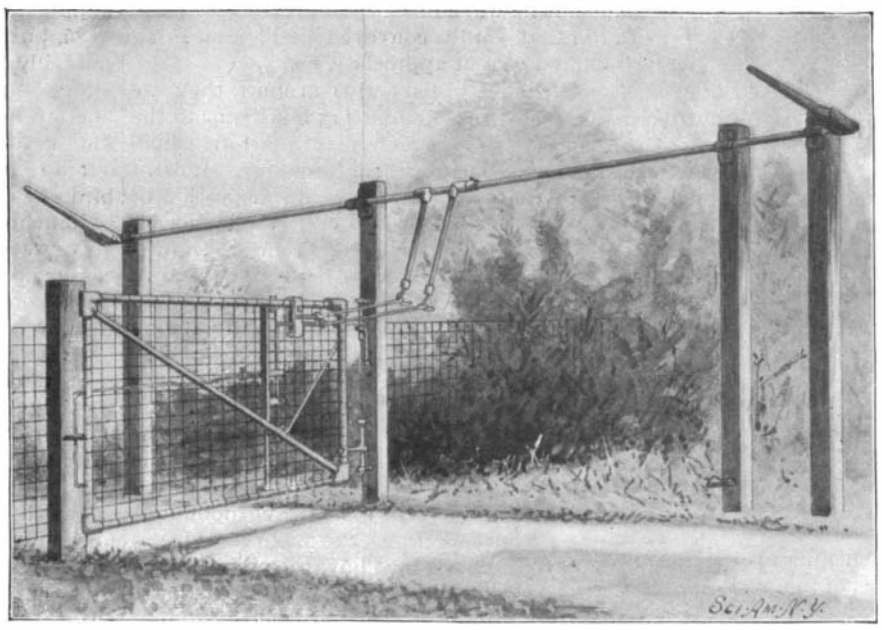
AN IMPROVED GATE.

The accompanying illustration represents a gate which may be operated from a carriage, by turning operating handles which control the locking mechanism of the gate. The frame of the gate is preferably made of iron pipes and is filled by a network of wire. Extending a slight distance from the hinge post are two eyes adapted to receive pivot-pins which support the gate. To sustain the gate at any desired elevation, a rod is provided with an eye at its upper end surrounding the upper pivot-pin and beneath the upper eye attached to the gate. The lower end of the rod is bent to one side and is adapted to enter one of a series of holes in the hinge post. The gate is provided with a spring-closed latch sliding longitudinally upon the gate. An eye attached to the latch incloses the vertical member of a bent lever, pivoted by its lower end below the latch. A yoke fixed to the upper pipe embraces and forms a guide for the upper horizontal member of the lever. An operating shaft extends parallel to the roadway and is supported by posts. A crank-arm on the shaft near the gate post is connected by a link with the upper end of the latch-operating lever on the gate.

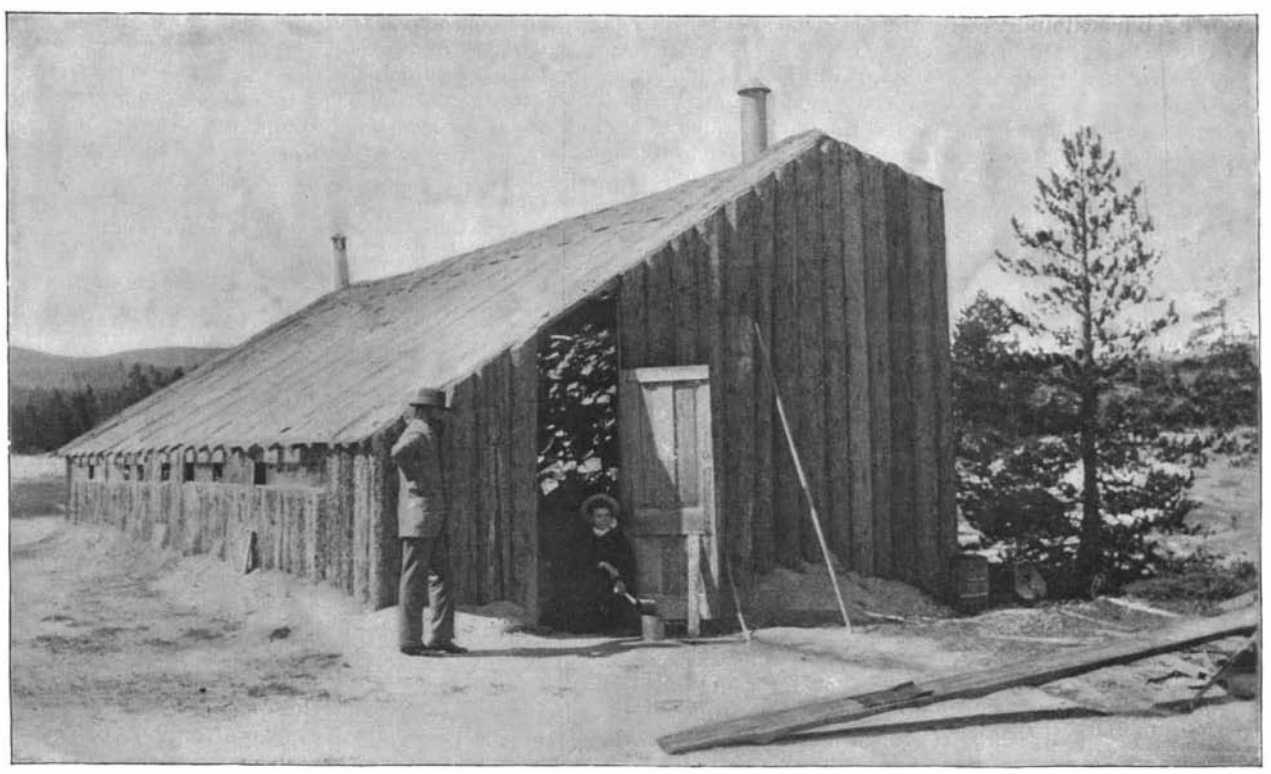
When the gate is closed, the operating handles attached to the end of the shaft are in the position shown in the illustration. If one of these handles be pulled down, then the central crank-arm acts on the latch-operating mechanism described and unlocks and opens the gate. Having driven on until the next shaft-operating lever is reached, the person seated in the carriage pushes this handle up to close and lock the gate. The gate has been patented by Theodore Sawyer, of Towanda, Ill.



SAWYER'S SELF-OPENING GATE.

GARDENING OVER A GEYSER.

Mr. W. P. Howe, of Upper Geyser Basin, Yellowstone Park, Cal., has a unique hothouse. It is constructed of rough slabs of wood, as shown in our engraving. The greenhouse measures 25 by 50 feet and is covered with a glass roof. The building faces the east; the front is four feet high and the rear is eighteen feet high. The heat is furnished by hot water from a five-inch orifice in the ground at the south end of the building; it then flows north to the center of the building. The water comes from the ground at a temperature of 195° F. at its exit from the geyser. Its temperature at this altitude is within 8° of boiling point, for the hothouse is 7,394 feet above the sea level. It is astonishing that such splendid garden products can be grown at such a height, for ice forms nearly every month in the year, and the mercury in winter is exceedingly low. Five-foot beds surround the building on the inside, except at the north end, which has a nine-foot bed in the center. All the beds are raised from eighteen inches to two feet for circulation and to afford a place for the growing of mushrooms. An aisle runs around the room between the beds. The result of this high temperature is wonderful. The beds are filled about three feet deep with rich stable refuse mixed with one-third silica formation from near by. The rich soil, the sun's light, and the condensation of steam from the hot water, makes an ideal combination for the growth of vegetation. Lettuce, it is said, comes up from the dry seed in two days and good sized heads of lettuce were gathered in from fifteen to eighteen days after planting. In twenty-eight days a head of lettuce measured twenty-two inches across, and the condensation of the steam would even break down the larger leaves with the weight of water upon them. Cucumber vines grow from twenty-five to thirty-five feet in length in less than sixty days, without being watered, except for the moisture in the air. On some of the cucumber vines, five full sized cucumbers were gathered from a single joint. Three pails of water have been sufficient for watering the plants in the greenhouse on even the hottest day. This greenhouse, or hothouse, as it should more properly be called, is an interesting utilization of the forces of nature which would otherwise run to waste.



A GREENHOUSE HEATED BY THE NATURAL HEAT OF A GEYSER IN YELLOWSTONE PARK.

The Effects of Change of Climate upon Man and Animals.

The problems of the relations of climate to the health of man are varied and complicated. That environment does exercise a very strong influence on race is universally allowed, although we are still greatly in the dark as to its effects on the human organization. Much light has been brought to bear on the subject of climatology within recent years. It has been intelligently studied, and, in consequence, a more accurate knowledge is spreading of the influence of climate in regard to health and disease. Especially is this the case in relation to disease. Change of air is often as curious as it is beneficial in its effects. Extreme purity is naturally an important factor, but after all it is but one factor. In many instances it is by no means essential that a patient should go to the seaside or even to the country in search of health. A change in itself is often of the greatest benefit. It is related on good authority that a man suffering from asthma and bronchitis, who lived in a healthy part of the country, found great relief by residing for a time in the slums of Whitechapel. Change of climate has an even more powerful effect on animals than on man; in fact, man is the only animal that can adapt himself to any circumstance of life or meet any environment. Dr. Richard Newton, in a paper read before the American Climatological Society, gives the results of his observations on the effects of climate on men and animals at Fort Stanton, N. Mex., sixty-one hundred and fifty feet above sea level. His opportunities for study were limited, but, as he remarks: "The great need in the study of climatology at the present moment appears to be more investigation of individual cases, more ascertained and established facts in relation to the action of climatic changes upon people or animals." He describes the effect of the change of climate upon the fever-stricken Texan cattle, and points out that if they survive the winter, and when the disease germs are killed by the frost, they soon wonderfully improve and increase in weight. Horses suffer acutely when brought from the plains to high altitudes, and it is stated that it takes twelve months or even longer for them to become acclimatized. Dogs, as is well known, endure climatic changes better than any animal except man.

Dr. Newton's deductions as to the effect of change of climate on man agree in the main with those of other observers. He disagrees, however, with the view held by Dr. Solly, that high altitudes are inimical to rheumatism; his experience teaches the reverse. No one will dispute the point that change of climate is of benefit in phthisis, yet climate treatment of this disease is beset with many difficulties and needs to be applied with much discrimination. The rule may be laid down as one to be followed in most cases, that in the early stages of phthisis a sea voyage or journey to a distant clime will do good, but that when the progress of the disease is far advanced, if a change be taken at all, it should be limited. The fact, too, should not be forgotten that one of the most important desiderata for consumptive invalids is plenty of sunshine. The causes for the health-giving properties of a change of air are obscure; at any rate, up to the present they have not been satisfactorily explained. A biological solution of the problem is sometimes suggested, that as early man was of necessity a wanderer, these nomadic habits have left their impression upon every cell and fiber of his being, and thus it is largely a question of heredity.—Med. Record.

A Rubber Substitute from Corn.

We have received a sample of a rubber substitute made from corn. It is made from the oil derived from corn, and by vulcanizing it in connection with an equal quantity of crude India rubber, a substitute is produced which, for certain purposes, is equal to the best gum rubber at a greatly lessened cost. The new corn rubber is claimed to possess all the essential qualities of Para rubber, including resiliency, and the discovery has been hailed with delight in the corn-growing States of the West. The manufacturers claim that the fact that corn oil does not oxidize readily makes this product of great value, since it is not affected by oxidation, so that products manufactured from it will always remain pliable and not crack as those made from other substitutes. This interesting substitute for rubber is very dark brown or black and it easily rubs off in light brown rolls. It is at present sold as low as six cents a pound. It is manufactured by the Glucose Sugar Refining Company, of Chicago, Ill.

Cinchona from West Africa.

The cultivation of cinchona in Portuguese West Africa was commenced more than thirty years ago with the planting of Cinchona paludiana. Between 1869 and 1871 a number of plants of C. succirubra and C. officinalis were given out by the botanic gardens in Coimbra, and from time to time the gardens have assisted in extending the cultivation of various species, so that by the end of 1887 1,600,000 cinchona trees, mostly C. succirubra, were flourishing. The best bark is obtained from trees growing at an altitude of 3,300 feet. Lisbon takes nearly all the bark produced for the manufacture of quinine.—Chemist and Druggist.

[It may here be remarked that cinchonas of different varieties, and even many profitable hybrids, are cultivated in Jamaica, Java, Sumatra, India and the French East Indies. Systematic cultivation is also being undertaken in Ecuador, Peru and Brazil.—ED.]