

Electric Cooking at Paris Exposition.

One of the most extensive applications of electric cooking is that which has been made at the restaurant in the basement of the Spanish pavilion. The installation which has been made there demonstrates the great advantages of this method and shows that it is adapted to all the requirements of an establishment of this kind. As the Spanish pavilion contains a number of collections of great value, the government authorized the establishment of a restaurant in the basement only on condition that no coal, gas, or petroleum should be used, on account of danger from fire. The electric system was thus almost compulsory; it was, however, quite an undertaking to establish a plant of this kind, as over four hundred meals per day were served, with the complicated menu necessary for a high-class restaurant. The installation was made by Parvillé & Company, of Paris, and is now in successful operation. The outfit consists of a large range, two large broilers, two ovens, a hot water reservoir, a vegetable boiler, and a small heater. The principle of the apparatus consists in the use of a metallo-ceramic resistance, based on the fact that the conductivity of metallic powders is diminished by mixing them with powder of refractory material. On account of the great pressure and high temperature used in making resistance-pieces of this kind, they are very solid and easily handled, and may be raised to incandescence in free air without deterioration. The powder is pressed into different forms, such as pencils, bars, or plates, and any desired resistance may be obtained. The consumption of energy in proportion to the heat given off is within reasonable limits. The pieces are easily replaced without taking apart the apparatus. In the large range, which measures 3 x 6 feet, there are eight fireplaces, each consisting of a group of these resistance-bars, which are raised to a bright red by the current and will support a temperature of 1,200° C. without deteriorating. Four of the fireplaces consume 25 amperes at 100 to 110 volts, and the other four 20 amperes. The heat not utilized by direct radiation is used to heat a series of intermediate plates by which the cooking is finished. The temperature is adjusted to any desired degree by means of a regulator, and any one of the resistance-bars may be cut out when desired. The two broilers give a high temperature, and heat from above, avoiding the falling of fat and the consequent odor; these take a current of 25 to 35 amperes. Of the two ovens, one is arranged to be heated by the lower part and consumes 20 amperes; the second has several heaters placed in the upper part and connected to different circuits, so as to be used independently or together. It roasts every day at least 75 pounds of meat at one operation, taking about 30 amperes. The vegetable-boiler and hot water reservoir have each a capacity of about 60 gallons. For the coffee, tea, etc., a small heater of two fireplaces is used, besides a water bath. The different heaters are constructed of sheet iron, with solid iron corners and braces; they are made with double partition, the interior space being filled with asbestos. This installation has worked very regularly since the first of May, and demonstrates the practicability of electric cooking when applied on a large scale.

Weight of Elephants' Tusks.

Sir Samuel Baker gives the weights of the largest African elephant tusks he ever saw as 172 and 188 pounds respectively. Tiffany & Company, of New York, have now a pair weighing respectively 224 and 239 pounds. Their corresponding sizes are: Length, 10 feet $\frac{3}{4}$ inch and 10 feet $3\frac{1}{2}$ inches; circumference, 23 inches and $24\frac{1}{2}$ inches. The tusks of the extinct *Elephas ganessa* were sometimes 12 feet 4 inches long and 2 feet 3 inches around. A mammoth tusk from Alaska is 12 feet 10 inches long and $22\frac{1}{2}$ inches around, but the average tusks of this animal are 7 feet to 9 feet long and only 60 pounds to 80 pounds in weight. The tusks of the mastodon are thicker than those of the mammoth, a large one being 9 feet 4 inches long and 23 inches around.

H. DE VRIES records the occurrence, in a culture of *Oenothera lamarckiana*, of a single individual differing in several distinct points of structure from the parent form, and presenting all the characters of a distinct species. These specific characters were repeated for three generations without exhibiting any tendency to return to the parent form. M. de Vries names the new species *Oenothera gigas*.—Comptes Rendus.

PENETRATIVE QUALITY OF LIGHT AS TESTED BY PHOTOGRAPHY.

BY J. W. KIME, M.D.

Ordinary sunshine falling upon the surface of the body penetrates the tissues to a considerable depth.



NEGATIVE MADE BY RAYS OF LIGHT PASSED THROUGH THE HUMAN BODY.

The condensed actinic rays of the sun pass entirely through the human body.

For the purpose of determining this question a series of experiments have been made by the writer, assisted by Photographer G. I. Hostetler, of Fort Dodge, Iowa, in which we were able to demonstrate that the actinic rays of the sun, when sufficiently concentrated, may be made to pass through the thorax of an adult, from front to back, with sufficient intensity to reproduce a picture upon an ordinary photographic dry plate. The method of procedure was as follows:

The person on whom the experiments were to be



PRINTS FROM NEGATIVE AND POSITIVE TAKEN BY RAYS PASSED THROUGH THE HAND.

made was taken into the photographer's dark room and the plates were applied with great care, that all rays of light save those that traversed the thorax might be excluded.

The direct rays of the sun falling upon the reflector through the skylight are focused upon the chest of the person upon whose back has been placed the sensitized plate on which the picture is to be taken. A

transparency on glass of a valley in the Klondike was used as the original from which the picture was to be made. This was fastened to the sensitized plate and the two were placed on the back between the scapulae of a man weighing 150 pounds, the transparency being placed next to the body with the new plate immediately behind it. Over these were placed black paper, black cotton wadding, several large black cloths, and over this his coat was drawn and all were securely fastened by means of long black bandages. He was then taken to the light room, and the reflector was turned upon the chest for fifteen minutes. After exposure he was again taken to the dark room and the plates were removed, and the illustration shown was developed on the photographic plate.

The upper engraving represents the scene in the Klondike valley.

In producing this picture all sources of error were carefully excluded, and the operation was repeated many times on various persons, and always with like results.

To further test the reliability of the procedure and to insure that the picture was not produced by contact of the transparency with the plate, aided by the body heat or by some undetermined influence other than the light transmitted through the body, plates were arranged in the same manner and for like periods of time, without attempting to pass the light through the body, and no picture developed on the plate.

The middle engraving represents a positive and negative picture of the Mason City and Fort Dodge depot, and, in the back-ground, the Fort Dodge High School building, taken through the hand of the writer, which is more than one inch in thickness.

The same care was here exercised to prevent the entrance of light as above described. Time of exposure, five minutes.

These photographs establish the fact that the actinic rays of the sun, when sufficiently concentrated, may be made to pass entirely through the body of a full grown man.

The rays of light pass through the integument with considerable difficulty, more readily through muscular tissue, and much more readily through bone. In producing a picture through the cheek the light passes through but a single thickness of the skin and the picture is reproduced almost instantly.

The reflector used in making these experiments is a compound circular mirror, 30 inches in diameter, and is overlaid with blue glass.

It is so constructed that all the light which falls upon it is focused upon a spot 6 inches in diameter at a distance of 8 feet in front of it. Thus a very powerful blue light is brought to bear upon the parts.

The heat rays of the solar spectrum are largely contained in the red band, while the actinic, or chemic, rays are much more abundant in the violet and ultra-violet bands; thus by utilizing the blue light we get a much greater percentage of actinic light in proportion to the heat rays than if ordinary white light be used.

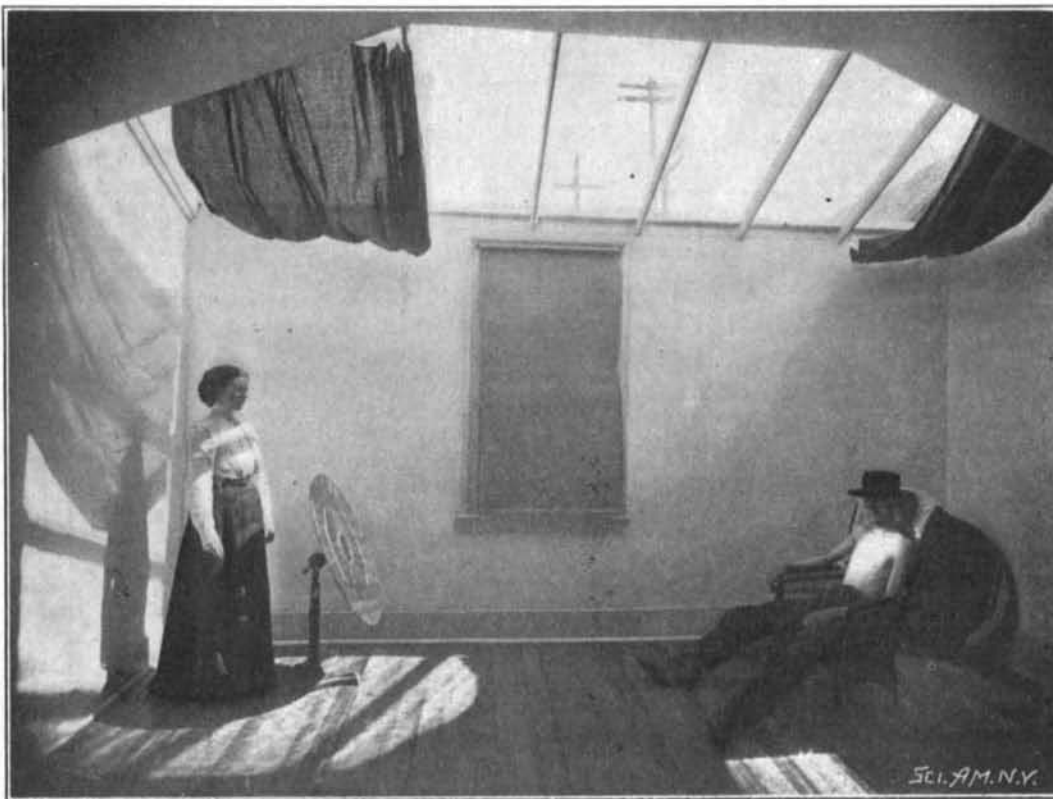
Heretofore, light has been applied to the treatment of diseases of the skin only, no one supposing that it would penetrate to any distance into the body.

Moldavite.

A curious mineral called moldavite, or bouteillenstein, attracted considerable attention among the geologists in Austria and Bohemia. The mineral is in glassy ovals from an inch to an inch and a half long, and is characterized by various markings, which look somewhat like finger impressions, while others form a network of furrows, which seem in part a rough radial arrangement.

They have been regarded by some authors as relics of prehistoric glass manufacture, but this view does not appear to have been sustained. Dr. Suess, the Austrian geologist, finds resemblances between them and meteorites, and the general disposition of students seems to be to regard them as of extra-terrestrial origin. Resemblances have been pointed out between them and the obsidian volcanic bombs found in Australia. In Bohemia the moldavites occur in sandy deposits, which are assigned to the late tertiary or early diluvial period.

A CORRESPONDENT from Boston states that the difficulty of forcing a button or shirt stud through a starched buttonhole may be entirely overcome by rubbing the back of the buttonhole with common paraffine wax.



STUDIO, SHOWING METHOD OF MAKING NEGATIVES.