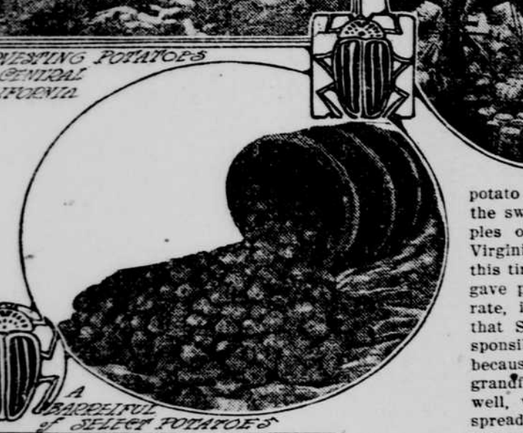
The POTATO AMERICA'S EDIBLE TUBER

BY ALBERT HALE

A WESTERN POTATO FIELD

HARVESTING POTATOES IN CENTRAL CALIFORNIA

WHAT'S SCENE DURING POTATO HARVEST



A HANDFUL OF SELECT POTATOES

ARRANGEMENT FOR CHECK OF SPROUTING EYES

POTATO PARINGS

POTATO SEEDS FROM THE BALLS OF FRUIT

CUTTING OFF SPROUTS

WITH corn and potatoes America has fed the world. The term "corn" is commonly used in the western hemisphere to mean "maize," or Indian corn, and not the rather generic expression under which all grains are included, according to English nomenclature. Indian corn has spread over the whole earth, till now it is a stable crop in Africa, in many parts of Europe, and even in Asia, where the original Indians cultivate it without knowing or perhaps caring whence it came. If it has not displaced it has at least supplemented rice, the great life-supporting grain, which from time immemorial has been grown in the far east; but Indian corn is an antipodal product, having come, as history teaches us, from the neighborhood of the isthmus of Tehuantepec, in North America.

The potato came originally from South America. But here it is necessary to pause a moment to state that what is really meant by the word potato is the plant and tuber vulgarly called the Irish or white potato, although it has no more relation to the Emerald Isle than that the good people there are very fond of it. The misnamed "sweet" potato has no right whatever to the title. That pleasant vegetable belongs to the morning-glory family, botanically being known as Ipomoea batatas, thus again betraying a fictitious relationship to the other family, because the batata is a native term for the real potato as well. Again, it is unjustly suspected that this sweet potato is the vegetable actually brought by Drake and Hawkins into England, where it masqueraded for some years as the genuine South American food of contemporary rumor. It must be understood, however, that the sweet potato is likewise a native of America, but its original home was probably the West Indies and Central America. At any rate, it grows in the tropics and subtropics and finds its climatic limitations at about the temperature and altitude at which the Irish potato begins to thrive. The yam is another appellation of the sweet potato, although that, too, is an error, for the yams—dioscoreae—belong to a group of climbing plants. A number of varieties are found throughout the tropics and subtropics, and they are cultivated in both the East and the West Indies. Other roots and tubers may resemble the potato, and the tomato is related to it, but they must not be confounded with the far better known vegetable, which alone is entitled to the name. The commercial and domestic classification is stronger, however, than the scientific, and therefore no attempt should be made to separate them in the popular mind.

The common, or white, or Irish potato is undoubtedly American all through. Its prehistoric and aboriginal habitat was the western slopes of the southern continent, from the neighborhood of Quito in Ecuador, or as some claim even from that of Bogota in Colombia, to the central region of Chile.

Botanically, the potato is a solanum, one of the most diversified plants of the vegetable kingdom. Something like 1,000 varieties have ben described, but, assuming that several of these are not substantially accurate, there remain at least 800 which are well known. It is remarkable that only about 40 varieties have pinnate leaves and produce tubers on the roots beneath the ground, and that these special varieties are chiefly of American origin. All these tuberous, pinnate-leaved kinds of the solanum are nearly related and very probably have a common origin. This first habitat of the potato has been laid by some students, quite as much for the sake of poetic harmony as for historic exactitude, in Central America near the home of the primitive maize, but in all fairness South America deserves and will hold the honor.

The edible potato, from which all the European and American variations have been developed, was undoubtedly cultivated by even the inhabitants of the west coast of South America who occupied the land before the arrival of the Incas. When the Spanish conquerers arrived there, they found one great source of food supply in this native vegetable. In Peru, however, it was not a coast product, for the climate there semed unfavorable, and what happened to grow on the lower levels were small, insignificant and watery. The best kind of potato grew at an altitude of about 7,000 feet, back of Lima; it was small, round, with a thin skin, and was yellowish inside (papa amarilla). In southern Peru, not far from Mollendo, but among the foggy regions (June to September), up among the rocky hills, the potato has been found wild.

Passing farther along the coast into Chile, where the climate is quite temperate and consequently is suitable, even near the coast, for such vegetables, there is found that other form of the indigenous potato, the Maglia, which so attracted the attention of Darwin when he made his famous voyage in the Beagle. As far south as the Chonos Archipelago (about 45 degrees south) this plant grows wild near the sea. The potatoes from it resemble English potatoes, and have the same smell, but do not stand cooking so well. Little effort seems to have been made to develop the original tubers, although they form a good part of the food of the people, yet in this neighborhood the island of Chiloe alone has about 25,000 acres under cultivation, of the 123,000 acres devoted to potatoes in all Chile. That the Europeans found potatoes in Quito and Bogota need not be denied, but there is no strong reason for supposing that it was more than the same plant already mentioned, transported thither before they came.

Quite another story is uncovered along the coast of South America. There the potato is considered a European vegetable and is cultivated only by those whose experiences are derived from the old world. No tradition connects the few remaining natives with a past in which the potato flourished, and in the minor instances in which the "wild potato" has been found, experiment shows that it is inedible and perhaps even poisonous.

This is the case in the "wild potato" of Paraguay. Such a plant has for years been known to exist in the basin of the River Parana. It grows on the plains, budding in March and April, and ripening during the winter months of May to August. The tubers are about the size of a walnut and sometimes larger, soft and watery, full of irritating solania (the active alkaloid of the potato), and of a poor taste. They are not eaten nor are they cultivated; the so-called edible potato is considered an imported vegetable, foreign to native experience and judgment, while the vegetable that takes the place of potato in all native dietary is the "mandioca," which has been prepared as a food from time immemorial by the pre-Columbian inhabitants.

The food potato of commerce made its way, therefore, from its prehistoric home in the Andes to North America and via Europe to the eastern shores of South America.

Great credit belongs also to Sir Francis Drake, who learned of the potato about 1578, either in Peru itself or in some near-by island. He took specimens back with him, stopping first in Virginia, where he helped to plant them in 1585. In 1586 he arrived in England, carrying potatoes among his treasures, and thus the story arose that potatoes came from North America. Closely allied to this error that other, which confused the South American potato with what is now known as the sweet potato, the "batata," samples of which surely came from Virginia somewhat earlier than this time. It is probable that Drake gave potatoes to Raleigh. At any rate, it is an accepted statement that Sir Walter Raleigh was responsible for their use in Ireland, because he gave several to the grandfather of Sir Robert Southwell, who, to check the famine spreading in that island after the disastrous failure of the grain crop, cultivated them at once there, and popularized their use to his eternal credit.

John Gerard, a celebrated English botanist, grew them in England, following the example of Raleigh, who ordered his own gardener, with a utilitarian purpose, to cultivate them along with other vegetables. The story runs that this man, whose curiosity was intensely aroused by the new plant from America, watched its growth carefully, and when the fruit (sic) was ripe, gleefully plucked it from the stem and tasted it. As he found this part of the plant merely insipid, he spat it out in disgust, and complained to Sir Walter that he had wasted so much time upon the miserable thing: "Is this, then, your delicious fruit from America?" The reply startled the gardener, for he was told to drag up the offender by the roots, for fear that the other plants might be contaminated. On doing so, however, he was astonished to discover among them a mass of exactly the same kind of tubers he had planted in the spring. "Cook them," said Sir Walter Raleigh, "and then give me your opinion." At the first flavor of this strange vegetable he was delighted, and ever afterwards gave particular attention to increasing his supply of the wonderful potato.

By such experiences the potato was spread over Europe. In France it was a rare but prized vegetable in 1616; in Germany it was recognized in 1650, and from that time on, Europe, as well as other parts of the world, gradually accepted it as an addition to the food supply of all peoples. It is unwise to discuss here the mooted point about the so-called indigenous potato of Mexico and Arizona; about the origin of the S. commersonii in Uruguay and Argentina; for the settlement of it cannot disturb the fact that the Solanum tuberosum, the common potato of today, came from the west coast of South America, and that the natives of these regions must be given credit of having recognized its food value long before they were discovered by Europeans.

The widespread botanical order of the solanaceae, to which our potato belongs, embraces plants of little aparent similarity. There are, as members of the great family, among medicinal plants, for example, the hyoscyamus, dulcamara, belladonna, and datura; among food supplies are the thorn apple (a tree, in this case), the artichoke, and the tomato; and adding to man's enjoyment if not to his vital sustenance, the capsicum or the chile of commerce, and the American tobacco. Not many of them have tubers, however, and of the tubers, the potato holds the prize for its usefulness in human economy. The tuber of the plant we are interested in is the common potato.

Now, the tuber is a curious provision of nature which by propagation can be carried on by means of the regular and normal plant activity of the seed above ground, and also by anomalous stems, enlarged by the development, to an unusual degree, of cellular tissue, which are below the ground. Potatoes have seeds and fruit like any other member of the botanic kingdom, but when left to themselves it may happen that more energy is expended in storing up food in the tubers, so that flowers and seeds are imperfect. Theoretically it makes little difference which element—tuber or seed—is used for perpetuation of the potato, but practically so much encouragement has been given to the tuber that the seed is habitually ignored. Incidentally it deserves mention that the popular Burbank potato, the spread of which was one of the earliest demonstrations of the genius of the botanical wizard, Luther Burbank, was propagated from the seed, as he had noticed what splendid fruit certain plants were showing, and reasoned correctly that the product must equal the parent.

Exactly what the tuber is, is another question. By some its production is ascribed to a fungous iritation, although this is not proved. As has been said, not all the solanaceae have tubers, nor are all tubers members of the family. Be the cause what it may, the tuber is not a true root, but a leafless branch, usually below yet sometimes above the ground; the eyes on a tuber are leaf buds which in due time lengthen into shoots and form stems. The contents of a tuber are a reserve supply of food, supporting the young growth until it can put forth roots of its own.

The food supply in the potato, is shown by aanlysis to be about as follows:

	Parts.
Starch, etc.	18.8
Nitrogenous matters	2.1
Sugar	3.2
Fat	0.2
Salines	0.7
Water	75.0
Total	100.0

although of course variations in these proportions, depending upon soil, climate and methods of cultivation, are to be expected. It is evident, therefore, that the potato is not a perfect food, and that it lacks sufficient nitrogenous matter while having a superabundance of starch and sugar. That does not destroy its value nor its usefulness, by any means, nor its popularity, for next to Indian corn and rice, the potato is the most widely used vegetable in the world.

Today no hopeful settler, after trecking into a virgin wilderness, thinks his little garden complete without the pretty patch of potatoes; no domestic or public meal is served without its tuberous embellishment, and after mastering the art of boiling eggs, the next step of the young housewife is to learn how to prepare potatoes.

The grand total of potato production for one year amounts to about 5,500,000,000 bushels, and this gigantic crop comes from every continent in the world. Over one-fourth of the output is grown in Germany; not quite one-eighth from Russia; usually a little less even than that, from Austria-Hungary; about one-ninth from France; about one-sixteenth from Poland, and a slightly less quantity from (contiguous) United States.

In the United States, almost one-third of the year's crop is grown in the North Atlantic states, but the group of North Central states east of the Mississippi river runs a close second; of the other subdivisions, the Central states west of the Mississippi are next in importance, and the far Western states are fourth.

This illustrates one fact about the potato; it is very susceptible to climate and cultivation. Left to nature, it is only a moderately prolific plant, and cannot thrive in a country too hot or too cold, but has its habitat essentially in the temperate zone; on the other hand, it responds readily to good care, so that the more it is nursed the better does it grow.

The few rules to follow in successful potato growing can be learned by any farmer. First the soil must be suitable, but this is not hard to find. It must be light, so as to offer no great resistance to the enlargement of the tubers; well supplied with organic matter, yet no more than moist, and containing abundance of natural fertilizing ingredients. Well drained sandy loam is excellent; clay should be avoided. Crop rotation is advisable, as the potato bears well after certain preceding crops, but may wither if succeeding itself too regularly. Liberal manure is necessary, but of the right kind. The rows should be laid off as close together as practicable without interfering with horse cultivation, and generally speaking the seed pieces should be dropped about 12 inches apart in furrows made in the level field and not on the ridges, yet deep enough—say four inches—to afford ample cover to them. It must be mentioned that in speaking of potatoes the word "seed" means the tuber or portions cut from it in which an "eye" has formed; the botanical seed may be used, but no benefit is derived from that method; care must be taken, however, that the sprouts from the eye are not injured, and it is best, therefore to use eyes from which sprouts have not appeared.

The uses of the potato as a food have long ago been vindicated. Nothing can dislodge it. Not even the latest discovered dashen, a Japanese and Chinese claimant to tuberous popularity, will take its place, even though it may be proved to possess more protein than the South American predecessor. Whole books have been written on the culinary art of cooking the potato. Boiled, baked, stewed, or fried, it has been a garnishment to the more aristocratic dishes of every feast since it was discovered, and has supplied many a full meal to the humble masses who do the world's work. Nothing but a poem could tell its praises, and a sonnet is the least tribute through which our gratitude to Peru should be expressed.

As a source of industrial alcohol, especially that substance which is commercially known as denatured alcohol, potatoes are being regarded as of increasing value.

Next to food, however, the greatest value to mankind of the American potato is a source of starch. In this, too, it vies with corn. Potato starch is every year proving its merit, and whatever can provide starch, has a long popularity ahead of itself. Starch is one of the essentials of civilization. Its uses are protean, the demand for it is unceasing, and for both art and industry the supply must be constant. With such a varied field for its activity, therefore, no one should doubt that few blessings to humanity can surpass that which came to the world through the famous potato.

Ghosts For Two

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By JOHN PHILIP ORTH

There was Miss Kitty Vernon, visiting her married sister at Keith Hall, far out in the country, and there was Mr. Jack St. Clair, stopping at his brother's place, three miles from Keith Hall, for the fall hunting and shooting. Only three miles apart, and Miss Kitty galloping over the highways on her pony, and Jack roaming about on foot, and yet three long weeks had passed and the two had not caught sight of each other.

There is much talk about magnetic attraction, but the weather is sometimes against it, or there is a range of hills to carry the current off at a tangent.

Jack St. Clair was a poor shot and a worse fisherman. It is just such fellows that go sloshing around and spoil the fun for others. When a snipe has been shot at 40 or 50 times without being even grazed he flies away to Canada for a rest, and the fish who has been permitted to eat all the bait off a hook time after time without being caught finally seeks other waters where there is something doing.

When Jack came home from his all day excursions without so much as a bird's tail-feather or the scale of a fish his sister-in-law would say to him:

"Why not give it up?"

"Why should I?"

"Give it up and spend your time looking for a wife. You are twenty-five years old, fairly wealthy, and it's time you settled down."

"But I am looking. That's one good thing about the country—you can look for snipe, fish and a wife at the same time. No lost hours. If you don't get snipe you may get fish. If you don't get fish you may meet a damsel in distress and rescue her and marry her."

Miss Kitty Vernon was not much of a horsewoman. When riding in the city park her horse was used to the paths and sights and cantered along half asleep and as steady as a clock. Her sister's country pony would shy at stumps, rabbits and geese, and when meeting with a farmer carrying

Would stand up on his hind legs

eggs to the village he would stand up on his hind legs and paw the air. Such conduct had its embarrassing side. And then, when she had been to the village three times and galloped over the highways so often the scenery lost its appeal, she would return from a ride looking anything but enthusiastic and her sister would say:

"Why not give it up?"

"And do what?"

"Sit on the porch."

"And why that?"

"A young man may come along in an auto any hour and bust a tire and have to ask for tools to repair it. Just such an event has brought about scores of marriages."

"Humph! It will be something more romantic than a busted tire that will interest me! In riding around the country I may come across a young man caught in a barbed-wire fence—one about to hang himself for unrequitted love—one who has been driven to the top of a haystack by a savage bull and needs my help to get down. I shall continue to go about until something happens."

Half-way between the village and Keith Hall, making it a mile and a half each way, was the old abandoned Parsons house. There were six acres of land around it grown up to bush and weed, and the house itself had gone to wreck. One thought of spooks when viewing it, even by daylight, and it was strange that it was not down on the list of haunted houses. Miss Kitty Vernon had passed it many a time, and Mr. Jack Sinclair had spent half an hour investigating the interior.

Fate sometimes gets a lazy streak on, and then things move as slow as molasses creeping across the kitchen floor. Young man and maiden had somehow dodged each other for four whole weeks when Fate woke up. Then came a morning when the chickens and ducks said it was going to rain. They beat the weather bureau at that sort of business. Mr. Sinclair decided not to go gunning and fishing but to try his hand at a toy wheelbarrow for his little niece, and Miss Vernon decided to sit on the porch with a rain-coat on and watch for the automobilist.

Noon and no rain yet! The wheelbarrow wouldn't wheel. The autoist—the only one that came along—was an old curmudgeon who was in a hurry to get somewhere, and he never looked at the girl on the porch and there was no explosion.

Two o'clock and no rain! Mr. Jack yawned and swore, and Miss Kitty yawned and didn't swear.

Three o'clock—four o'clock! Same overcast sky—same clucking hens and quacking ducks, but the first drop of rain had yet to fall.

"Hang it, but this is the very best sort of snipe weather!" exclaimed Mr. Jack as he shouldered his gun and set out.

"I've got a letter to mail, and I'll canter to the village and back," said Miss Kitty as she ordered the man to saddle the pony.

Fate was planning. A snipe or some other bird—one is not over-particular about the species—led Mr. Jack a two-mile chase. It did so by offering him about fifty fair shots, and of course every one of them was a miss. He had just aimed for his fifty-first miss when a drop of rain hit him on the nose and the long-deferred downfall began to get busy. The old Parsons house was the nearest shelter, and he made for it.

The pony was galloped into the village and the letter mailed, and she headed for home. Half a mile from the Parsons house, and just as it began to rain, the pony caught sight of a log beside the road he had passed a hundred times and shied at it. Out of the saddle went Miss Kitty, and away for home galloped the pony. No bones broken and no skulls fractured, but no one can take a flop of the sort without a few bumps and being mussed up more or less.

The rain was making porridge of the dust when the unseated and very angry maid started for the old house.

Mr. Sinclair had reached the house fifteen minutes ahead of the girl, and had taken a seat on the rotting floor of what had been the parlor. Five minutes before her arrival he had heard a queer sound upstairs, but several of the stair steps were gone and he could not have investigated if he had wished. He heard rather than saw Miss Kitty timorously enter the hall, and he could not make out what was going on.

A growling from upstairs—a patter-ing across the floor—a bumpety-bump! Ghosts for two! The real thing and no discount!

Miss Kitty screamed out and fell down the front steps. Mr. Sinclair exclaimed, "The devil!" and also made for out of doors! He saw something flying towards the highway and he up with his gun and fired. He missed, of course, but there was a scream and the something fell down, and the huddle was under his feet before he made out that it was a girl in rain-wet and clinging garments.

"Oh, Mr. Ghost!" from the bundle.

"Who is it! What is it!"

"Sir, how dare you!"

"You hid there on purpose!"

"And you came on purpose!"

There was a moment's silence, and then both laughed heartily and even in the pouring rain explanations were entered into.

"But there was surely a ghost upstairs," protested the girl.

"And I will come here tomorrow and rout it out."

Hand in hand, through rain and mud and darkness, Mr. Sinclair finally delivered his charge into her sister's care and then went his further way.

"Now, then, Miss Kitty, you have had an adventure!" accused her sister.

"I have."

"And I demand to—"

"Oh, you needn't. I have been bucked off by the pony, rolled in the mud, rained on, visited a haunted house, heard a ghost and met the man I am to marry. That's all!"

And next day, when Mr. Sinclair visited the Parsons house he found upstairs an old cat with her tail caught in a crack in the floor, and he blessed her and set her at liberty.

Risked Ship to Secure Aid

Mutineers Outwitted and Brought to Punishment Through Act of Quick-Witted Mate.

In his article on the Life-savers of the Goodwin sands, Walter Wood, the English sea writer, tells of a case where a mutiny was brought to a sudden end by the mate of the vessel, who deliberately imperiled his ship in order to bring the life-savers to his aid.

"Once a ship was deliberately imperiled on the Goodwins for subtle reasons. She was bound from Hamburg, and was off the English coast when her crew mutinied, and murdered and threw overboard the captain and his son. The mate was spared because he was essential to the navigation of the vessel. He was ordered to make for the North sea; but the heavy weather forced him into the Downs. Purposely he ran perilously near the sands, knowing that instantly boatmen would put off from shore. The mutineers had no understanding of his motive, nor did they realize that they were doomed. From all points of the shore the ever-watchful hovelers launched their craft, striving to be first to reach the ship. Most famous of the vessels was a lugger which used to be stationed at the south end of Deal. Seventeen men sprang into her and sailed toward the wanderer, and one of them was the first to get on board and take charge. To him the mate, in hurried, stealthy whispers, told the story of the murder. The sordid tidings quickly spread among the hovelers, and the mutineers, realizing that they were trapped, implored the Deal men to allow them to escape, offering everything they had for life and liberty. They were still clamoring when a boat's crew from a man-of-war boarded the vessel and took the murderers into custody. The ship of war conveyed them to Germany, where some were put to death and some were sent to prison. The salvers, who had scorned the efforts to suborn them, took the vessel into Ramsgate harbor, and were paid $1,100 as salvage."

Time Changes.

"Men are so contrary. In the days of chivalry, a knight was always sighing and begging for his lady's glove."

"What of it?"

"Just watch a man's face these days when he gets the mitten!"

Bismark In a New Light

Reminiscence of French Surgeon Proves That Great German Statesman Had Tender Heart.

The French surgeon Czernicke in his reminiscences of the Franco-Prussian war tells a story that seems to place Bismarck in a new and more gentle light. He says: "Seated on some straw and propped up against a pillar of the church of Rezonville was one of our poor soldiers, a quiet young man named Rossignol. A shell, striking him like the lash of a whip, had carried away both his eyes and the bridge of his nose, leaving the front of the skull bare. This fearful wound was covered with a dressing. He lay there calm, silent, and motionless, in quiet resignation. Bismarck stopped in front of him and asked me what was his case. He seemed really touched. 'There is war for you, messieurs the senators and deputies!' Then, turning to one of his suite, he said: 'Please bring me some wine and a glass.' He filled the glass to the brim, took a sip, and then, gently tapping the shoulder of the poor martyr, he said: 'My friend, will you not drink something?' Rousing himself from the deathlike stupor that was creeping over him, the man assented. We then saw Bismarck stoop and very softly and slowly give the wounded soldier the wine. Rising again, he drank what was left in the glass, and said: 'What is your name, my boy, and where do you come from?' 'Rossignol, from Brittany.' The count then took his hand, and said: 'I am Bismarck, my comrade, and I am very proud to have drunk out of the same glass as a brave man like you,' and stretching his hand over the horribly mutilated head, he seemed to give him a mute benediction."

Modern Education.

Knicker—Is Jones well educated?

Rocker—He can read a speedometer and write a check.