - - - -	32 lbs.
Potash, - - - - -	100 lbs.

The following table gives the leading commercial sources for the above named ingredients, and also the quantities of each required to supply the necessary quantity of potash, phosphoric acid and nitrogen required for 300 bushels of potatoes.

COMMERCIAL SOURCES OF POTASH.

Quantity of Each Required to Yield 100 lbs. of Potash.

		Potash.	Phosph acid.
		lbs.	lbs.
Wood ashes (unleached, 25 bushels), - - - - -	1,200 lbs. will yield	100	50
Wood ashes (leached, 117 bushels), - - - - -	6,670 lbs. " " "	100	100
*Sulphate of Potash, - - - - - "Kainit"	800 lbs. " " "	100	
" " " - - - - -	50 per cent. 364 lbs. " " "	100	
" " " - - - - -	72 per cent. 250 lbs. " " "	100	
" " " - - - - -	80 per cent. 228 lbs. " " "	100	
†Muriate of Potash, - - - - -	80 per cent. 200 lbs. " " "	100	

*In the use of the low grade potash salts known as "Kainit," as a source of potash for potatoes, it is necessary to take precautions against damage arising from the presence of chloride of magnesium which this grade of potash salt contains to the extent of some ten per cent. (200 lbs. to the ton). These "Kainit" salts average only some 13 per cent. of actual potash, it therefore requires some 700 lbs. per acre, provided this salt is used alone, to give 100 lbs. of actual potash. (the quantity required for 300 bushels of potatoes). The use of this quantity per acre would be attended with serious danger to the crop owing to the presence of some 70 lbs. (10 per cent.) of chloride of magnesium. The only safe method of application is to sow broadcast and harrow in several weeks before planting.

Professor S. W. Johnson advises the mixing of fifteen pounds of air-slacked lime with each one hundred pounds of "Kainit" before use. This is said to counteract any injurious effects that might otherwise arise from the presence of the chloride of magnesium. In Germany they seldom use this grade in quantities exceeding 500 to 600 lbs. per acre.

†The **muriate of potash** is open to the objection for use on potatoes, that it has a tendency to produce tubers of an inferior quality—watery and waxy. It is recommended to use as a source

of potash, when the formation of starch or sugar is desired, either wood ashes or some grade of sulphate of potash (as free as possible from any chloride salt.)

COMMERCIAL SOURCES OF PHOSPHORIC ACID.

Quantity of Each Required to Yield 32 lbs. of Phosphoric Acid.

		Nitrogen.	Phos. acid.	Potash.
		lbs.	lbs.	lbs.
Pure Fine Bone, (dissolved in sulphuric acid),	267 lbs. will yield	6	32	
Pure Bone Meal, - - - - -	160 lbs. " "	6	32	
Dissolved Bone Black, - - - - -	230 lbs. " "		32	
Rectified Peruvian Guano, - - - - -	228 lbs. " "	16.	32	4½

COMMERCIAL SOURCES OF NITROGEN.

Quantity Required of Each to Yield 30 lbs. of Nitrogen.

		Nitrogen.	Phos. acid.	Potash.
		lbs.	lbs.	lbs.
Dried Flesh or Blood, - - - - -	300	30		
Rectified Peruvian, - - - - -	375	30	52½	6½
‡Nitrate of Soda, - - - - -	192	30		
§Sulphate of Ammonia, - - - - -	145	30		
Pure Bone Meal, - - - - -	800	30	160	

‡These articles, nitrate of soda and sulphate of ammonia, as they furnish nothing of value but nitrogen, should be used in potato culture with caution, and in small quantities. Their effect upon potatoes, except when used on soil abounding in the mineral ingredients (particularly phosphoric acid and potash), will be to produce an excessive vine-growth and a yield of tubers small in quantity and inferior in quality.

MAPES' POTATO MANURE.

Ammonia, 4.50 to 5 per cent. Phosphoric Acid, 8 to 10. Potash, 6 to 8.

Price, per ton, 2,000 lbs. - - - - - bags (200 lbs.) \$48.00

This has proved a complete Manure for Potatoes on all lands, supplying the potash in *ample quantity*, and the phosphoric acid *even in excess* of the demands of the crops. The phosphoric acid is found in practice to be *relatively* deficient in most soils for potatoes. This is shown by the excellent results frequently attending the use on potatoes of an ammoniated super-phosphate containing *no potash and little ammonia*, but *rich in phosphoric acid*. In the cases where a super-phosphate or a dissolved bone act so well on this crop, there must be an ample supply of available potash as well as of magnesia, etc., in the soil itself, as is sometimes found in clay loam soils, and these of a shale or slaty character. *Sooner or later the continual culture of potatoes*, or any *other crop* requiring potash and other similar alkaline ingredients largely, and using mainly bone and phosphates, must result in getting the land *out of balance*, and the crops suffering in consequence both in quality and quantity.

In Washington County, New York, where potatoes are the main crop with many farmers, the average yield has fallen to one hundred bushels per acre, and yet within the memory of some of the present growers, the yield per acre on the same lands has in former years been 300, 400, and even 500 bushels per acre.

The Mapes' Potato Manure supplies all the ingredients required to restore such lands as *above* named, and to permit of continued cropping of potatoes, as far as plant food is concerned on any lands, without exhaustion of the soil. It will constantly improve the condition of the land, and leave it in better "heart" for any crop.

The liability of the crop to suffer from the ravages of the potato disease is greatly reduced by having the soil well supplied with full quantity of available plant food. Experience has shown that on new virgin, forest soils, or those well supplied with the products of burnt brush heaps, that the disease rarely attacks the crops, even under conditions of sudden changes of weather so favorable for the parasitical attacks and fungus growth so destructive of the crop.

DIRECTIONS FOR USE OF MAPES' POTATO MANURE.

May be used in the hills or rows, mixing and covering with earth, and distributing well.

Scatter it down the rows, mix it as thoroughly as possible, in any manner which best commends itself, with plough, hoe, brush, etc. With ordinary care, the potatoes will not be injured, and the crop will invariably be heavier than when the manure is applied broadcast. Use *two to four* bags per acre.

POTATOES.

NEW VARIETIES NOT BEFORE OFFERED.

The following varieties—**Pride of America**, **Matchless**, and **Silver Skin**—have been selected as the best of several hundred seedlings which have been on trial for several years in various parts of this country and in Europe, and have given perfect satisfaction. We recommend them with the greatest confidence to all cultivators of this valuable esculent.



PRIDE OF AMERICA.

This superb variety was raised several years since by Mr. E. S. Brownell, a celebrated hybridizer in Northern Vermont, to whom we are already indebted for a number of well-known and valuable varieties. It was raised from a seed-ball of the **Eureka**, fertilized with the pollen of the **White Peach Blow**, and combines the wonderful productiveness and excellent keeping qualities of the former with all the well-known qualities of the latter.)

It has been carefully tested by several of our most experienced growers in various parts of the country for the past four years, all of whom have given it their unqualified approval. (In appearance it closely resembles the well-known **Snowflake**, and may be easily mistaken for that favorite variety.) It ripens a few days later, and has the advantage over that variety in being adapted to a greater variety of soils, much more productive, growing to a larger size, and producing but a very few small tubers, nearly all being of a good marketable size; it is a most excellent keeper, and, so far, has shown no signs of disease. (In quality it is fully equal to the **Snowflake**; flesh exceedingly fine grained and of snowy whiteness either baked or boiled,) cooks through quickly and evenly, dry and floury, has no hard center or core, as a table variety is absolutely without a fault. (In habit of growth the vines are of medium length, well covered with a light green, stocky foliage; the tubers grow compactly in the hill, so that the crop can be easily harvested. It is an excellent keeper, and retains all its good qualities throughout the entire season.)

In the Spring of 1878 we sent about thirty of our choicest seedlings, under numbers, to Prof. Tracy, of the Mo. State Agricultural College, for trial. In his report he pronounces this variety the best of all. A gentleman of large experience, who has tested this variety, says:

"I have grown this variety for the past two seasons, and find it all that can be desired. Its smooth, handsome appearance, combined with its great cropping and remarkably fine table qualities, make it one of the most desirable varieties I have ever grown, and I have grown all the new varieties of any note introduced for the past ten years. I consider it much superior to the famous **Snowflake** in every particular. It is so far entirely healthy, grows but few small tubers, no hollow core at the center, and is one of the best keepers I ever saw. I do not hesitate to say, all things considered, that it is the best potato I ever grew—it has no fault that I can find."

Price \$1.00 per pound; three pounds to one address, \$2.50, by mail, post-paid. By express or freight, at the expense of the purchaser, half peck, \$3.00; one peck, \$5.00; half bushel, \$7.00; one bushel, \$12.00; bbl., \$25.00.)

NEW POTATOES.



SILVER SKIN.

In this variety we have another wonderful production from Northern Vermont—raised in 1875 by one of our most successful cultivators—from a cross of the Early Rose and the White Peach Blow—from the same seed-ball from which the **Matchless** originated.) It has been a very promising variety from the first, but wishing that its character might be fully established, we have delayed offering it until the present season. Meanwhile, it has been carefully and thoroughly tested, and we have no hesitation in giving it a place among our most desirable varieties. (It resembles the **Peerless** in many respects, but is **earlier** and of **better quality**, and has so far proved more productive than that favorite variety. Vines of medium height, quite stocky, and of compact growth. Tubers medium to large, with very few small ones. Skin smooth, silvery white,—in some soils slightly russeted. Flesh of snowy whiteness, fine grain, and well-flavored; cooks through quickly, and very mealy. As a baking potato it has no equal. Its productiveness the past season was greater than any variety in our trial grounds. It is entirely free from disease,—a most excellent keeper,—and cannot fail to give satisfaction to the cultivator. As a market variety we think it will entirely supersede the **Peerless**.)

Price \$1.00 per pound, three pounds to one address \$2.50, by mail post-paid. By express or freight lines, at the expense of the purchaser, half peck, \$3.00; peck, \$5.00; half bushel, \$7.00; bushel, \$12.00; barrel, \$25.00.

MATCHLESS.

See Cut on Next Page.

(This excellent variety was raised in 1875 from a seed-ball of the Early Rose, fertilized with the White Peach Blows—since which it has been thoroughly tested in various localities, both in this country and in Europe, and has given general satisfaction. (The vines are upright, of medium height, vigorous and healthy; foliage dark green. The tubers are generally round, sometimes oblong, occasionally flattened; very handsome and symmetrical in form; skin slightly russeted, pale red, except the eyes and seed end, where it is much brighter. Flesh fine grain, pure white, of excellent quality; cooks through quickly and evenly.) It is a great cropper, an excellent keeper, has never yet shown any signs of disease—eyes slightly depressed. (It ripens with the **Peerless**), and will be found equally valuable for the general crop. Its attractive appearance, great productiveness, and fine quality, will make it one of the most valuable varieties for the market.

Price \$1.00 per pound; three pounds to one address, \$2.50 by mail, post-paid. By express or freight, at the expense of the purchaser, half peck, \$3.00; one peck, \$5.00; half bushel, \$7.00; one bushel, \$12.00; bbl., \$25.00.

When the three varieties are ordered we make the following deductions:
One pound of each, \$2.50; three pounds of each, \$6.00, by mail post-paid. By express or freight lines, at the expense of the purchaser, one peck of each, \$12.00; half bushel of each, \$18.00; bushel of each, \$30.00; barrel of each, \$70.00.



MATCHLESS.

See description on page 13.

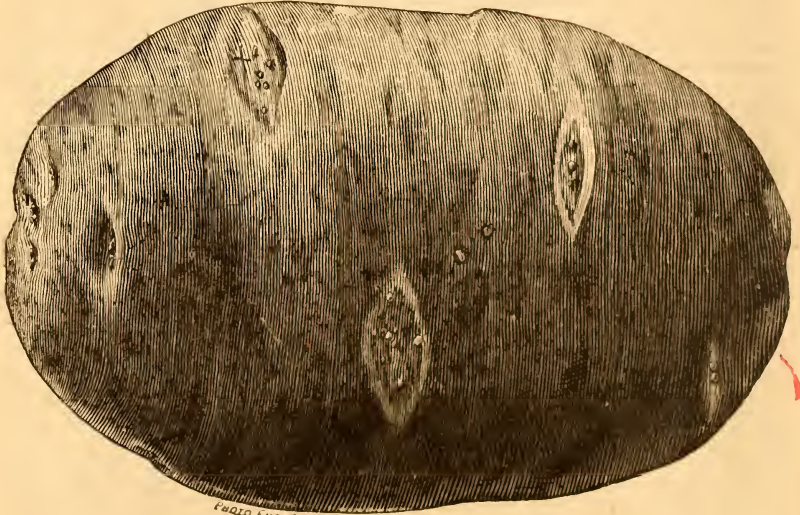


Photo Eng. Co. N.Y.

LATE SNOWFLAKE.

See description on page 15.

NEW VARIETIES—(Continued.)

SUTTON'S MAGNUM BONUM.

A new English variety, considered in England as best of all, is described as follows by the originators:

"This potato was introduced by us two years since, and now undoubtedly ranks as the best and most useful variety in cultivation. It combines great productiveness with excellent flavor, while its power of resisting disease and late keeping properties render it invaluable both for gentlemen's and cottagers' gardens, as well as for field culture. The tubers are of uniform size, of true kidney shape, with few and very small eyes, almost level with the surface; the skin is russeted, and flesh firm. The haulm is dark green in color, and very robust in growth, which enables it to withstand the disease better than any potato with which we are acquainted. It may be cooked directly it is taken from the ground, or may be kept till other varieties are useless. The productiveness of this potato will be understood when we state that we grew this year, on a sharp gravel, nearly 80 sacks upon a piece of ground measuring rather more than half an acre."

75c. per pound; 3 pounds, \$2.00, by mail post-paid. By express or freight, at expense of purchaser, \$2.00 per peck; \$5.00 per bushel; \$12.00 per bbl.

MAMMOTH PEARL.

This variety, introduced last season, has proved a great favorite wherever tried. It is described as follows by the originator: "This new and wonderful variety of potatoes was originated in Ohio, and selected from over 2,500 seedlings. Sure to produce a crop in spite of the bugs. Of good table qualities, handsome in appearance, free from rot, and never hollow; skin white, and flesh whitest of any variety. For the table it cooks like a ball of flour. Eyes few and even with the surface; in shape oblong to round. It ripens in August, very productive, yielding double any ordinary variety." By mail, 60 cts. per lb.; 3 lbs., \$1.25. By express, per peck, \$1.00; half bush., \$1.50; bush., \$2.50; bbl., \$5.00.

LATE SNOWFLAKE.

This new and valuable variety originated in northern Vermont, and was first discovered while harvesting a field of the Early Snowflake in the summer of 1875. Several hills were noticed—evidently the product of one potato—the vines of which were quite green and in a growing state, while those of the early variety were quite dry and the crop fully matured. They continued growing for several weeks, and upon harvesting the crop the tubers were found to be exact counterparts of the Early Snowflake in form, size, color and general appearance, but much more productive. In quality they are fully equal to the Early Snowflake. They have been cultivated for the past three years and found to maintain their distinctive characteristics. We offer this variety on its own merits.

A potato combining all the good qualities of the Early Snowflake—which is the best variety introduced since the Early Rose—more productive and ripening its crop so as to be ready for use after the early crop is disposed of, cannot fail to be a valuable acquisition.

Prices by mail, 60 cts. per lb., two lbs., \$1.00. By express or otherwise, purchaser paying freight, \$1.00 per peck, \$2.00 per bush., \$4.50 per bbl.

TROPHY.

This new and exceedingly fine variety is, like most of those heretofore sent out by us, a native of northern Vermont, and is one of several very promising varieties raised from a packet of Pringle's Hybridized Potato seed, by a most successful cultivator, and is sure to become a general favorite. It is a seedling of the Ruby impregnated with the Excelsior, and is a decided improvement upon both of these varieties.

Tubers of medium size, very regular in form, elongated oval, somewhat flattened, eyes very few, almost flat upon the surface, resembling in many respects the well-known Snowflake, skin reddish, slightly russeted, flesh fine grain, white, and of excellent quality, either baked or boiled. Vines are stout and vigorous, foliage dark green. It matures its crop about two weeks later than the Early Rose. The tubers are compactly clustered around the base of the stock, and easily dug. It is a good keeper, very productive, and we are confident will become a general favorite.

This variety was exhibited in London at the great International Potato Show, in 1877, and received a first-class certificate. Stock limited. Price 60 cts. per pound; three pounds to one address, \$1.25; by mail post-paid. By express or freight, one peck, \$1.25; half bushel, \$1.75; bushel, \$3.00.

NEW SEEDLINGS.

The following varieties have been selected from year to year for the past five years—from several thousand seedlings grown for us—and may be strongly recommended for their good quality, productiveness and general adaption for cultivators in various parts of the country. They are excellent keepers and well worthy of general cultivation. Our stock being limited, we offer them only in small quantities.

A premium has been awarded our collections for two years past by the New York Horticultural Society and American Institute.

SARANAC.

This variety originated in Vermont in 1877. It is a seedling of the White Peachblow crossed with Compton's Surprise. (Skin white, blotched with purple. Flesh white, fine-grained. Cooks dry and mealy, of fine flavor; an excellent keeper; very productive; free from disease, and highly recommended for a main crop.)

CHARLOTTE.

Irregular, globular, flattened, of large size; skin rose-colored, darker in the eyes, smooth, eyes small and sharply depressed; flesh white, purple-veined near the seed end similar to the Mercer Potato; quality first-class in every respect. Compared with the older standard varieties, the Charlotte resembles the Peachblow in its palmyest days, more than any other new Potato.)

HERO.

This variety was awarded the First Premium at the New York Horticultural Exhibition in 1878 as the best new seedling. Its shape is long cylindrical, pointed, very uniform; skin smooth, of a peculiar coppery red color; eyes very smooth; flesh in the raw tuber of a pinkish hue, pure white when boiled, mealy and porous and of superb quality when baked, for which latter purpose is especially recommended.)

MANSFIELD.

A handsome medium-sized Potato of even, uniform size and oval shape, somewhat flattened; very smooth, with hardly any depressions of the eyes; skin russety, tessellated; flesh pure white and fine grained. Yields well. A most desirable variety for baking and boiling.)

STARTLER.

Early, large, long-cylindrical, little pointed towards the seed end; skin light pink, very smooth and thin; eyes small and slightly depressed; flesh white, cooks well and of exceedingly fine quality and pure flavor. It is an excellent yielder, healthy, and promises to become a most valuable addition to our list of market Potatoes.)

Price of either of the five above named varieties, 1 lb., 75 cents; 3 lbs., \$2.00, by mail, postpaid. By express, at the expense of the purchaser, ½ peck, \$1.75; peck, \$3.00; ¼ peck of each of the five varieties, \$7.00; 1 peck of each of the five varieties, \$12.00.

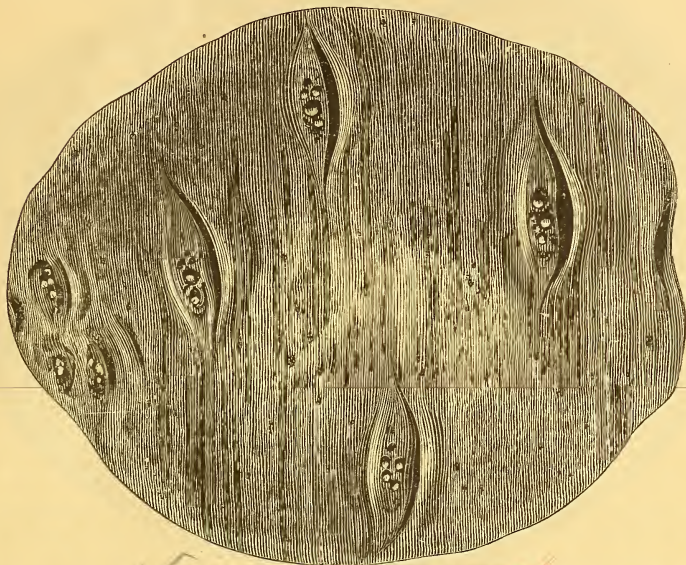
Collection of Seedling Potatoes.

We have on hand 100 varieties **unnamed Seedlings** raised within the past five years from **Pringle's Hybridized Potato Seed**, which have been selected from several **thousand varieties** for further trial. Among them are many that are exceedingly promising and well worthy of the attention of Farmers. They will be offered in collections as follows, and mailed postpaid:

100 varieties, 1 tuber each,	- - - - -	\$15 00
50 " 1 " " - - - - -	- - - - -	8 75
25 " 1 " " - - - - -	- - - - -	5 00

N. B. Orders for Potatoes, received during Winter, will be forwarded in Spring as soon as the weather will permit, which is usually about the first of April. They can be forwarded earlier, if desired, at the risk of the purchaser.

VARIETIES OF 1878.



BLISS'S TRIUMPH.

This new and beautiful variety is, without exception, the most attractive in appearance of any that we have yet offered, and will also compare favorably with the best of them in quality. It originated in the State of Connecticut, several years since, and has been faithfully tested by the originator, and found to maintain its good qualities from year to year. It was raised from a seed ball of the well-known Peerless crossed with a seedling of the Early Rose. It combines the wonderful productiveness of the Peerless, with all the good qualities of the Early Rose, is much more productive, and matures its crop at least ten days in advance of that favorite sort, before the second crop of beetles appear. In color and form it resembles the Garnet Chili, though greatly improved in form and quality. Tubers of medium size, round and uniform in shape, with but a very few small ones, eyes slightly depressed, color a beautiful light red, strongly resembling the early varieties from Bermuda; flesh fine grain and of excellent flavor. Vines about two feet in height, erect, with but a few lateral branches, covered with long, dark-green foliage.

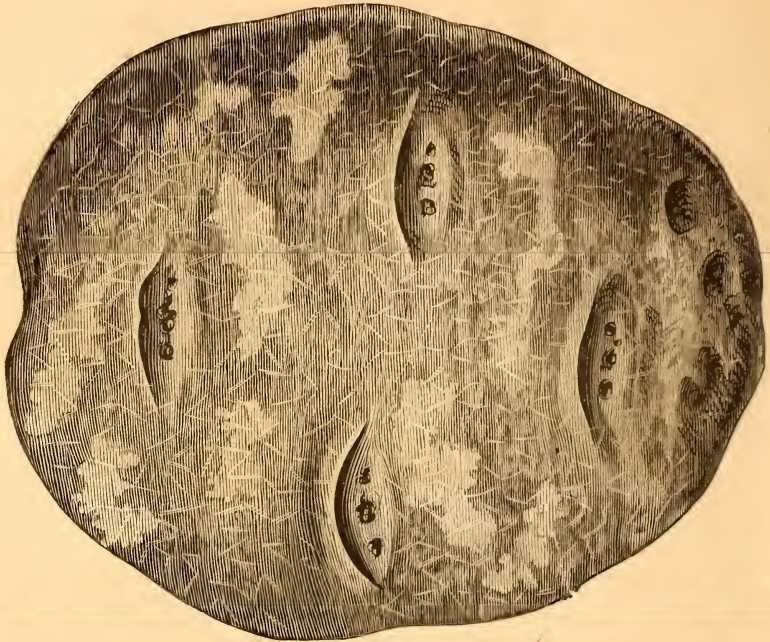
The tubers grow compactly in the hill, are easily harvested. It is an excellent keeper; not inclined to sprout early. Its great beauty, productiveness, and fine quality, will make it one of the best market varieties in cultivation.

Price 60 per pound; three pounds to one address, \$1.25 by mail, post-paid. At purchaser's expense, \$1.00 per peck; \$2.25 per bush.; \$5.00 per bbl.

BEAUTY OF HEBRON.

This variety was introduced in the spring of 1878. It bears a strong resemblance to the Early Rose, and is said by the originator to mature its crop a week earlier than that variety. The plants appear above ground very shortly after planting, grow rapidly, and on this account withstand better the attacks of the Colorado beetle; skin smooth, slightly tinged with pink around the eyes, but attain a pure white color during the winter; they are very productive, good keepers, of delicate flavor, and for culinary purposes can be highly recommended. It is almost invariably sound, and solid to the core, and will prove a good market variety.

Price by mail, 60 cts. per lb.; 3 lbs. \$1.25. At purchaser's expense, \$1.00 per peck; bush., \$2.25; bbl. \$5.00.



MANHATTAN. ✓

In this variety we have what may be called an "Improved Compton's Surprise." It combines all the good qualities of that favorite variety, but is much more regular in form, and consequently more desirable as a market variety. In shape it is nearly round, sometimes a little oblong, skin dark purple, occasionally blotched with white; origin unknown; flesh white, very solid, fine grain, cooks through evenly, either in baking or boiling; dry and mealy, and of excellent quality. Size, medium to large, eyes slightly depressed, vines vigorous, a little spreading, of a dark green color; one of the most productive in cultivation. It is an excellent keeper, and can be strongly recommended as a main crop variety. ✓

Price, 60 cents per lb.; 3 lbs. \$1.25, by mail post-paid; by express, freight paid by the purchaser, \$1.25 per peck, \$3.00 per bushel, \$7.00 per bbl. ✓

EARLY OHIO.

A seedling of the Early Rose, and similar in color, habit of growth, and appearance, with the exception of being a round oblong, while the former is more of an oval oblong, so that side by side it is readily distinguishable. It is several days earlier and more productive, and of very fine quality. It has given general satisfaction wherever it has been tested.

By mail, 60 cents per pound; 2 pounds \$1.00.

By express or freight at expense of purchaser, 1 peck \$1.00; 1 bushel \$2.00; 1 bbl. \$4.00.

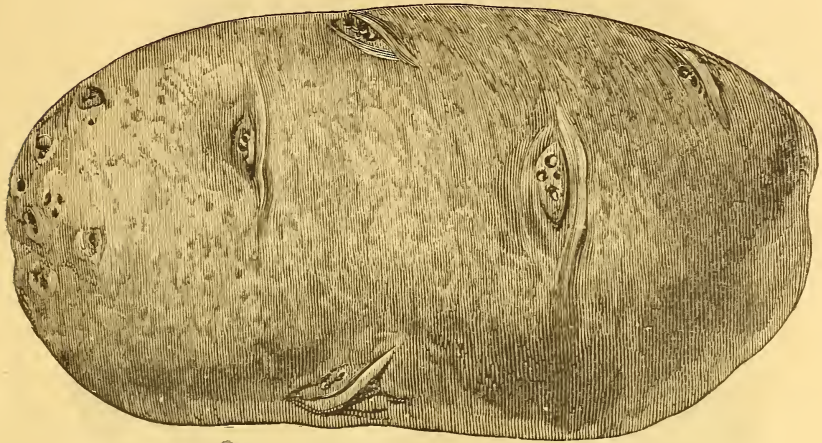
BURBANK'S SEEDLING.

A seedling of the Early Rose, tubers large, long and slim, eyes few and but little depressed; flesh white, fine grain, dry and floury; cooks through readily. It is a second early variety, very productive, and superior for the market, as its size and general appearance are very much in its favor.

By mail, 60 cents per pound; 2 pounds \$1.00.

By express or freight at purchaser's expense, 1 peck \$1.00; 1 bushel \$2.00; 1 bbl. \$4.00.

GENERAL COLLECTION.



✓ SUPERIOR. (Brownell.)

The parentage of this variety is the same as that of the "Centennial." It was produced in 1873, from a seed ball of Brownell's Beauty, fertilized with Peachblow. The yield of this new seedling potato is enormous; six hundred and seventy-three pounds were grown from one pound of seed, during a season of unprecedented drouth, when many older varieties did not yield enough to pay for the digging. Its tubers are medium to large, elongated oval or cylindrical, of a peculiar dark copper color, and very uniform and handsome in appearance. Skin very fine and smooth, eyes few and small. The vines are strong and healthy, and the growth of the roots and tubers, close around the stalks. It ripens second early or medium late; keeps well during Winter, and retains its mealiness and excellent table qualities through the entire season. A certificate of merit was awarded to this variety at the great International Potato Exhibition at London, last September.

Price, 60 cts. per pound; 3 lbs., \$1.25, by mail to one address, post-paid. By express or freight, charges to be paid by purchaser; 1 peck \$1.00, bush., \$2.00, bbl. \$5.00.

✓ DUNMORE.

This new seedling—a white skinned and white fleshed variety, which originated in Vermont, tested side by side with over forty varieties, in every requisite of a first-class potato, ranks but second to the Burbank. It is superior in its yield, size of the tubers, handsome appearance and fine floury quality either boiled or baked, of the varieties that have recently become famous. As the same potato varies on different soils, possibly on some soils the Dunmore may give greater satisfaction than the Burbank Seedling.

The past season the crop has been remarkably large. Some of the potatoes weighing two pounds each, and were perfect in shape. Its general appearance somewhat resembles the Peerless, but it surpasses that well known variety in both yield and quality.)

By mail 60 cts. per lb., 3 lbs. \$1.25. By express or freight, at purchaser's expense; 1 peck, \$1.00, 1 bush. \$2.00, 1 bbl. \$4.00.

✓ WHITE ROSE.

Similar in many respects to the Late Rose, said by the raiser to be of very superior quality.

By mail, 60 cts. per lb., 3 lbs. \$1.25. By express or freight, 1 peck \$1.00, 1 bush. \$2.25, 1 bbl. \$5.00.



✓ IMPROVED PEACHBLOW.

A cross between the "Jersey Peachblow" and "Excelsior," grown in 1873 by an experienced hybridizer of Vermont, who has devoted many years in experimenting with the Potato. It partakes some characteristics of each of its parents, the vines and leaves having the appearance of the "Excelsior," while its tubers resemble the "Peachblow." The form of the tubers, however, is more round and regular than that of the "Peachblow." While in quality it fully equals that old standard market sort, in productiveness it far excels the same, yielding nearly double as much per acre. Its season of ripening is somewhat earlier than that of the "Peachblow," and the growth of its tubers is more compact and closer in the hills. Taking all its points together, it may be considered a rejuvenated and reinvigorated "Peachblow," combining all the best qualities of that general favorite, in its best days, with the additional advantages of earlier ripening and compacter growth.

Price, \$0.65 per lb.; 3 lbs. for \$1.25, by mail, to one address, postpaid. By express or freight, charges to be paid by the purchaser, 1 peck, \$1.00; bush., \$2.00; bbl., \$4.00.

Bliss's Improved Long Orange Carrot.

This superior variety is the result of a careful selection, for successive years, of the best formed, largest and deepest colored roots of the Improved Long Orange Carrot, by which it has attained a perfection hitherto unknown in this useful vegetable, being larger, better flavored, and of a deeper orange color, and more sure to produce a crop. Butter makers will find this variety very useful in giving to their butter a rich, deep yellow color. We unhesitatingly pronounce it the best variety in the market, and one which will not fail to give satisfaction to the purchaser. One ounce, 15 cents; four ounces, 40 cents; one lb., \$1.15; by mail, postpaid.



CENTENNIAL. (Brownell.)

This new seedling was raised by E. S. Brownell, the originator of that well-known and favorite variety, "Brownell's Beauty." It was produced in 1874, by fertilizing the blossoms of the Brownell's Beauty with pollen from the White Peachblow. The vines are upright, stout, vigorous and of medium height; foliage dark green, strongly resembling the leaves of a Raspberry; very healthy. The tubers are compactly clustered around the base of the stalks, consequently easy to dig; are of a good medium and uniform size; shape nearly round, somewhat flattened, very symmetrical, remarkably uniform and handsome; never rough or pongy, eyes few and quite small, and but slightly depressed near the seed end; stem set in a shallow, round basin; skin of a deep red color, smooth and uniform in coloring; season second early or medium. Its flesh is of exceedingly fine grain, white, and when boiled or baked of a lightness and porosity seldom equaled; cook through evenly without any hard or watery core.

During the past two seasons it has proved to be one of the most productive varieties; its tubers were perfect in every respect, never hollow or false-hearted; and their excellent and delicate flavor places them in the first ranks of our best table potatoes.

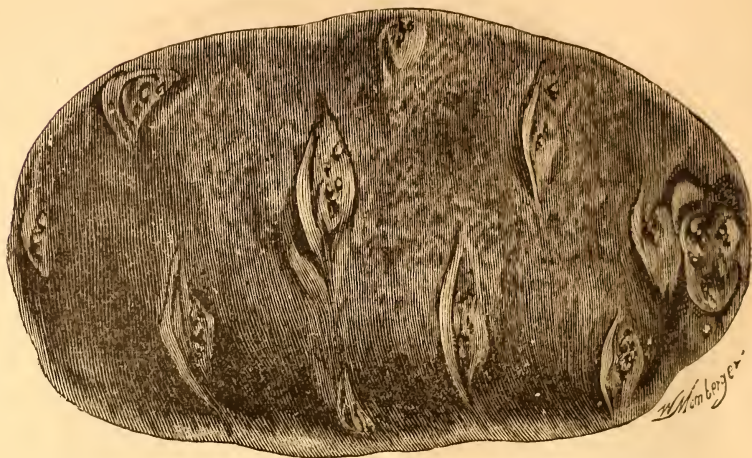
Per lb., 60 cts.; 3 lbs. to one address, \$1.25 by mail, prepaid. By express or freight, charges paid by the purchaser, 1 peck, \$1.00; bush., \$2.25; bbl., \$5.00.

A NEW EARLY PEA,

Bliss' American Wonder.

—••—

This new and fine flavored variety is a seedling, the result of a cross between the two favorite varieties, Champion of England and Little Gem. It combines all the good qualities of both of its parents, with the additional ones of superiority in flavor to the Champion, and of greater productiveness than the Little Gem, besides being earlier than any other of the wrinkled varieties. Peas planted June 5th, were ready for the table in thirty-three days from date of planting. On good soil, each vine will average twelve pods, and each pod six peas. Fifteen pods have been counted on some vines, and nine large peas in some of the pods, and every pod is well filled. The vine grows from ten to twenty inches high, according to the soil and season. We introduced this variety last spring, and it has been highly praised by all who have tested it. It is unquestionably the best early wrinkled pea ever offered. *Price, ¼ pt. pkt. 15 cts.; pts. 50 cts.*



RUBY. (Pringle.)

1,982 lbs. (33 bushels) grown from one pound of Seed.

A new red kidney-shaped Potato of superior quality, raised in 1871 from the Early Rose hybridized with the White Peachblow. Its hybrid origin is quite apparent. The shape is oblong, slightly flattened, resembling that of the Early Rose. In its coloring the red of the latter variety is deepened by the carmine which shows in the blotches of the White Peachblow. The eyes, which are but slightly sunken, are carmine like those of this variety. The flesh possesses much the character of the Peachblows, being white, fine-grained, firm, and of excellent flavor. The tubers are of approved medium size; and are clustered close about the foot of the stalks. These are short and stout, with foliage broad, thick, and of a very dark green color. The time of maturity is the same as that of the Early Rose, and it is equally productive.

In short, we believe this variety combines in a rare manner the good points of its parents; and to those with whom the Peachblows are favorites we can recommend it with confidence as an early variety of the Peachblows without any of their faults. At the recent International Potato Exhibition held in the Alexandra Palace, London, in September, this seedling, in common with a few others sent by us, received a certificate of merit. To those who prefer a red-skin Potato, we can confidently recommend this excellent variety.

The following extract from the report of the committee who selected the premiums offered by us for this variety, gives their opinion of its merits:

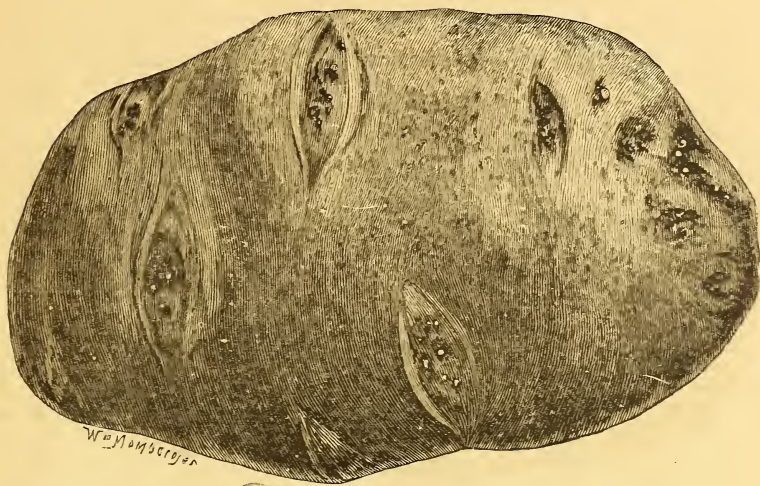
"The Ruby, although not presenting as striking characteristics as the *Alpha*, has proved to be a valuable introduction. It is declared to be a 'No. 1 Potato in every particular,' and seems to be especially valued for its remarkable exemption from rot. Although there was so much rain in some of the Western States, that Potatoes generally failed to grow, and those that grew generally rotted, yet no rotten ones were found among these, and their quality was excellent. Its large yield and very handsome appearance, combined with excellent quality, make it a valuable market variety, where red-skinned Potatoes are in demand." In Europe it has likewise succeeded exceedingly well. Mr. P. Robertson of Scotland, says: "they were pronounced of excellent quality by every person who has tried them."

For further information see the reports of the successful growers in the following pages:

Per lb., 60 cts.; 3 lbs. to one address, \$1.25, by mail, prepaid. By express or freight, charges paid by the purchaser, 1 peck, \$1.00, $\frac{1}{2}$ bush., \$1.50, bush., \$2.25, bbl., \$5.00.

COCOANUT SQUASH.

A magnificent little squash for table use, very prolific, yielding from six to a dozen to the vine. In beauty it excels every variety of the squash family; indeed, wherever grown, specimens very naturally find a place on the mantelpiece as ornaments to the parlor—not being surpassed in beauty by any of the gourd family. The color is an admixture of cream and orange, the latter color predominating in the depressions between the ribs; while the bottom, over a circle of two or three inches in diameter, is of a rich grass green. The flesh is fine-grained, very solid (the squash being remarkably heavy for its size,) and the quality excellent, closely resembling Canada Crookneck, but in every way much superior. Price, per ounce, 25 cts.; per package, 10 cts.



ALPHA. (Pringle.)

The Earliest Variety in Cultivation. 1,707 lbs. (28 1-4 bush.) grown from one pound of Seed.

Raised in 1870, from seed borne on Early Rose and impregnated by pollen of Sebec. A very early variety for farm and garden culture, also for forcing under glass; fit for the table ten or fifteen days before the Early Rose. Tubers of medium size, oblong, somewhat flattened, with eyes but slightly depressed; color a clear white, with the slightest tinge of red about the eyes; flesh very white, fine grained, dry and firm, and possessed of a decided and excellent flavor; stalks short and close jointed, seldom exceeding a foot in height; leaf broad, light green and shining above; tubers clustered about the base of the stalk; quality of the highest excellence. A first-class certificate was awarded by the Royal Horticultural Society, of London, in 1874. A silver medal was also awarded by the Massachusetts Horticultural Society. It has been thoroughly tested several seasons in various sections of this country, and has given perfect satisfaction. We can recommend this with the greatest confidence as the very best early variety in cultivation.

(From the Report of the Royal Horticultural Society of London.)

ALPHA—(B. K. BLISS & SONS.)—Haulm compact, about 12 inches long; ripening off very early, stem pale green, leaflets broad, flat, very pale green; tuber medium size, half round, flat; eyes large, skin smooth, very clear, pale straw-colored; flesh firm, white, of excellent quality for early use. Moderate cropper; one of the very earliest of potatoes. *First-class certificate.*

The committee who awarded the premiums offered by us last Spring, after examining the various communications received from competitors for premiums, report as follows:

"The **Alpha** has by many growers been declared "much the earliest of any seedlings." It was found to be "fit for use, in sixty days from the day of planting" "of excellent quality when cooked in any way, and gaining steadily in quality and yield." In this latter respect the *Alpha* differs from most new seedlings. But few improve after the third year, while many deteriorate rapidly. The *Alpha*, when first brought to notice, was below medium size, and so delicate that it was thought only suitable for garden culture. But gradually we found it increasing in size and productiveness, while it retains its earliness and excellent quality. That it will henceforth rank as the earliest Potato for the field as well as the garden, and that it yields enormous crops, even under ordinary culture, has been sufficiently proved by Mr. Clute's 1,535 pounds, grown without manure whatever." For further information respecting this variety, see the reports of the successful competitors in the following pages.

Per lb., 60 cents; 3 lbs. to one address, \$1.25, by mail, prepaid. By express or freight, charges paid by the purchaser, 1 peck, \$1.00; ½ bushel, \$1.50; 1 bushel, \$2.50; 1 barrel, \$6.00.

THE SNOWFLAKE. (Pringle.)

1,417 lbs. (23 6-10 bushels,) grown from 1 pound Seed.

This new variety, first sent out by us in the Spring of 1873, has been thoroughly tested, both in this country and in Europe the past two seasons, and we have yet to learn of the first instance where it has failed to give entire satisfaction. The superior quality claimed by the originator, when first offered, has been confirmed in every case as far as heard from.

It is one of the earliest varieties, ripening about the same time as the Early Rose. The tubers are of a good medium and uniform size; shape elongated oval, compressed, exceedingly symmetrical and remarkably uniform; eyes few, entirely flat on the base and body of the tuber, and but slightly and sharply depressed near the seed end; skin white with a russety tinge, and somewhat roughish and tessellated. Its flesh is of exceedingly fine grain, snow-white when boiled, and of a lightness and porosity almost approaching a snowflake. In quality, we do not hesitate to say nothing can surpass this new variety; its mealiness, its pure, delicate flavor, and the evenness with which it cooks through, have never been eclipsed by any Potato. As a baking Potato, it is equally valuable, and as such is distinguished for its pure starchy texture, and delicate nutty flavor. The tubers have attained the full development of their quality as soon as they are fit to dig, and do not lose it during Winter; samples kept till the first of June, did not show the least deterioration. The vines are of medium light, stout and vigorous; leaves medium, and of dark green color. The tubers are compactly clustered around the base of the stalks,—an important consideration in digging the crop. The variety has been tested on widely varying soils—sand, gravel, loam, as well as heavy clay—and has, in every case, given the same favorable results, and often produced a yield of from 300 to 400 bushels per acre. In every case it has proved healthy and hardy, while other varieties alongside of it failed to give satisfactory results.

We could fill quite a volume with the many letters of commendation that have been received from various growers throughout the country in favor of this fine variety, but for want of room we publish those only which have been received from the successful competitors for the prizes offered by us last Spring. These will be found in the report of the Committee in the last pages of this Catalogue.

We take pleasure in submitting the following extract of that report to our friends, which cannot but satisfy the most incredulous of its superiority.

"The Snowflake has received more and higher praise than has probably ever been bestowed upon any Potato. There is no dissenting voice among the whole list of reports, nearly every one of which contains '*It is the best Potato I ever saw.*' Its quality and uniformity of size are especially commended. In many cases, 25 to 40 perfect Potatoes were found in every hill planted, and 'tubers of two and three pounds each cooked readily and completely through.' Mr. Perkins could select 1000 tubers weighing 1000 pounds from a gross product of 1304 pounds, and finds them preferable to any Potato out of over a hundred varieties he grew. Mr. Salter 'never saw so fine a Potato; beautiful in color and shape, firm in texture, flesh white; luscious cooked in any way; it stands unrivalled.' There is certainly within our knowledge no variety which combines all the essential points of a Potato in as high a degree as the Snowflake. Quality, shape, size, color, yield, are all that can be desired, and it is difficult to perceive in what direction further improvement can be obtained."

By mail postpaid, per pound, 60 cents; 3 pounds, \$1.25. By express or freight, charges paid by the purchaser, 1 peck, \$1.00; ½ bushel, \$1.25; 1 bushel, \$2.00; 1 barrel, \$4.00.

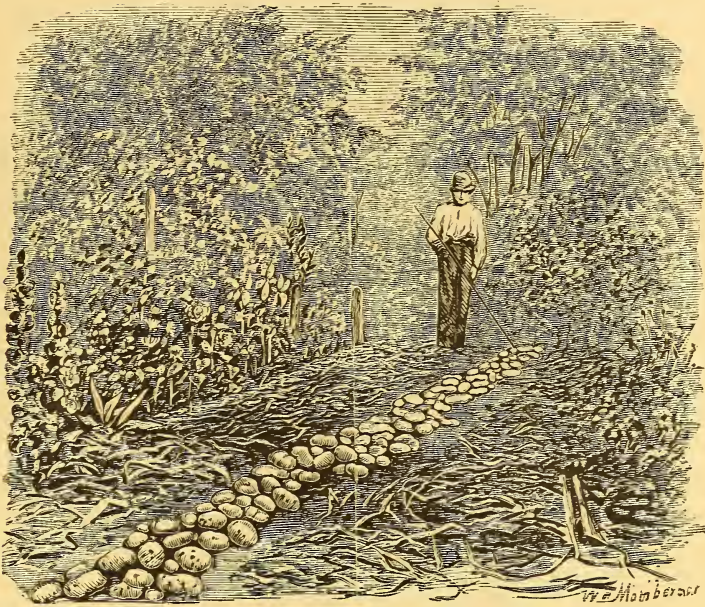
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(From the Report of Messrs. Carter's Royal Metropolitan Root Show, in *Bell's Weekly Messenger*, Nov. 20 1876.)

A dish of Snowflake Potatoes, sent by Mr. Penny, head gardener to his Royal Highness the Prince of Wales, cannot be adequately described in words; but we may advise any professional or amateur grower to secure a supply of this stock for trial next year, that they may put it to a practical test under their own eye.

(From the *London Gardeners' Chronicle* of Jan. 16, 1875.)

"It is not many years ago, since our American cousins introduced us to the first of their wonderful 'Taters,' and just see what a revolution they have caused! On the exhibition tables, frequently no other than American varieties are to be found—they are unmistakably great croppers and of fine, taking appearance. We cannot say in points of quality they are always so superior, yet, we can say, from personal experience, that some of the best potatoes we tasted during the past season were of the American sorts. Of this year's introduction, we would first especially note **Snowflake**. The tubers of this sort are of a long ovate form, the eyes very full, skin rough, pale straw, the most handsomely formed of all, and of excellent quality.



Mr. Burnett's Crop of Snowflakes from One Pound of Seed.

SKANEATELES, N. Y., September 27, 1875.

Messrs. B. K. BLISS & SONS:—Accompanying this please find Stereoscopic view of the **Snowflake Potato** as grown in my garden the past Summer. It exhibits the product of one pound of seed purchased of you last Spring. The earth was carefully removed, leaving each potato attached to the root *exactly as it grew*. They were grown in good garden soil, without extra manure, and had the same cultivation as the other potatoes. No one could have been more surprised than I at the wonderful production. I had them on exhibition all one day, and a large number of farmers and amateur gardeners called to see them. For size and quantity all admitted they had never seen its equal. At the nearest end of the row, as shown in the picture, the yield was affected by a shade tree, but at the other end they were very large and in one solid mass—in fact, there was no room for a jack-knife between them. It makes quite a pretty picture, with rose bushes, geraniums and tuberose on the left and my boy "Frank" and the grapevines for a background. I have created no little excitement by exhibiting the Snowflakes at our Town Fair.

Yours respectfully,

JOSEPH H. BURNETT.

A Trial of the Snowflake in June.

In order to show the wonderful keeping properties of the Snowflake Potato, we annex a letter from the well-known horticulturist, Chas. Downing, Esq., to whom a sample grown in 1874, was sent in June for trial.

NEWBURGH, June 28, '75.

Messrs. B. K. BLISS & SONS—*Dear Sirs*: The box of potatoes was received in due time. The quality is equal and I think superior to any potato I ever ate so late in the season, and being of good size and so smooth and regular in form, it will be an acquisition if the production is sufficiently good.

Please accept my best thanks for your kindness, and for the opportunity to test them.

Very respectfully,

CHAS. DOWNING.

From Nash & Crook, proprietors of the well-known and popular restaurant in the *Times* building, opposite the new post-office on Park Row:

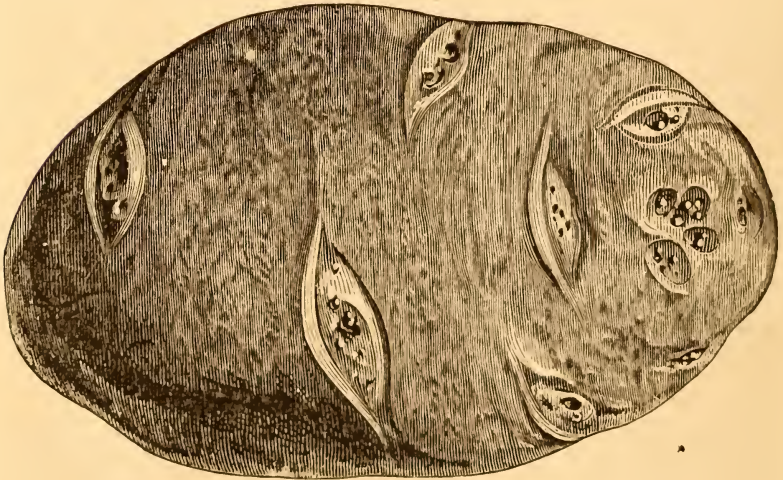
NEW YORK, July 1, 1875.

Messrs. B. K. BLISS & SONS:—We have been using the Snowflake potatoes, supplied by you in our restaurant for the past month, and find them superior in every respect to the Bermuda or any other early variety in the market. They cook dry and mealy, and are of excellent quality; and on account of the eyes being so nearly even with the surface, there is but little or no waste in peeling. They give general satisfaction to our customers. We have no hesitation in pronouncing them the best potato we ever used in our business at this time of the year.

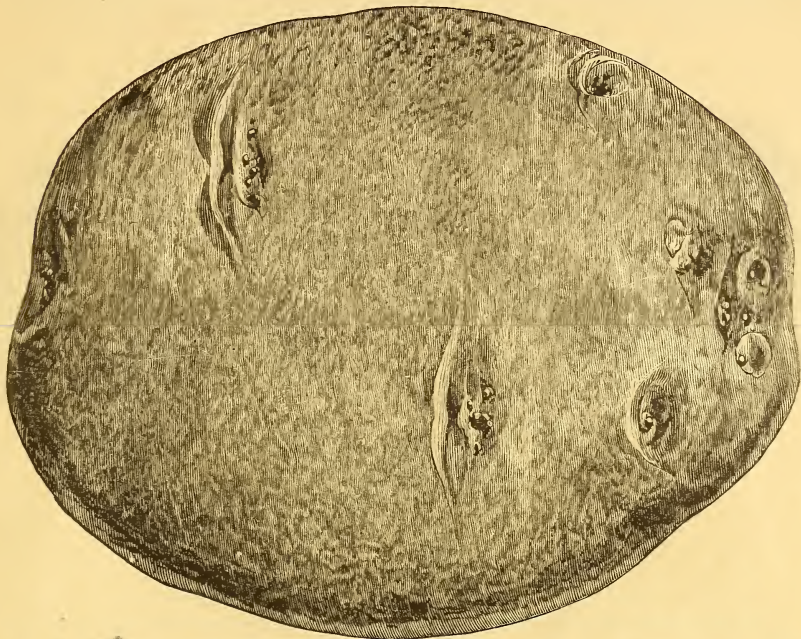
NASH & CROOK.



ALPHA.—The Earliest Variety known. Page 23.



SNOWFLAKE. (Pringle.) Page 24



BROWNELL'S BEAUTY. (Brownell.)

This is another of the varieties first sent out by us in the Spring of 1873, the beauty and superior keeping qualities of which, together with its fine quality as a table variety and productiveness, places it in the front rank of those recommended for general cultivation. We know of no varieties whose good qualities can be retained for the entire year, as this has done. Potatoes of the crops of 1873 and 1874 have been exhibited side by side at several State and County exhibitions, those of 1873 having been kept in an ordinary cellar without any especial care, being equally fair and sound as those of this year's growth. Samples were sent in 1873 to the gardens of the Royal Horticultural Society of London, where they received a *first-class certificate*, and have also received many premiums at various Agricultural Fairs in this country. Size, medium to large, growing very fair and smooth. Eyes few and small, nearly even with the surface; shape oval, somewhat flattened; skin reddish, or a deep flesh color; flesh white, fine-grained and very delicate. For the table, they cook either by baking or boiling equal to the very best, and with ordinary boiling they cook through to the center evenly, dry and mealy, and are never hard, hollow, watery, or discolored at the center; flavor unexceptionable. Vine of medium growth; foliage deep green, and very healthy in all respects. The tubers grow compactly in the hill and are easily dug, ripening in about three months from time of planting, though suitable for cooking about two weeks later than the Early Rose, with the same culture. They are very productive, with but few small tubers. Its beautiful appearance, fine quality, extraordinary productiveness and remarkable keeping qualities render it a most valuable variety for the market.

PRICE :—One pound, 60 cents; three pounds, \$1.25, by mail to one address, postpaid. By express or freight, charges to be paid by the purchaser, 1 peck, \$1.00; $\frac{1}{2}$ bushel, \$1.25; 1 bushel, \$2.00; 1 barrel, \$4.00.

PRICKLY COMFREY.

Descriptive Circulars with Directions for Culture Mailed to all Applicants.

Prickly Comfrey is specially adapted for the feeding and fattening of stock, and for increasing the milk of cows; it grows more rapidly and luxuriantly than any other green soiling plant, producing on a given space a far greater quantity of forage than any crop now grown. Good grass land yields but 8 tons of grass to the acre, cut green; Lucerne, 40; Rye Grass, 50; Vetches, 20; Comfrey, 80 to 120 tons.

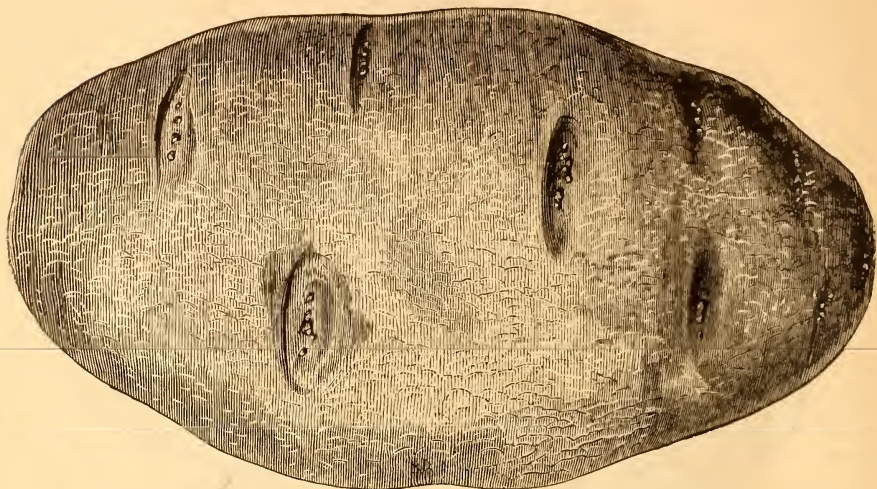
Comfrey being a deeply rooted plant, is independent of weather and climate, for in the driest and hottest seasons it will afford several hay cuttings when all other vegetation is either burnt up or at a stand-still. It also comes in earlier than any other crop, and lasts longer, continuing to afford forage until it is cut down by severe frosts.

If the stock refuse to eat the leaves when freshly cut, allow them to wilt in the sun for an hour or two, sprinkle a little meal over them, and they will eat them with avidity.

The roots may be subdivided and planted at all seasons of the year except in frosty weather, and in this way **ONLY** can the plant be propagated. This plant cannot be cultivated from seed, 4,000 sets will plant an acre.

We will supply roots of the above at the following prices, post-paid by mail: 4 oz., 25 cents; 8 oz., 40; 1 lb., \$0.75. By express, freight paid by purchaser, per lb., 50 cents; 5 lbs., \$2.00.

One pound of the roots will make about one hundred cuttings; they can be cut smaller if desired.



EXTRA EARLY VERMONT.

The superior merits of this variety, first sent out by us in the Spring of 1872, may now be considered as fully established. It has been largely cultivated over every section of the country, the past two seasons, and fully sustains the high character given it by the committee for awarding the premium offered by us in 1873, in the following statement, after examining the reports of the various competitors:

"**The Early Vermont**, as proved by the numerous reports before us, more than sustained its previous reputation. *Nearly all the competitors declare it from one to two weeks earlier than the Early Rose, and many even more.* Its uniform and large size is recognized by every one. Mr. McLeod says: 'There are more than 100 in the amount I raised that would weigh from one to two pounds each;' and Mr. Salter raised one tuber that weighed **THREE POUNDS TWELVE OUNCES**. Its superior cooking and eating qualities are unanimously commended, as well as its compact growth in the hill and its freedom from disease, and with the thousands of cultivators who have grown it alongside the Early Rose, there seems to be no doubt left that in *quality, hardness, earliness and yield, it far surpasses that celebrated variety.*"

A first-class certificate was awarded this variety by the Royal Horticultural Society of London, 1873.

Caution.—In consequence of the great similarity between the **Extra Early Vermont** and the **Early Rose**, many of the latter will doubtless be offered by unprincipled persons as the **Early Vermont**. To avoid imposition, we caution purchasers to beware of itinerant peddlers, and purchase their stock of reliable parties only. We employ no peddlers or agents. Address all orders directly to our house.

PRICE:—By mail, postpaid, one pound, 60 cents; three pounds, \$1.25. By express or freight, charges paid by purchaser, 1 peck, \$0.75; $\frac{1}{2}$ bushel, \$1.25; 1 bushel, \$2.00; 1 barrel, \$4.00.

BLUNT'S WHITE PROLIFIC FIELD CORN.

This is an eight-rowed white flint corn, with short, well-shaped ears, and small cobs. The stalks bear from 3 to 8 ears; the ears are uniform in size, from end to end, averaging 8 to 9 inches in length, and the kernels are hard, well-shaped, and compactly placed on the cob. Like other flint varieties it matures early. Mr. Henry Stewart, one of the editors of the *American Agriculturist*, says that it yielded at the rate of 150 bushels per acre, on an experimental plot, at his farm in New Jersey. In the *Country Gentleman*, Mr. Blunt says, "The average number of ears to the stalk is six good sized ears, and fourteen the largest number on any one stalk. I selected 100 stalks that made a little over three bushels of shelled corn." *Prices by mail, per pkt., 10 cts.; 1 lb., 40 cts.; 3 lbs., \$1.00. By freight or express, per peck, \$1.00; half bush., \$1.75; 1 bush., \$3.00; 2 bush., \$5.50.*



SNOWFLAKE.—Showing Habit of growth in Hill.



BROWNELL'S BEAUTY.—Showing Habit of growth in the Hill. Page 26.



Compton's Surprise Potatoes.

Showing the growth from a single eye in the grounds of F. Seiler, Verona, New Jersey, who raised 384 lbs. from one lb. of the tubers, with ordinary culture.

Remarkable for its size, quality and productiveness. Its shape is oval-oblong, eyes sunken, brow prominent, skin smooth, color reddish-purple, flesh white; grows to a large size, and is invariably sound to the center. It retains its quality *perfectly* throughout the year, appearing on the table like a ball of flour. Remaining plump and free from sprouts when kept until June and never having that wilted appearance common to early sorts. Thousands have testified that they never ate a better Potato. Its uniform mealiness of grain, combined with the purest flavor and its snowy whiteness of flesh, which is not in the least affected by its blue skin, cannot fail to make it highly valuable.

The following extract from the report of the Committee awarding the premiums offered in 1873, confirms all that was claimed for them by the originator when first introduced.

"Compton's Surprise has received the unanimous verdict for the most prolific Potato cultivated at present. Yields of from twelve to twenty pounds to the hill are reported by the hundreds, and in one instance 28½ pounds were dug from one hill. As a rule, the most prolific varieties are not of the best eating quality, but to this, Compton's Surprise is an exception. Thousands have testified that they never ate a better Potato. Its uniform mealiness of grain, combined with the purest flavor, and its snowy whiteness of flesh, which is not in the least affected by its blue skin, cannot fail to make it highly valuable.

One pound, 60 cents; 3 pounds, \$1.25 by mail, prepaid; by express or freight, charges paid by the purchaser, 1 peck, \$1.00; ½ bushel, \$1.25; 1 bushel, \$2.25; 1 barrel, \$5.00.

NEW ENGLISH PEAS.

Culverwell's Telegraph.—A very superior second early variety, very robust in habit, bearing immense pods containing ten to eleven very large peas in each pod; the peas often forming a double row in the pod; height five feet; the peas when cooked, of a deep green color; a great bearer and of fine flavor. ¼ pint packets, 25 cents; 5 packets, \$1.00

Carter's Telephone.—Selected from the above variety (Telegraph) from which it differs in the seeds being wrinkled, whilst the quality is very superior. It is an extraordinary cropper, bearing immense semi-double pods full of large peas of exquisite flavor. ¼ pint packets, 25 cents; 5 packets, \$1.00.



POTATOES—EXTRA EARLY VERMONT.—Showing Habit of growth in the Hill.

STANDARD VARIETIES.

Three pounds of either of the following varieties will be mailed, postpaid, to any address in the United States, upon receipt of \$1.00, or one pound for 60 cents.

Not less than one pound, or more than one variety in one package, will be mailed.

Early Rose.—This was the first of Mr. Bresee's Seedlings, offered by us in January, 1868, and has now become the standard variety for earliness, quality and productiveness. *Per Peck, 75 cents; bush., \$2.00; bbl., \$4.00.*

Bresee's Prolific.—Vines of medium height, quite bushy, somewhat spreading. Tubers large, regular in shape, and very smooth, slightly oblong, somewhat flattened. Skin dull white, inclined to be russeted, eyes but little depressed and slightly pinkish, flesh white, cooks quickly, is very mealy and of excellent quality, yields very large, matures about three weeks later than the Early Rose; a valuable variety for field culture. *Per peck, 75 cents; bush., \$2.00; bbl., \$4.00.*

Late Rose.—This variety, first offered by us in the Fall of 1871, has been largely cultivated in various parts of the country, and has given universal satisfaction. It ripens two or three weeks later than the Early Rose, and has proved to be much more productive, hardier, healthier, and a better keeper, retaining its good quality till new potatoes come in. *Per peck, 75 cents; bush., \$2.00; bbl., \$4.00.*

Peerless (Bresee's No. 6).—Skin dull white, occasionally russeted; eyes shallow; oblong; flesh white, mealy, grows to a large size, often weighing from one and a half to two pounds, and enormously productive, frequently producing from 100 to 150 barrels to the acre. Its great beauty, superior quality, and enormous productiveness, place it among the best varieties for general culture. *Per peck, 75 cents; bush., \$2.00; bbl., \$4.00.*

Jackson White.—A northern variety. Medium late; large; irregular, round to longish; skin white and smooth; eyes deep; flesh white, finely grained, and of good table quality; is a good keeper, and very productive in some localities. *Per peck, 75 cents; bush., \$2.00; bbl., \$4.00.*

White Peachblow.—A seedling of the old Peachblow. Very late; medium to large; round; skin white, with bright pink eyes; flesh white, cooks very dry and mealy. This variety has for years been the principal market potato in New York, and has proved a remunerative crop to the producers. *Per peck, 75 cents; bush., \$2.00; bbl., \$4.00.*

Peachblow (Jersey).—A well-known variety, very productive, superior for the table, and one of the best for the market and shipping purposes. *Per peck, 75 cents; bush., \$2.00; bbl., \$4.00.*

Any other varieties not in our list will be furnished at lowest market prices.

THE GREAT CENTENNIAL EXHIBIT

OF

500 Named Varieties of Potatoes.

The Largest Collection of Potatoes in the World, for which was Awarded

THE GRAND CENTENNIAL PRIZE MEDAL AND DIPLOMA!

Acme.	Cascoe.	Early Ohio.
Adirondack.	Cayuga.	“ Peachblow.
Agawan.	Central City.	“ Pearson.
Alaska Blue.	Centennial.	“ Pinkeye.
Alexandra.	Charlotte.	“ Prince.
Alpha.	Chenery.	“ Purple.
Amazon.	Chili No. II.	“ Queen.
American Breadfruit.	Clinax.	“ Racehorse.
Anderson.	Cluster.	“ Rose.
Andes.	Colebrook.	“ Russet.
Angola.	Collum's Seedling.	“ Samaritan.
Armonk.	Columbus.	“ Scotch Cottage.
Ashleaf Fluke.	Colorado.	“ Shaw.
Ashleaf Kidney.	Colorado I.	“ Snowball.
Ashtop Fluke.	Colorado II.	“ Sovereign.
Badger.	Compton.	“ Stevens.
Baldwin.	Compton's Surprise.	“ Victor.
Banks.	Con.	“ Wendell.
Beauty.	Concord.	“ White.
Beauty of Hebron.	Conn. Blue.	“ York.
Bellaire.	Conover.	East Branch.
Ben. Merritt.	Cornell's Kid.	Eclipse.
Berkshire.	Cowhorn.	Egg.
Black Diamond.	Cracker.	Elder.
Black Mercer.	Cullock.	Empire.
Black Prince.	Cuzco.	Empire State.
Bliss Triumph.	Dagger.	Eng. Rose.
Blue Kidney.	Davenport Seedling.	Eureka.
Blue Western.	Davis Seedling.	Excelsior.
Blush.	Delmahoy.	Extra Early Vermont.
Bradford Seedling.	Dickinson's Saybrook.	Early Rose Seedling.
Breakfast.	Dover.	“ Ohio.
Breese's Prolific.	Dover Seedling.	“ White.
Brown.	Dr. Bretonneau.	Fancy Red.
Brownell's Beauty.	Dr. White.	Field crop.
Brownell's Success.	Duke of Cumberland.	Findlay.
Brownell's Superior.	Dunniore.	Fisher.
Bueyrus.	Dykeman.	Fluke.
Bulkeley's Seedling.	Early Blue.	Forest Rose.
Burbank.	“ Cottage.	Forfarshire Red.
Busam's Early.	“ Don.	Foster's Late Rose.
Busam's Late Prime.	“ Durham.	Fox Seedling.
Calico.	“ Golden.	Freeman.
California.	“ Goodrich.	Fremont.
California (purple).	“ Handsworth.	French.
California Mercer.	“ Indiana.	Galva.
Callao.	“ June.	Gardner.
Campbell's Late Rose.	“ Kidney.	Garnet Chili.
Carpenter.	“ Lilac.	Gem.
Carter.	“ Manly.	Gen. Grant.
Carter's Early Forcing.	“ Mohawk.	Genesee Co. King.

German Russet	Manhattan.	Prairie Flower.
Giant.	Mansfield.	President.
Gilman.	Marchioness of Lorne.	Prince Arthur.
Gleason.	Massachusetts White.	Prince of Wales.
Globe.	Mammoth Pearl.	Purple Blush.
Golden Gem.	Massasoit.	" Mercer.
Granite State.	Matchless.	" Peerless.
Gray Russet.	Merino.	Quadroon.
Great Britain.	Methodist.	Queen of the Earlies.
Great Western.	Mexican.	Queen of the West.
Greenfield.	Michigan Red.	Quinby's Seedling.
Guernsey.	Miller.	Rand's New Peachblow.
Hamburg.	Miller's Seedling.	Raspberry-Leaved.
Harison.	Minnesota Seedling.	Red Climax.
Harlequin.	Missouri White.	" Gem.
Hemlock.	Monas Pride.	" Jacket.
Hero.	Monon.	" Kidney.
Hickory.	Motley.	" Neshannock.
Hinman.	Mountain Blue.	" Orange.
Holly Hock.	Nanuet.	" Peachblow.
Holmes.	Napoleon.	" Streak.
Hoosier.	New Hartford.	" Ulink.
Hugh.	New Kidney.	Ridgefield Seedling.
Huntington Seedling.	Noblow.	Rochester Seedling.
H. Ward.	Nonesuch.	Rose Bud.
Hyde's Seedling	Noyes.	Rose of the West.
Ice Cream.	Niggerhead.	Rose Seedling.
Improved Ashleaf Kidney.	Niggertoe.	Rough and Ready.
Improved Gem.	Ohio Beauty.	Round White.
Irish American.	" Chenango.	Roxbury.
" Blue.	" Mercer.	Royal Ashleaf Kidney,
" Cup.	" Red.	Ruby.
" Orange.	" Russet.	Sandy Brown.
Jackson White.	Old Fleshcolored.	Saranac.
Jenny Lind.	" Kidney.	Scotch Blue.
John Bright.	" White.	" White.
Jones Seedling.	Oneida.	Sebec.
Jug.	Orange Peel.	Seedling Cusco.
Kansas.	Orono.	" Mercer.
Kearsarge.	Oscar.	" Peachblow.
Keystone State.	Pale-Blush Pinkeye.	" Prolific.
King of Jacksons.	Palmer.	" Rock.
King of Potatoes.	Palmyra.	Sharon.
King of Sweden.	Paragon.	Shaker's Fancy.
King of the Earlies.	Patterson's Albert.	" Russet.
King's Seedling.	" Blue.	Shaw.
Kruger.	" Early White.	Sheridan.
Lackawanna.	" Golden Don.	Sherwood.
Lady Finger.	" Regent.	Silverskin.
Laing's Seedling	Patoka.	Skerry Blue.
Large Seedling.	Peachblossom.	Smith's New Seedling.
Lapstone Kidney.	Pearl.	Snapdragon.
Late Pinkeye.	Peerless.	Snowball.
Late Rose.	Penn. Searchwarrant.	Snowflake Early.
Ledding's Seedling.	Philadelphia.	Snowflake Late.
Little Gem.	Philbrick's Early White.	Soisoto.
London White.	Pigeon Eye.	South Bend.
Long Pond.	Pinkeye Rustycoat.	Starch.
Magnum Bonum.	Pinkeye Strawberry.	Startler.
Mahopac Seedling.	Platt's Seedling.	State of Main
Maiden's Blush.	Plymouth Rock.	Stevens.

Stonehouse.	Week's Seedling.	White Pinkeye.
Strawberry.	Western Chief.	“ Rock.
“ Mercer.	“ Russet.	“ Rose.
Temple.	West-Fairview Seedling.	“ Sprouts.
Tippecanoe.	West Windsor.	“ Ulink.
Titicaca.	Whipple's Seedling.	“ Utica.”
Topeka.	White.	Willard.
Trip's Garnet.	“ Apple.	Williams.
True Lady Finger.	“ Chili.	Wm. R. Prince.
Triumph.	“ Clinton.	Wilson.
Tucker.	“ Cowhorn.	Wisconsin Blue.
Union.	“ Eyed Peachblow.	“ Seedling.
Utica Pinkeye.	“ Lily.	Woodard.
Vanderveer.	“ Mountain.	Worcester.
Van Tassel's Seedling.	“ Mountain Early.	Yankee Plot.
Vermont Beauty.	“ Neshannoek.	York Seedling.
“ Seedling.	“ Peachblow.	Young.
Wampoo.		

ENGLISH AND FRENCH VARIETIES.

The following varieties, the very best cultivated in Europe, were in nearly all the winning stands at the International Potato Exhibition at the Alexandra Palace, London, for the past two years, and are highly recommended both for their extra fine quality and productiveness. One pound of the following-named varieties will be mailed postpaid for 75 cents. They are also offered in collections of one tuber each, as follows:

Collections of 5 varieties, 1 tuber each, \$1.50.	Collections of 20 varieties, 1 tuber each, \$5.00.
“ “ 10 “ 1 tuber “ 2.75.	“ “ 40 “ 1 tuber “ 8.00.

Ashtop Flake.	Jersey Blue.	Quarantaine Violette.
Barrow's Perfection.	King of Potatoes.	Rector of Woodstock.
Blanchard.	Marceau.	Red Emperor.
Bountiful.	Marchioness of Lorne.	Red Fluke.
Coldstream.	Marjolin Cetard.	River's Royal Ashleaf.
Dawes' Matchless.	McKinlay's Lady Webster.	Rogmon Rose.
Early Dimmick.	Model.	Sedila.
Early Union.	Myatt's Prolific Ashleaf.	Scotch Regent.
Excelsior Kidney.	Prince Arthur.	Stanton's Premier.
Fenn's White Kidney.	Prince Teck.	St. Helena.
Fenn's Early White.	Prince of Wales Kidney.	Sutton's Red Skin Flour-ball.
Fenn's Early Market.	Patterson's Victoria.	Sutton's Exhibition Kidney.
Fenn's Perfection.	Patterson's "The Queen."	Sutton's New H'nd'dfold Fluke.
Hayes' Superb Kidney.	Porter's Excelsior.	Wonderful Red Kidney.
Headley's Nonpareil.	President.	Yorkshire Hero.

One Tuber of each variety of the entire collection, correctly labeled, carefully packed, expressage or postage prepaid, for **\$100.**

Collections of 250 varieties, one tuber of each, for \$50.00; 100 varieties for \$25.00; 50 varieties, \$15.00; 25 varieties, \$8.00.

Pringle's Hybridized Potato Seed.

The extraordinary success which has attended Mr. Pringle in his attempts to improve this valuable esculent—which has resulted in the production of the **Snowflake and Alpha**, and last, though not least, the **Ruby**—has encouraged him to still greater efforts in his favorite pursuit of hybridization, and we have now the pleasure of offering a very choice strain of seed saved by him, which is the product of numerous hybridizations between the above named and many of the best new and old varieties in cultivation, both English and American, and includes every strain, which Mr. Pringle will himself sow the coming Spring. Full directions for sowing accompany each packet. Numerous testimonials have been received during the past season in favor of the superior quality of this seed, as well as of its extraordinary productiveness, 5 to 22 pounds of good sized potatoes having been grown by several parties from a single seed.

Report of Committee

For awarding **PREMIUMS** offered by **B. K. BLISS & SONS** to growers of the largest quantity of **POTATOES**, from **One Pound of Seed**.

After becoming fully satisfied of the superiority of the new varieties of Potatoes, introduced by us during the past ten years, we have offered, from year to year, premiums to those who should grow the largest quantity from one pound of seed, of the different varieties with ordinary farm culture, and have paid out within that time upwards of **Three Thousand Dollars** to the successful competitors. The premiums offered for each variety were as follows:

\$250.00 in Premiums.

For the largest quantity of Potatoes grown from one pound of seed, - - - - -	\$100 00
For the second largest, - - - - -	50 00
For the third largest, - - - - -	40 00
For the fourth largest, - - - - -	30 00
For the fifth largest, - - - - -	20 00
For the sixth largest, - - - - -	10 00

Competitors for the prizes were required to give the date on which they gave their order for the potatoes, date of planting, date of digging, with a written statement of their mode of culture, characteristics of the soil—whether clay, alluvial, sandy or loam—nature of the subsoil, whether underdrained or not; also the kind and quantity of fertilizers used, how and when applied, the number of hills, and distance apart each way, with the weight of the crop when dug, and the number of square feet occupied by the crop, which must be witnessed and sworn to before a justice of the peace, notary, or any other one competent to administer the oath.

The awards were made by a committee composed of the following well-known gentlemen in the agricultural community: **PROF. GEORGE THURBER**, editor *American Agriculturist*, **DR. F. M. HEXAMER**, and **P. T. QUINN**, Horticulturists. They were published in the leading Agricultural Papers, and a copy mailed to each competitor. The prizes were awarded the first of January, of each year.

N. B.—To prevent misunderstanding, we wished it distinctly understood that no prizes would be awarded unless the above requirements were complied with in every particular. Competitors for premiums were placed under no restrictions, as to their mode of culture, excepting that *they must not be grown from slips or forced by artificial heat*, our object being to ascertain their respective merits with such culture as is usually given to crops in a well-managed vegetable garden or farm.

REPORT.

The number of competitors, who, tempted by these liberal prizes, tried their skill and industry in producing a premium crop, was naturally very large. Thousands of reports—representing every Potato-producing State and Territory of the United States, and even many Foreign Countries—nearly all from practical farmers, and many from men who have made Potato-growing their life's work, and may well be called the Champion Potato growers of the world. The practical information embodied in these Reports must naturally be of great value to every tiller of the soil, and at the request of the committee I have endeavored to condense the leading features of the modes and conditions under which these immense crops were grown.

YIELD FROM ONE POUND OF

Compton's Surprise in 1873.	Early Vermont in 1873.	Early Vermont in 1874.	Compton's Surprise in 1874.	Brownell's Beauty in 1874.	Snowflake in 1877.	Eureka in 1877.	Alpha in 1876.	Ruby in 1876.
511	607	708	900	1,018	1,117	1,666	1,707	1,982
450	437	698	874	811	1,304	1,403	1,665	1,694
390	393	690	832	782	1,125	1,149	1,535	1,576
386	380	674	811	749	1,090	1,145	1,511	1,571
		629	684	720	1,089	1,087	1,426	1,534
		615	588	696	1,069	1,066	1,280	1,353

The gradual increase in the yield, from year to year, is at once apparent, and when we consider that several of the largest yields in 1876, were grown by the same persons to whom the highest awards were given at the first trial, and when we consider that this increase in the yield is not due to the greater productiveness of the newer varieties, but solely to the increasing skill of the competitors, and the better management given their crops, we are forced to appreciate the great amount of good which these competitive trials have produced. I am aware that the largest yield from one pound is not always in proportion to the largest yield per acre; nor do these immense yields, produced by the lavish application of manures, regardless of expense, give a criterion of the profits of the crops, after deducting the premiums. Many growers who have produced less than one thousand pounds from one, may have obtained larger profits per acre, than the successful competitors yet no one who has grown a thousand, or even five hundred pounds from one, can have done so without learning something which will be of value to him in growing Potatoes as a field crop, nor can any one read an intelligent report of his methods of cultivation, without benefit.

Soil.—Many of the premium crops were grown on new lands, and on soil of almost unequalled quality. The largest yield was produced on "a mixture of sand and clay, very rich in vegetable matter to the depth of *eighteen feet*, and underlying this is a gravelly subsoil. For three years the ground was used as a stock-yard, the straw being left on the ground to rot and be burned." The second largest product, was grown "on a very rich, sandy loam, rich in decayed vegetable matter to the depth of between two and three feet, and lying upon a compact formation known as hard-pan, which has never been underdrained." Another competitor describes his soil as "black loam, four feet deep, on the bank of a creek, and it has been used as a cattle-yard for ten years." Another, "as vegetable mould and sandy loam, three feet deep, never cultivated before." Most crops however, were raised on deep, alluvial lands, underlaid with gravel; others on light loam with clay or gravelly subsoil, and in a few cases on heavy clay highly manured. In but very few instances was the land artificially underdrained, which seems to be a noteworthy fact, as most writers consider drained soil indispensable for the production of good crops.

Manures.—The large quantities of Fertilizers used by most competitors is something astonishing, and may well serve to disprove the general belief that heavy manuring is injurious to potatoes. Mr. Pearson added to an already very rich soil, about 60 two-horse loads of manure, nearly 200 bushels of wood-ashes, and 24 bushels of lime, per acre, together with bone-dust and other fertilizers in smaller quantities. Mr. Rose, after covering his land three inches thick with rotten barn-yard manure, and three bushels of wood-ashes per square rod, applied in addition, a large shovelful of rotted hen manure, and two handfuls of ashes to each hill, besides several surface dressings with other fertilizers. But all this must appear but a small attempt at enriching the land, to our Scotch friend, Mr. Robertson, who would not entrust his seed to a black sandy loam, four feet deep, underdrained and trenched, to probably the entire depth, before spading under a coat of *five inches* of well rotten cow-dung, and applying afterwards to the hills three cart-loads of wood-ashes, two of sheep droppings, and several other fertilizers.

About the value of wood ashes, and especially in mixture with hen manure and plaster, there seems to be no doubt left; they were used by a large majority and may be considered the Special Potato Fertilizer. Even when applied in very large quantities they have produced no injurious effect. In a few cases, as much as one pint of ashes has been applied to each hill as top-dressing, and in one instance the sets were actually planted in and covered with ashes. Plaster, lime and salt have likewise been extensively used and with great advantage. Strong nitrogenous manures have generally been considered as detrimental to the potato, but here we find that many successful growers have used large quantities of Blood, Fish and Peruvian Guano; hen manure as well as barn-yard manure, at the rate of fifty loads per acre, to the greatest advantage and without producing diseased potatoes.

Planting.—The time of planting in nearly all cases was between the 10th and 26th of May, and in the majority of these before the 15th. That single eyes and eyelets will, with good care, produce large crops, has been sufficiently proved. All the large yields were grown from very small sets. In some cases, single eyes were divided into ten pieces, and in one instance two hundred and ninety (290) sets were made from one pound, nearly all of which grew well. The sets, with few exceptions, were planted singly, yet we find a product of nine hundred and seventy (970) pounds raised from fifty-two (52) hills, two sets to each, nearly nineteen (19) pounds per hill, and six hundred and seventy-seven (677) bushels per acre. Whether this large yield is due only to the very favorable soil they grew in—a rich black loam, formerly used as a hog yard—and the immense quantities of ashes applied in the hills and as top-dressing—one peck to the hill—or to the two-set system, does not appear. It is to be regretted that a part of the plat was not planted with one set to the hill, and the products weighed separately. These practical tests, of the feasibility of raising large crops from small sets, become of much importance in seasons of scarcity of seed

potatoes. For it is shown here that, even without carrying the division of the eyes to extremes, nine-tenths of the seed may be saved.

A comparison of the distances between the hills with the average yield per acre gives a most interesting and valuable table, as follows:

The sets planted at a distance of

2 x 3 feet gave a yield of 378 bushels per acre.		3 x 4 feet gave a yield of 372 bushels per acre.
2 x 4 " " " 462 " "		3½ x 4 " " " 342 " "
3 x 3 " " " 651 " "		4 x 4 " " " 332 " "
3 x 3½ " " " 441 " "		4 x 8 " " " 88 " "

The large number of data of which the above figures form an average, give these statistics a special value. It will be seen that although the greatest yields from one pound grew from hills four feet apart, the largest crops per acre were raised at distances of three feet each way, and that as the distances between the hills are increased or decreased, the yield diminishes in regular proportion. In the first case, there remains wasted ground which is not reached by the roots of the plants, and in the latter, the roots are so crowded that they cannot obtain all the nourishment they are capable of consuming.

Cultivation.—It will be hardly necessary to state that in many cases the cultivation and care these growing potatoes received were unremitting and indefatigable. In no case were weeds to be seen in the patch; some of the plantations received semi-weekly hoeings, and all were kept scrupulously clean, and the soil loose and mellow. Yet many large crops were grown with but ordinary care. Mr. J. I. Salter swears "that the cultivation, manuring, etc., was the same he has given his general crop of potatoes for the last five years, and in no respect had there been extra care and labor bestowed." Mr. H. C. Pearson certifies "that these potatoes were grown with the most ordinary farm culture, being hoed only twice and receiving no extra treatment in any respect."

The mode of planting and cultivating with a larger number of the best cultivators consists in crossing their fields with furrows six and more inches deep. The sets are dropped at the crossings and immediately covered with about two inches of soil or compost. The vines as they grow are hilled up gradually and frequently to a final height of twelve to eighteen inches. Then large, broad hills are made, using all the soil between the rows.

Irrigation.—The fact that the largest yields were produced in the Eastern States, in regions which suffered from one of the severest droughts known, where the general crops failed almost entirely, induced us to investigate more closely the manner in which these premium potatoes were grown. As the result we find that all these competitors attribute their success to the judicious application of water during the dry season. One of the competitors had arranged an ingenious system of irrigation, by inserting six inches from each hill, two inch drain tiles, six inches deep, and filling these with water, twice a week, during the dry weather. In reply to a letter he writes: "I attribute my success the past season to the fertilizers applied, but more especially to the mode of applying water. I find that, even without manure, this plan gives great results. Give me drouth and this means of applying water, and I can grow a much larger crop than with the most favorable weather and no watering. This I have proved by two years' experience." Many may not be so situated that they can apply as complete a system of irrigation, but thousands of farmers have running through their lands, brooks and streams which might, without much cost, be made to furnish nutriment to their parching crops. One acre of potatoes would in many cases pay for more than the entire expense of a permanent system of irrigation. The information about this important subject, derived from the accompanying reports, cannot but prove of the greatest value to all cultivators of the soil.

Although these short extracts, from material sufficient for a large volume, can do but little justice to the importance of the subject, yet they may serve as an outline of the important and valuable information which could in no other way be obtained.

Trusting that the increasing interest in potato culture, stimulated largely by these competitive trials, may be still more productive of information and progress in this important branch of Agriculture,

I am yours respectfully,

F. M. HEXAMER, *Secretary.*

Extracts from the Report of Mr. Nardy, delegate from the French Government to the Centennial Exhibition at Philadelphia in 1876.

"The collection exhibited by the house of Messrs. B. K. Bliss & Sons of New York, is the most remarkable of its kind in the Exposition. The varieties of Potatoes in their exhibit, and the evident care and attention bestowed upon their collection, manifest constant study on the part of the exhibitors. In our opinion theirs was the most complete display of this valuable escu-

lent in the exhibition. To this remark we desire to add a few observations. We sincerely hope that the influence of this horticultural exhibition at Philadelphia will long be beneficially felt among farmers and growers of plants and vegetables. That were in reality all the fruits and vegetables which we to-day enjoy, when Asia, Africa and America sent them to us in their wild state? unfit for eating! Now, after having been cultivated and improved by the gardeners, they have become succulent and nourishing, and pleasant to the taste. By patience and careful cultivation, horticulture has been enabled to transform the type of many species of vegetation into a great number of varieties. Let me take as an example of this, the collection of Potatoes exhibited by these gentlemen which consists of 500 varieties, and we can thus appreciate the patience and researches which must have been necessary to obtain so many useful varieties. The service rendered to the farmers of the United States by the house of B. K. Bliss & Sons is so evident, that we do not hesitate to call attention to them, for agriculture in general derives an immense benefit from these great improvements in useful vegetables, which are mainly due to their initiative. The cultivation of the Potato takes an important rank in the agricultural productions of this country. As a source of revenue, it comes immediately after grain and before tobacco. It is now many years since the senior partner, having a special aptitude for horticulture, devoted himself to that study. In 1845 he founded his first establishment, and year by year, by steady application, and especially by his energy in collecting the rarest seeds and best varieties of useful vegetables from all countries, the reputation of the house constantly increased. He was the first to introduce the Early Rose Potato, which he did in 1867, and his establishment then acquired the important position which it now enjoys. Animated by the spirit of the amateur he has not only sought out varieties in this product, but has endeavored in every way to render a benefit to agriculture by inducing the farmer to improve the cultivation of this esculent.

But if we were to dwell longer on this question, we should be carried too far from our object, which is to call the attention of our French Government to the importance of this house who were so highly distinguished by the jury at Philadelphia, and close this report by expressing our desire that they will send some of their rare specimens to our Paris Exhibition of 1878."

Reports of Three of the Successful Competitors FOR THE PREMIUMS OFFERED BY US IN 1876.

How to Grow Twenty Bushels and Upwards of Potatoes from One Pound of the Seed.

The following reports have been properly witnessed and sworn to before a Justice of the Peace—in their respective residences—they have also been carefully examined by the committee and found to conform to the rules prescribed in our offer for the Premiums.

(From H. C. Pearson.)

PITCAIRN, N. Y. October 4, 1876.

MESSRS. B. K. BLISS & SONS:—I ordered of you April 1st, 1876, one pound each of **Ruby** and **Alpha** Potatoes, and planted them May 10th, 1876, and dug them September 28th. The Ruby produced **1,982 pounds** and the Alpha produced **1,707 3-4 pounds**. The soil was light loam with some gravel with a sand and gravel subsoil not underdrained. The soil was very rich, and its fertility was increased in the Fall of 1875, by spreading broadcast fifty-two horse loads of well rotted manure, three years old, and 150 bushels of ashes per acre, and plowed it under about eight inches deep; plowed and harrowed until perfectly pulverized eight inches deep last May. Placed in each hill before planting, two quarts of compost, composed of thirty bushels of decayed manure, five bushels of ashes, three bushels slacked lime, eight quarts salt, and four pounds of sulphur; the tubers were cut, some of the eyes divided into as many as seven and eight parts, planted one set in each hill, and covered them about three inches deep with soil mixed with some bone dust, making in all 195 hills of the Ruby, 210 of the Alpha; they were planted three and one-half feet apart each way, the number of square feet occupied by Ruby, was 2,364 feet, the number occupied by Alpha, was 2,546 feet. I hoed them three times, making very high, broad hills, watered them several times during July and August, with liquid manure, dug from one hill of Rubys, forty-three potatoes, weight **17 1-2 pounds**; used no slips or artificial heat. H. C. PEARSON.

(From J. I. Salter.)

ST. CLOUD, MINN., October 24, 1876.

Messrs. B. K. BLISS & SONS—Sirs:—On the 7th of April, 1876, I ordered of you, one pound each of the "**Ruby**" and "**Alpha**" Potatoes. Planted the Ruby on the 31st day of May. Prepared the ground as follows: I spread as evenly as I could on the sward, about eq. parts of ōen and barn-yard manure, at the rate of five heaping garden wheelbarrowfuls to the square rod,

before plowing, then plowed, turning a furrow ten inches deep and ten inches wide. I then planted my sets, after dividing every cluster of eyes into from three to twelve pieces, in rows four feet apart and as near as convenient, three and one-half feet apart in the rows, dropping but one piece in a place. I covered from two to three or four inches with loose earth. From the pound I made two hundred and ninety (290) sets, the space planted was sixty by seventy feet, (4,200 square feet); hoed but once, when the plants were about ten inches high, making a broad and continuous ridge, flat on the top, and a little depressed in the center; covered the vines all but a very little of the top. Before hoeing, I applied to each plant a large shovelful of fermenting hen manure; it was so hot that it would turn the leaves of plants black, and give them the appearance of being scalded, in less than a minute; I would manure three or four plants, and then cover as quickly as possible. The plants, in a day or two, began to grow and retained a dark green, almost black color until they were killed by the frost. I did nothing more in the way of cultivation.

On the 19th of August, I dug one hill of the "Ruby," and had ten and one-half (10½) pounds; on the 9th of October, I dug of the Ruby eight hundred and twelve (812) pounds; on the 10th of October, I finished digging the Ruby, digging eight hundred and seventy-one and one-half (871½) pounds, making a total of sixteen hundred and ninety-four (1,694) pounds. The "Alpha" was planted the same distance apart each way, had the same cultivation, manuring, etc., as the Ruby, except about fifty hills, that I covered the sets about four inches deep with coarse, unfermented horse manure, and applied no other manure afterward. I covered this manure with earth, the same as I covered the hen manure. I did not get as many large potatoes from these so treated, but about the same in weight per hill; made two hundred and fifty sets. The ground occupied by the Alpha was the same as the Ruby, sixty feet by seventy (4,270 square feet). I also planted two rows of this Potato in hills four feet apart each way. The land in both cases, a black sandy loam, rich in decomposed vegetable matter, usually about two feet deep, under which is hard pan. On the 28th of August, I dug two hills of the Alpha, and had 15 3-4 pounds; on the 12th of October, I dug 1,010 pounds of the Alpha, and on the 13th of October, 640 pounds, making altogether 1,665 3-4 pounds.

These amounts I dug, were grown alone from the one pound each of the above named varieties, purchased from you as I stated above, and without any sprouting or any other means being used than as stated. The land was not drained in any way.

J. I. SALTER.

(From Peter Robertson.)

THE GARDENS—HARRIGGE HOUSE, JEDBURGH,

ROXBOROUGH, SCOTLAND, October 4, 1876.

Messrs. B. K. BLISS & SONS:—Gentlemen. I beg to forward to you my report. I ordered of you, March 21, 1876, one pound each of Alpha and Ruby Potatoes. I planted them on April 24, 1876; they were dug October 2 and 3, 1876. The Ruby produced 1,534 pounds, and the Alpha produced 1,246 pounds. The soil is a mixture of black, sandy loam, four feet deep, with a red clay subsoil and underdrained; it has been lawns or short grass for many years; it was trenched on or about December, 1875, and remained in Winter fir until about April 10, 1876, it was enriched by about five inches of well-rotted cow dung and gas lime rubbish; the ground was then dug in the usual way, care being taken to mix and make it as fine as possible; the rows were six feet apart, and the sets were planted three feet apart, a mixture of about three cart-loads of wood-ashes, two cart-loads of sheep droppings, one lime, two hundred weight salt, all mixed. The tubers were cut and planted in the presence of Mr. Kerr and others. Some of the eyes divided into seven parts; they were very small. Planted one set three feet apart each way; under each, three spadefuls of the above mixture was pulverized three inches deep with the soil, and each set planted one inch deep; they all grew; at first they looked very weak, but gained strength something extraordinary; they were kept free of weeds, and the soil drawn to them as they grew; they were two inches high on May 29, 1876; they got nothing but kept free of weeds, and the soil drawn to them as they grew, until the tubers began to swell; they were then watered with a mixture of sheep droppings and hen manure a few times until they were lifted; there were 176 sets of Ruby, 164 Alpha, single eyes and very small; from one set single eye I had twenty-one pounds; many of the tubers were two and three pounds each. I may also say that I had some very fine, early Cauliflowers and Early Cabbage on the same ground; they were planted between the rows of the Potatoes, and cut before the Potato vines got up to cover the space between; the ground they occupied was forty-six feet by seventy feet, and would be about 3,220 square feet for each variety. Many of the vines remained green until they were lifted. The season was generally good for Potato culture; no forcing process was used whatever.

PETER ROBERTSON.

The Potato Crop.

A Paper Read at the American Institute Farmers' Club.

By Conrad Wilson.

THE annual yield of potatoes in the United States, according to the returns of the last census, was nearly one hundred and fifty million bushels. In view of the increasing attention lately given to this crop, it will doubtless show, at the close of the present decade, a large increase in the amount of the yield, as well as in the number and improvement of varieties. In fact, it may safely be assumed that, in spite of the fears of many in regard to the ravages of the beetle, this crop will still show a yield, at the next census, of over two hundred million bushels.

By its valuable qualities, and its large consumption, the potato ranks in nearly all countries as a leading food staple. It is therefore in every view important, and may always be discussed with interest and profit. There are, of course, some other crops that are grown on a larger scale, and some that foot up a larger yearly aggregate. Yet no product of husbandry is more variously useful, or more generally raised by farmers, and none, if we except wheat, more universally consumed by the people.

A few examples illustrating the rate of yield and the cost per bushel for this crop will tend to show what possibilities belong to it, and thus perhaps stimulate the average farmer to aim at higher results.

Some experiments in potato culture were reported in January of last year, of which the following are a part of the results:

H. C. Pearson, of Pitscairn, St. Lawrence Co., N. Y., produced from one pound of seed, 1,982 pounds of potatoes, of the Ruby variety. He also raised the same year, from one pound of seed, 1,707 pounds of the Alpha variety. J. I. Salter, of St. Cloud, Minn., got the same year, from one pound of seed, 1,694 pounds of the Ruby, and 1,665 pounds of the Alpha; while Alfred Rose, of Penn Yan, N. Y., got 1,576 pounds, and P. L. Wood, of Ill., 1,571 pounds, each from a pound of seed of the Ruby variety. The year previous J. L. Perkins, of Little Sioux, Iowa, obtained 1,666 pounds from one pound of the Eureka variety.

These amazing products were some of the results obtained by farmers competing for the premiums offered by B. K. Bliss & Sons of New York.

The inducements thus held out by this enterprising firm has led to valuable consequences, and the competition has developed the prolific quality of this vegetable to a degree that surpasses all previous conception.

But while duly crediting the liberality and public spirit of B. K. Bliss & Sons, and the grand success of the winning parties, we cannot help regretting that the most important question in potato culture was not included among the offers. It is easy to see that

The Cost of Production

is the underlying question which measures the importance of all the others. Yet this does not at all diminish the value of the test made by Mr. Bliss. The Rubies raised by Mr. Pearson from a pound of seed fell short of a ton by only 18 pounds. This fact has arrested the attention of potato growers as well as consumers in both hemispheres, and confers merited distinction on both Pearson and Bliss; and certainly the tendency of such facts is to help forward the solution of the still greater problem of cost. The man who gets the bottom figures in this problem, though he may not "double the blades of grass," will more than double the product of potatoes.

Since these prizes were awarded I have received statements of cost from several competitors, and hope still to hear from others.

Alfred Rose has reported his cost, in one competition, at less than 15 cents per bushel, and J. L. Perkins about the same. J. I. Salter obtained a yield in one case at about 20 cents per bushel. His latest results I have not learned. Henry V. Rose and M. M. Rose have each reported a cost slightly above the figures obtained by J. L. Perkins and the elder Mr. Rose. For the previous year, Alfred Rose reported his cost at \$5 per acre, and 9¼ cents per bushel. Mr. Perkins has also reported a later crop, since the competition, in which he makes the cost, without manure, \$5.40 per acre, and 5¼ cents per bushel.

Various other farmers, since the Bliss competition, have reported to me their yield and cost for potatoes. Lyman Alexander, of Minnesota, got 400 bushels per acre of the Peerless variety, at a cost of about 7 cents per bushel.

Azro Smith, of Rock Bluffs, Nebraska, raised a crop of Extra Early Vermont, of which the yield was 824 bushels per acre, and the cost, as he made it, 4½ cents per bushel. But the cost in this instance, as also in the two previous cases, requires some correction. Every crop should be charged for interest on the land, and when no manure is used, a charge should also be made for exhaustion of soil. This would probably add 2 or 3 cents per bushel to the cost of the three last named crops.

C. C. Holton, of Rochester, N. Y., has reported potatoes at 400 bushels per acre, and at a cost of 12½ cents per bushel. A crop of 600 bushels per acre has been reported by one of the editors of the *Agriculturist*, 640 bushels by C. L. Bragdon, and 700 bushels by P. F. Rice of Polo, Ill. In one of the competitions for the Bliss prizes, Mr. Perkins obtained 376 bushels per acre, and Alfred Rose got 600 bushels of Brownells and 746 bushels of Eurekas.

Let us now take another view of the potato crop that may perhaps shed some light on its utility and value as a food staple.

Feeding Value of Potatoes.

Like Indian corn, this vegetable is everywhere extensively utilized as an article of food, both for the human family and for nearly all domestic animals. Hence it is clear that the nutritive properties of the potato are a question of no little importance to the farmer, and one on which the light of further experience is still greatly needed.

How to convert potatoes, with the best economy, and with the largest profit, into other forms of food, into milk, butter and meat, is a problem not yet fully solved. Various estimates have been made by practical men as to the effective value of the potato in the production of beef, mutton and milk; and though opinions still differ, the proportion of other food staples that potatoes are capable of yielding is nearly indicated in the following statement:

A bushel of potatoes when judiciously fed to animals of a good breed will produce:

Of Beef, - - - - -	from 2 to 3 pounds.
" Mutton, - - - - -	" 4 to 5 "
" Pork, - - - - -	" 4 to 5 "
" Milk, - - - - -	" 35 to 40 "
" Butter, - - - - -	" 2 to 2½ "

It is of course not supposed that potatoes are fed *exclusively* in producing these results, but in a suitable combination with other kinds of feed.

Now the practical value of the above table depends materially upon the amount of potatoes produced from an acre. The average yield of the crop for the whole country is probably not over 100 bushels per acre. And yet it will be seen, from the examples above reported, that over 800 bushels have been produced, and even that is not by any means the final limit of yield. Considering the recent progress of potato culture, and conceding the fact that 1,000 bushels per acre have been occasionally achieved by brilliant farmers, it seems hardly credible that the average yield for the United States is only 100 bushels per acre. What shall we say then? Shall we distrust the return of the last census? or shall we rather credit some progress to the eight intervening years, and claim that the average is now very much better. One thing at last seems clear. If the progress of the next two or three years shall correspond to the same period of the past, it may safely be assumed that the average yield of potatoes for the coming decade will not be less than 200 bushels per acre. I venture therefore to assume this figure as the coming average, and if any of our twenty million farmers are disposed to quarrel with me for claiming this yield, my best revenge will be to prove the possibility and then to tell them how it may be done.

If now we apply to this estimate the figures of the above table, we shall discover

What an Acre of Potatoes Means,

when expressed in the form of other food staples. We shall find that it is measured

In Beef, - - - - -	by 400 to 500 pounds.
" Pork, - - - - -	" 800 to 1,000 "
" Mutton, - - - - -	" 800 to 1,000 "
" Milk, - - - - -	" 7,000 pounds, or over.
" Bread, - - - - -	" 4,000 "
" Butter, - - - - -	400 "

Again, as I have already shown that the total potato product of this country is nearly certain to reach 200 million bushels as the average for the next decade, it will be seen that if the above figures are extended so as to meet this case of the total product, then it will be found that

The Annual Potato Crop of the United States

is equivalent

In Beef, -	- - - - -	to 400,000,000 pounds.
" Pork, -	- - - - -	" 800,000,000 "
" Mutton, -	- - - - -	" 800,000,000 "
" Milk, -	- - - - -	" 7,000,000,000 "
" Bread, -	- - - - -	" 4,000,000,000 "
" Butter, -	- - - - -	" 400,000,000 "

Let us now take another view of this subject. If Mr. Pearson had taken his crop of Ruby potatoes that were produced from a pound of seed, and by a right mode of feeding, had converted them into butter, according to the above estimate, the outcome of his experiment would have been about sixty pounds of butter in the Fall, as the legitimate result of one pound of potatoes planted in the Spring. Or if he had converted the potatoes into mutton, the result would have been 120 pounds.

Again, when Azro Smith harvested over 800 bushels of potatoes from one acre, if he had fed that crop to a good breed of cattle, it would have produced, according to the above estimate, at the rate of two pounds of beef for each bushel of potatoes, making a total of 1,600 pounds of beef, as the product of one acre, or if, instead of beef, he had converted the crop into milk, the result would have been over 20,000 pounds.

These results, of course, depend in part on the above estimate for the feeding value of potatoes. On this point there is room for some difference of opinion. But it would be easy to show that when potatoes are combined with other well-selected elements, and fed in the right proportion to animals of good breed, and good capacity, the estimate given is not far out of the way. But to place the matter beyond any question, if we reduce the estimate by 50 per cent., it would still be possible for Pearson to plant his pound of potatoes in the Spring, and harvest in the Fall either 30 pounds of butter, or 60 pounds of mutton; and Azro Smith would still be able to show from his acre of potatoes, that an acre of beef is equivalent to 800 pounds, and an acre of milk to 10,000 pounds.



EGYPTIAN, EAST INDIAN OR PEARL MILLET.—(*Pencillaria spicata*.)

This new Millet is quite distinct from all other species, and is without doubt, destined to take a place in the front rank of valuable forage plants. Sown in light, sandy soil, the plants at first appear feeble, resembling broom-corn; but when a few inches above ground they begin to tiller, and new shoots appear very rapidly from the original root, until they number a half dozen to a dozen or more. The stems at first are nearly prostrate, but when about two feet long they begin to assume an upright position, reaching a height of eight to ten feet, not differing in color or substance from our common Indian corn. In fact, it is one of the most "leafy" plants we have ever met in the great family to which it belongs. When the stems have reached nearly their full height, the seed or flower spikes appear at the summit. As soon as the first or principal flower spike appears, the stems throw out lateral branches from every joint, these in turn producing leaves and flower spikes. When cultivated for fodder, the seed should be dropped in drills, and given plenty of room on account of the peculiar habit of tillering; and, judging from our brief experience with it, we think a quart, or at most two quarts, of seed would be abundant for an acre. The fodder is in the best condition for cutting and curing when the stalks are five or six feet high; but, if used for soiling, it might be cut earlier or later, at the convenience of the cultivator; the stumps, sprouting and throwing up a new growth, continue to grow until killed by frosts. Cows, horses and other farm stock are exceedingly fond of this kind of millet, eating it with as much avidity and apparent relish as they do the green leaves of Indian corn; and we are inclined to think that it is fully as nutritious. The seed will not mature in the Northern States. *Price, clean seed, per oz., 15 cts.; per ¼ lb., 25 cts.; per lb., 60 cts., by mail postpaid. By express, at purchaser's expense, 40 cts. per lb.; 10 lbs., \$3.00. 3 to 5 lbs. required for an acre.*

THE CHUFA, OR EARTH ALMOND.—(*Cyperus esulentus*.)

This plant is extensively grown in the Southern States, and for sheep, hog and poultry feed. It is claimed to be one of the most profitable crops grown. Chufas may be planted in rows two and a half or three feet apart, and two tubers should be dropped twenty inches or two feet apart in the row, and covered two inches deep. In this way, about a half bushel is sufficient for an acre. In the South they are planted during February and March. North they should be planted when the ground is warm: about the same time as corn, or a little earlier.

Price ½ pt. packet, 15 cts.; per qt., 40 cts.; [by mail 60 cts.]; per peck, \$2.00; ½ bush., \$3.00; bush., \$ 6.00.

For a more detailed description of the above and mode of culture, see our circular of **Novelties for the Farm and Garden**—mailed free to all.

Dioscorea Batatas—Chinese Yam.



DIOSCOREA BATATAS—BULBLETS FROM THE AXILS OF THE LEAVES.

One of the most valuable esculents in cultivation, though but little known. Stem twelve to twenty feet in length, of rapid growth, of creeping or climbing habit, forming an excellent covering for a screen; flowers small, white in clusters; leaves, heart-shaped. The root is of a pale russet color, oblong, regularly rounded, club-shaped, largest at the lowest end. Plant eight inches apart, in a deep, light soil, tolerably rich, and thoroughly stirred two feet deep. A well

grown root, two years from the bulblets, will measure two feet in length, and two and one-half inches in its broadest diameter, and is quite hardy, remaining in the ground over Winter without protection. The flesh is remarkably white, and very mucilaginous in its crude state. They may be boiled or roasted, and when cooked possess a rich-like taste; are quite farinaceous, nutritive, and valuable for food. It is also a very desirable climbing plant, suitable for covering screens, arbors, and unsightly places.

Extract from a letter in the *Rural New Yorker* from a correspondent who has cultivated this plant for many years.

"The Chinese Yam possesses merits that should commend it to the agricultural classes of the United States, yet there are many who don't even know that it is grown in this country, although it is more than twenty years since its introduction here, from China. The difficulty all new beginners have to contend with in the culture of this esculent, is a proper understanding of its wants. I have grown them for twelve or fifteen years, and will give the readers of the *RURAL* the benefit of my experience:

In the first place, select a soil that is moderately dry, deep and rich, and prepare it by spading or plowing deeply: then plant the bulblets eight inches apart each way. When the large roots are used for planting they should be cut up in pieces about one inch in length. They will produce much stronger roots than those grown from the bulblets. They will need to be cultivated a few times the first year, to keep weeds down and soil loose. After the first year, keep the weeds hoed off or mowed down, as you prefer. The Yams are perfectly hardy, standing in the ground all Winter and growing again when Spring comes, increasing in size for a number of years. They increase naturally from the small tubers that grow on the vines just above each leaf. These should be saved in the Fall, and kept during Winter where they will not freeze, as freezing injures their growth, and planted in the Spring as soon as the ground gets warm.

As to the product per acre, in the best of soil, with three years' growth and tubers planted eight inches apart each way, we could safely calculate on getting six and a quarter tons of Yams per acre. Some may think this a large yield, but I believe it is not as large as I should put it, and think it is not an overestimate. I have only cultivated them on a small scale, but have come to the above conclusion with regard to their productiveness. A few years ago, I was digging in an old bed of them where they had been left to grow for several years, and such a sight! The ground was literally full of roots, measuring one and a half to two

DIOSCOREA BATATAS. feet in length, and one and a half to two inches in diameter at the **CHINESE YAM—ONE** largest end, and this too where the soil was not more than eight or ten **YEAR OLD ROOT.** inches deep.

They grow in a perpendicular position with the large end downwards. The vines are ornamental, having heart-shaped leaves edged with scarlet and are very pretty. A few tubers planted near a door or window and the vines trained over and about it, make an ornament worthy the admiration of all. The flowers are numerous and have a cinnamon fragrance, but the vines do not bloom until the roots are two years old. In garden culture I let the vines run on the ground, except those I wish to save tubers from for seeds. These I set stakes or poles to, as I think by this method the tubers are produced in greater abundance and of large size.



There is scarcely any difference perceptible to the taste between the Chinese Yam, when properly cooked, and the Irish potato, although the Yam is much whiter and somewhat finer grained.

Some object to growing them on account of the great depth to which the roots penetrate. But to those I find no difficulty. I commence digging at the end of a row, take out what I want, and leave the hole open. The next time I dig I commence where I left off, and throw the dirt where I dug before; by this way I have the soil stirred so deep that it is in fine condition for planting out more tubers.

They have no insect enemy, and drought affects them but very little, as they root so deeply. There is no necessity for their being dug at any time of the year, except when wanted for immediate use. They are suitable for cooking any time in the year. A person can plant enough at one planting to do his family for years, each year bringing him larger Yams. I consider them safer to depend on than the Irish potato, which has its enemies, and is so sensitive to a little freeze.

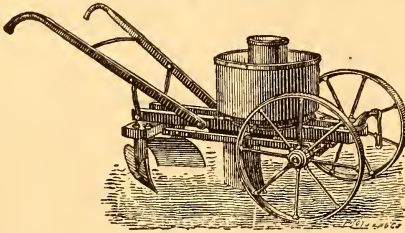
I believe their proper cultivation would be attended with success anywhere in the United States. If the masses of the people better understood their nature and were better acquainted with their many fine qualities, they would be more generally grown. In conclusion I will say that they are the most profitable crop that I cultivate.

Small bulblets, which form roots about a foot in length, in one year, in packets of one dozen, 20 cents. \$1.50 per hundred. One year old roots \$1.25 per dozen; \$6.00 per 100.

J. L. True's Improved Potato Planter.

This Machine will cut the Potato and Plant Six Acres in Ten Hours.

We invite the attention of the farming community to this machine, which is beyond doubt one of the greatest and most successful labor-saving machines of the age.



Having been submitted to thorough practical tests on all kinds of soil, in this country and in Europe, we offer it to farmers for the season of 1878, with entire confidence in its ability to do the work intended for it, in a thorough and proper manner.

No intelligent farmer can fail to see that an implement with which a man can, with the aid of a horse, cut the potatoes, and plant six acres in one day, doing the work in many respects better than it is

usually done by hand, is of inestimable value.

The Machine is very simple in construction, and its arrangement is such as to render it very easy to operate.

The Hopper holds about one bushel of potatoes.

The knife is placed in such a relative position to the seed-boxes that the potatoes are cut into pieces of such a size and shape as to render it almost impossible for any to drop without eyes on them.

The potatoes drop through the plow, the back of which being open, the operator can see each piece as it falls, and they are still exposed to his view for some distance as they lay in the furrow, before the covers reach and cover them, thus affording him the satisfaction of knowing that the work is being well done.

Gauge rings are provided for diminishing the size of the seed-boxes, when planting different sizes of potatoes separately.

Any kind of dry, concentrated fertilizer may be dropped with the potato in such quantities as may be desired.

The Plow and Covers can be adjusted to cover the potatoes in a most satisfactory manner, at any depth desired.

The drive wheels mark the rows, which can be made as far apart as the farmer chooses, while the seed is dropped 9, 18, or 36 inches apart in the rows.

Prices of Machines on cars in New York :

No. 1—Machine with Fertilizer Attachment, complete (drops 9, 18 or 36 inches apart),	\$40 00
No. 1—Without Fertilizer Attachment,	37 00
No. 2—Machine has no Fertilizer Attachment, and drops 18 or 36 inches apart,	30 00
Steel Covers, extra,	2 00

Allen's Potato Bug Destroyer.



The Planet, Jr. Potato Beetle Destroyer.

as with reasonable care to make its use *entirely safe*. It is desirable to apply in the *early morning*, the dew then forming a paste, and that time being *less windy*. Price, \$3.00.

Allen's Potato Bug Destroyer, sent out late last Summer, has been greatly improved, and will be found efficient, handy and inexpensive, and an important acquisition where the potato beetle is either established or expected. It is especially contrived for the purpose of quickly and economically throwing a mixture of Paris Green and Flour, or other destructive compound in a penetrating cloud, among Potato and other plants, and upon bushes, vines and trees, to destroy Bugs, Fleas, Worms, Slugs, Caterpillars, etc.

It consists of a peculiarly constructed double coned reservoir, readily filled, and by means of bellows, capable of throwing either a jet or cloud of fine powder, thoroughly dusting a row of potatoes or other plants *at the speed of a walk*. It is also especially effective for Pear and Rose Slugs, Cotton Worms, Plant Lice and other insects.

Paris Green, before use, should be carefully mixed with 40 to 50 times its weight of *dry flour* or *plaster*; the quantity applied being easily regulated by the quantity of flour added.

Though the Powder is a dangerous poison, this machine discharges *at so great a distance* from the hands and face, as with reasonable care to make its use *entirely safe*. It is desirable to apply in the *early morning*, the dew then forming a paste, and that time being *less windy*. Price, \$3.00.



A book that ought to be in the hands of every owner of a farm, large or small, or of a garden plot.

POTATO PESTS.

Being an illustrated account of the **COLORADO POTATO BEETLE,**

And the other

Insect Foes of the Potato

IN NORTH AMERICA,

With Suggestions for their Repression and Methods for their Destruction.

By CHARLES V. RILEY, M. A., Ph. D.,
(State Entomologist of Missouri.)

Finely Illustrated.

Price, postpaid, paper covers, 50 cents; cloth, 75 cents.

Randolph's Fertilizer Distributor.

An implement for depositing Fertilizers of all kinds used in hill crops, such as *Corn, Potatoes, Tobacco, Cotton, etc.*



By its use all kinds of **Phosphates, Bone Dust, Fish and Peruvian Guano, Poudrette, Ashes, Plaster,** and all kinds of **concentrated Fertilizers and Chemical Manures** can be distributed, without the material used coming in contact with the hands.

The manner of using the dropper will be readily understood from an inspection of the cut.

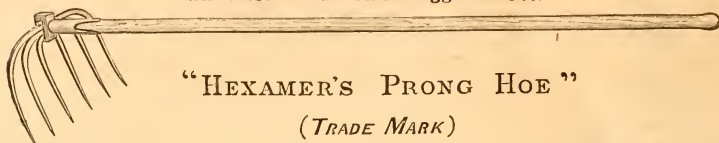
The sack, G, having been filled with the fertilizer, is attached to the person by passing the adjustable strap, E, over the shoulder as shown. The handle, O, of the connecting shoot, S, is then held by the left hand, and the handle, H, of the plunger, J, by the right, unless the person is left-handed, in which case the arrangement is just the reverse, the dropper being adapted for use in either way.

The implement is used after the manner of a cane, it being operated by simply swinging it from hill to hill, no exercise of care or judgment being required other than to select the spots upon which to rest its step, F.

For recommendations, and a more complete description, send for circular. Price, \$5.00 each.

HEXAMER'S PRONG HOE.

The Best Hand Potato Digger in Use.



“HEXAMER'S PRONG HOE”

(TRADE MARK)

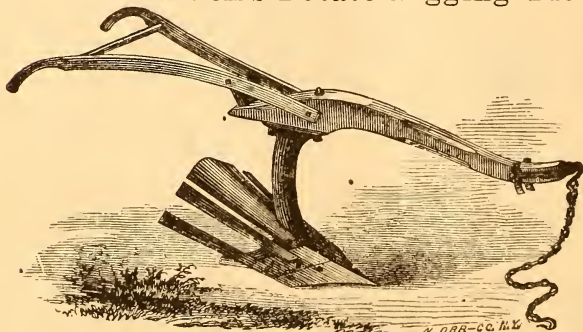
The highest premium in the Horticultural Department of the Great American Institute Fair of 1867, was awarded to it. The *American Agriculturist*, in speaking of this implement, gives it the following favorable notice:

HEXAMER'S PRONG HOE.—Dr. HEXAMER, the well-known Horticulturist, has such a way of making his investigations and coming at his facts, that we accept his results with almost the same confidence we would have in our own. He makes use of expensive labor, and the monthly pay-roll is so large as to lead him to employ his men to the very best advantage. The problem was what tool to place in the hands of the laborers for hoeing out between rows of strawberries or other small fruits, root crops, nursery stock, etc. The common hoe is a slow, hard, old-fogy tool, and, of course, its use is out of the question. The potato hook, or pronged hoe with round prongs, good, but not sufficiently rapid for the outlay of strength, yet vastly superior to the hoe for the same purposes, except after weeds have grown large, which ought rarely or never to occur. After having made numerous experiments with tools made expressly for him, he decided upon this implement. The six teeth or prongs are eight inches in length, the outer ones being ten inches apart, which is the width of the actual cut. The prongs are square, of the best steel, and inserted in pairs into a malleable iron head, in which they are firmly wedged. They are delicate, but very strong and elastic.

It stirs the soil thoroughly, more than a foot wide, and from two to four inches deep, killing all small weeds, lifting out stones of small size, removing weeds and all obstructions as effectually as a rake. On light soil it is as easily worked as a hoe, and on heavy soils, if dry enough to work at all, very much easier. It is safe to say that a man, with one of these, can do several times as much work as with a hoe. We think it will prove more useful as a potato digger on account of its breadth, than the implement made for the purpose.

PRICE,—\$1.50 each; \$15.00 per dozen.

Allen's Potato Digging Plow.



ALLEN'S POTATO DIGGING PLOW.

This implement weighs one hundred pounds, and is of very light draft. A pair of small horses or oxen, with a boy to drive will easily dig potatoes as fast as twenty men can pick up. It turns them out so cleanly that scarcely one bushel in fifty, whether small or large, is left uncovered.

The standard is high, so as to allow of its working freely, with-

out clogging from weeds and potato vines, but in harvesting for an early market, when the vines are long and still green, the work will be much facilitated by cutting these and removing them from the rows.

Price of Potato Plow, with cast-iron Mould and Share, \$15.00. The same, with steel Mould and Share, \$25.00.

The Planet Horse Hoe and Cultivator.

This is a new and most perfect tool for horse cultivation. It is especially adapted to market garden and farm-hoed crops, and to working *Tobacco, Broom-Corn, Cotton, Rice and Roots*. It greatly reduces the labor of hoeing, often thus saving cost in a day. Blades tempered and polished steel. Price, \$12.00. With extra cross-piece and pair of hoes, \$15.00.

Planet No. 3.—A Fertilizer sower. Price, \$16.75.

Complete directions for use accompany each machine. Send for a full descriptive circular, with cuts of each implement and testimonials.

New Varieties Wheat.

IMPORTANT TO WHEAT GROWERS.

PRINGLE'S NEW HYBRID SPRING WHEATS.

We take much pleasure in announcing two new and distinct varieties of Spring Wheat, produced in 1870 and 1871 by Mr. Pringle of Vermont, whose skill and judgment as a hybridizer of Cereals and Potatoes have already won for him a world-wide reputation. After a careful trial of seven years we now offer these varieties to the public, having entire confidence in their superiority over all others, feeling assured that they will prove to be valuable acquisitions to the wheat growers of the country.

CHAMPLAIN.

791 Pounds Grown from One Pound Seed.

Was produced in 1870 by Mr. Pringle, in his endeavors to unite the remarkable hardness of the Black Sea with the fine and superior quality of the Golden Drop. Several varieties were the result of this hybridization, from which this one was chosen, as realizing the end in view, showing greatly increased vigor and productiveness over both its parents. A careful selection from this for the past seven years has now fully established its character, and we have a Wheat bearded like the Black Sea, with the white chaff of the Golden Drop, free from rust and smut, yielding a lighter colored grain than the former, which makes a flour of superior quality. Its strong and vigorous straw, growing 6 to 12 inches higher than its parent varieties, stands erect, frequently bearing, even in very ordinary culture, heads from 5 to 6 inches in length, containing from 60 to 75 kernels each.

We confidently recommend this new Wheat as among the earliest, promising to give the growers of this most important crop better results than are produced by the old and "run out" varieties now sown. Price, 40 cents per lb.; 3 lbs., \$1.00, by mail, post-paid; by express, at purchaser's expense, peck, \$2.00; bush., \$7.00.

DEFIANCE.

528 Pounds Grown from One Pound Seed.

Another variety of Spring Wheat of the highest promise, the result of a series of experiments by Mr. Pringle in 1871, to incorporate superior qualities upon the hardy stock of our common Club Wheat, by hybridizing it with one of the finest, whitest and most extensively grown sorts of the Pacific Coast.

This variety displays great productiveness, vigor and hardness. It is a beardless, white chaff Wheat, with heads frequently 5 to 6 inches long, very closely set with large white kernels, frequently numbering 75 to 80 to the single head. Its white, stiff, erect straw, exempt from the attack of rust, its earliness combined with great vigor and superior qualities, should claim for it universal trial. Price, 40 cents per lb.; 3 lbs., \$1.00, by mail post-paid; by express, at purchaser's expense, peck, \$2.00; bush., \$7.00.

These two varieties of Wheat, **Champlain** and **Defiance**, first offered by us in the Spring of 1873, have been faithfully tested the past season in every part of the country where Spring Wheat is grown, and have proved to be the hardiest, the most vigorous and productive varieties ever offered. In order to see what it would do under careful cultivation, we offered premiums to the amount of \$250.00, to be divided among those who produced the greatest amount from one pound of seed—also for the best and largest heads. These premiums were competed for by growers in all parts of the Union. Some of their reports are truly wonderful, as well as exceedingly interesting, and show what good culture and good seed will do. 791 pounds of Champlain and 528 pounds of Defiance were raised the past season, each from one pound of seed. Many of the best heads measured six to seven inches in length, and produced from 80 to 90 kernels per head. The prize collection was exhibited at the American Institute last Fall, for which a Diploma was awarded. Circulars, giving a more complete description of the two varieties, with the report of the committee awarding the premiums, also the reports of the successful competitors, giving their method of cultivation by which such large crops were produced, and much other useful information upon Wheat culture, will be sent to all applicants.

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Mold's Improved Red and White Winter Wheats.—We take much pleasure in offering two new varieties of Winter Wheat, raised by one of the most successful cultivators in Europe, which we are confident will prove a valuable acquisition to this country. A specimen of this variety was on exhibition at the Exposition in Paris, of 85 heads grown from a single grain, and for which an offer of £50 sterling (\$150) was refused by the exhibitor; 105 heads have been grown by the originator on one root. By sowing in drills, and giving each plant plenty of room, the most wonderful results may be obtained. Price, 50 cents per lb.; 3 lbs., \$1.25, by mail, post-paid; by express, at purchaser's expense, peck, \$2.50; bush., \$8.00.

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They supply **all the required ingredients**, in the proportions which practical experience, and the feeding powers and composition (analysis) of each crop show to be **best adapted** to its successful and profitable growth. They leave the land in **"good condition."**

The leading elements of plant food are furnished in them in the best known forms, as follows :

NITROGEN—From Nitrate of Soda, Blood, Flesh, Peruvian Guano and Bone.

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POTASH—Soda, Magnesia, etc., from Alkaline Salts, such as Sulphate of Potash, Muriate of Potash and Sulphate of Magnesia.

Mapes's Manures are all sold on guaranteed analysis, plainly given on tag accompanying each package.

In the numerous analyses and reports on these Manures, issued by the Conn. Agricultural Station, New York State Agricultural Society, and others, *in no instance* has the Fertilizer been found to be below the guarantee.

Six additional Awards and Medals have been conferred during the past fall (1879) upon these Manures by the Conn. State Agricultural Society, New Jersey State Agricultural Society, American Institute of New York, etc.

Every bag of Mapes's Manure is accompanied with a tag, giving composition and *directions for use*.

Mapes's Potato Manure, 600 lbs. per acre.	Price per ton (bags 200 lbs.)	\$48 00
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Mapes's Asparagus Manure, 1,000 to 1,500 lbs. per acre.	Price per ton (bags 200 lbs.)	51 00
Mapes's Fruit and Vine Manure, 200 to 400 lbs. per acre.	Price per ton (bags 200 lbs.)	37 00
Mapes's Grass and Grain Spring Top Dressing, 600 lbs. to the acre.	Price per ton (bags 200 lbs.)	51 00
Mapes's Beet and Mangold Manure, 1,000 to 2,000 lbs. per acre.	Price per ton (bags 200 lbs.)	49 50
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This last named manure is particularly adapted for use on all soils, for Onions, Early Cabbages, Tomatoes, Cucumbers, Melons, and all early vegetables. It hastens maturity some two weeks earlier than Stable Manure, and after a long experience with truck growers has proved more economical than any other fertilizer, either for use alone or in connection with stable manure.

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Full descriptive pamphlet on Fertilizers will be issued about February 15th, and mailed gratis.

PRACTICAL RESULTS ON POTATOES—SEASON 1879.

(Full Details in Pamphlet.)

Yield, with 8 cords stable manure alone,	200 bushels.
Yield, with 3 bags (\$15.00) Mapes's Potato alone,	310 "
GILBERT A. MARSHALL, Lancaster, N. H.	
Yield, with 2 bags (\$10.00) Mapes's Complete Manure,	302½ bushels.
Yield, no manure, natural soil,	88 10-60 "
J. F. EMERY, Potter Place, N. H.	

Yield, with 3 bags (\$10.00) Mapes's Potato Manure, averaged 195 bushels per acre. No acre fell below 180 bushels, while some portions of the field did not fall short of 240 bushels, and *ninety-five per cent.* at least of these were of marketable size. There were three rows left without any Fertilizer, and the yield there was too poor to be considered of any market value. A marked difference of more than two weeks was unexpectedly seen in the early maturing effects of the Mapes's Manure over common yard manure. The cost of the potatoes grown with the Mapes's Potato Manure for the fertilizer, including freight, cartage and spreading, was *twenty-three cents a barrel*, or about *eight cents* a bushel.

TEN EYCK BROS., Matawan, N. J.

On worn out land, so poor that the yield with Beans in preceding year (1878) was less than five bushels per acre, 800 lbs. of Mapes's Potato Manure per acre produced 144 bushels. Ten cords of farm yard manure yielded 115 bushels. The yield from the Mapes Manure was four times as much as from the natural soil.

SILAS CARLETON, Pomeroy, Meigs Co., Ohio.

Yield on natural soil,	140 bushels per acre.
Yield with barn-yard manure,	180 bushels per acre.

Yield with barn-yard manure and 400 lbs. of Mapes's Potato Manure, 284 bushels per acre, and the Potatoes were of superior size and quality. Received the First Premium at Yorktown Fair.

LEWIS BEACH, New Castle, N. Y.

600 lbs. Mapes's Manure per acre.	gave 200 bushels per acre.
Ten cords Stable Manure,	gave about same yield.
Yield from Natural Soil,	gave 25 bushels per acre.

The Potatoes raised with Mapes's Manure were all of *two weeks earlier* than those grown with Stable Manure.

FREDERICK MORTON, Rocky Hill, Hartford Co., Conn.

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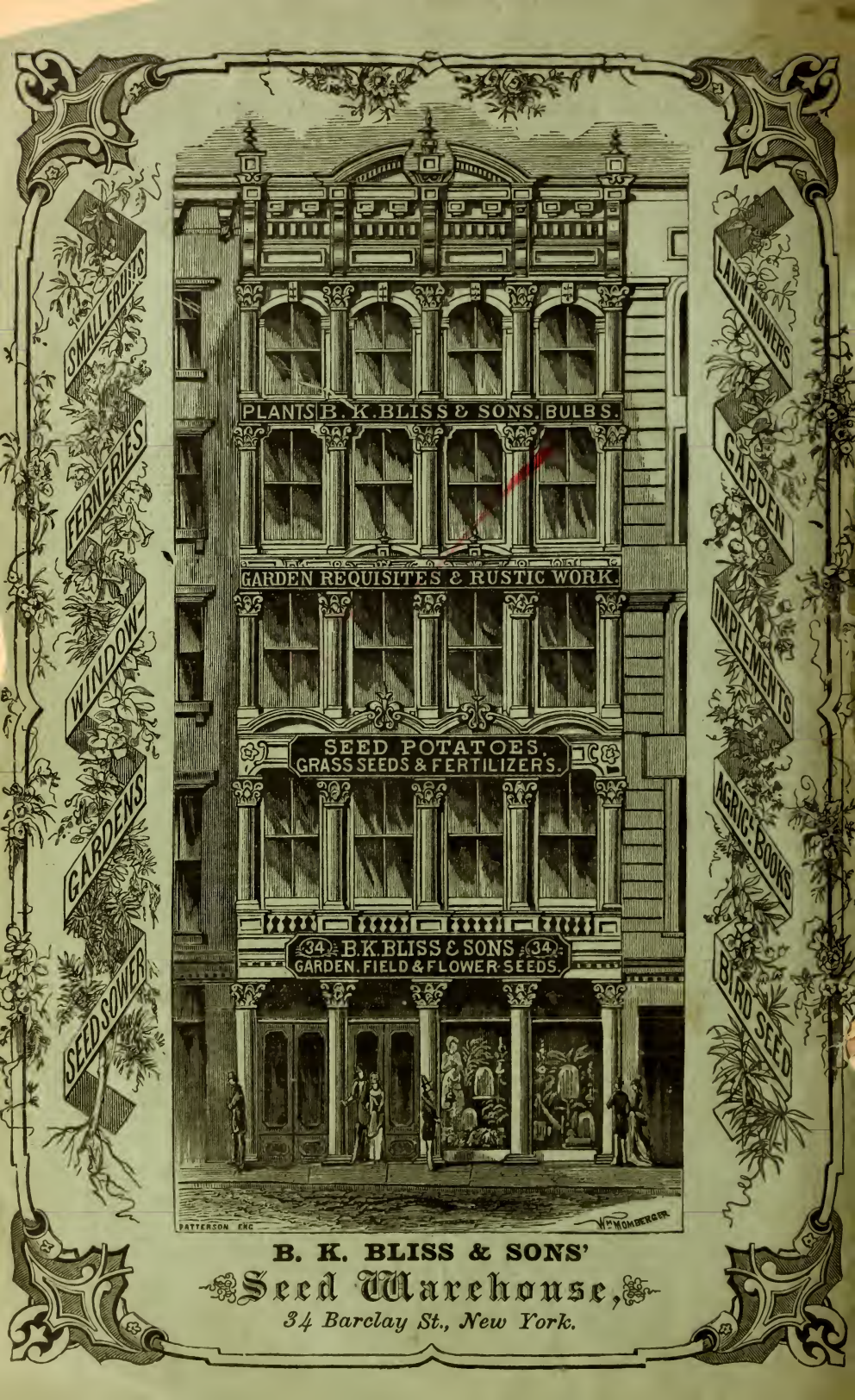
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