

born in Detroit in 1866, and entered the office of Wells W. Leggett, a son of the former Commissioner of Patents. He soon became a well-known patent lawyer.

We understand that Mr. Chamberlain was appointed through the recommendation to the President of the Commissioner of Patents.

SOME CHINESE VEGETABLES.

A thorough investigation of the food and vegetables offered for sale in Chinatown, San Francisco, is being made by Prof. Walter Blasdale of the chemistry department of the University of California, and undoubtedly many of the vegetables can also be obtained in the Chinese quarters at New York. They form a remarkable collection, entirely different from that of Caucasians. In fact, the Chinese do not care at all for our vegetables with the exception, perhaps, of celery. Many of their common vegetables would form an agreeable addition to our own tables as they possess qualities of flavor and nutrition which, in many cases, are equal to any of the vegetables so common with us. "Po kua" which is used for cooking, is grown both for its fibrous pulp and as a food. It is a long gourd-like vegetable measuring when mature about 24 inches and is yellowish green in color and contains quantities of sugar and starch and is highly nutritious, but is inferior in flavor to the delicate qualities which make the squash a desirable vegetable. The young green and hairy fruit of the "zit kwa" is a kind of melon growing on a vine and is boiled and seasoned like a squash. The interior is made up of a white, solid flesh, set with rows of white seeds. When mature, says The San Francisco Chronicle from which we derive our information, these vegetables weigh thirty pounds, and are covered with an exudate which hardens to a white wax. The hairs disappear, and the surface is perfectly smooth. This product is used by the Chinese for making a confection, and in this form has a taste and flavor as agreeable as many of the glazed fruits. The "chu ko" is something like an ordinary potato in starchy content and nutritive value, but in appearance resembles the beet. It is the most common and valuable of cultivated root crops among the Chinese, as it holds among them about the same place as does the potato with us. Analysis shows it to be a dietary article far superior to the potato. It has a flavor characteristically Chinese and would probably not be esteemed by us. The root yields excellent starch, and is largely employed by the Chinese in making that commodity. It is grown on swampy land. The "taro" somewhat resembles the last named vegetable. It is also grown in the Hawaiian Islands. It resembles an ordinary red beet whose consistency is that of a sweet potato. It has found favor with many American families, and their purchase of the bulb comprises no inconsiderable part of its sale. It can also be used as an ornamental aquatic plant, the roots being easily started. An extraordinary thing, which has been noticed, is that nearly all of the vegetables of Chinese origin have a considerable proportion of manganese. Prof. Blasdale has found that the green color characteristic of manganese was always present in a greater or less degree upon igniting the ash of the Chinese vegetables. The water chestnut or "ma hai" shows the largest quantity. This is a well-known food in Chinese quarters. It has a sweet chestnut flavor and is juicy and watery in consistency. It has a thick, tough brown outer skin. Within it is white, and when grated yields quantities of starch. It is eaten either raw or boiled. It does not resemble the chestnut in any sense, being a little bulb, and growing at the bottom of a collection of long, marsh grass stems. A considerable proportion of Chinese vegetables are produced from swamps.

The lily bulb called by the Chinese "pak hop" finds a large sale, the price ranging from 10 to 20 cents. They are sold green and dry and are regarded as a delicacy. The seeds of the lotus which grow largely in China are roasted and ground. They are then made into bread and are used largely in soup. They are eaten raw, boiled or roasted and are sold in great quantities in Chinatown, two varieties of them being obtainable. The Chinese also eat varieties of sweet potatoes which are almost like those grown in this country. The "fan ko" or yam bean grow upon a fibrous vine which runs along beneath the surface of the ground. They are covered with a thick yellow stringy bark which peels off and leaves a white fleshy interior, firm and sweet to the taste. Above the ground the vine bears rounded leaves and white flowers, bulbs or beans containing large quantities of starch and cane sugar, and have a sweet insipid flavor, but are nutritious. The most poisonous vegetable which the Chinese eat is "ginseng" which contains hydrocyanic acid. It is rich in starch and nearly all the proteins is true albuminoid, and it contains large quantities of both cane and reducing sugar. The roots are about 20 inches long, 4 inches thick, and weight about 1½ pounds. They taper at both ends and are curved with gray bark. The flesh is white and sweet and is traversed by bundles. It is very starchy and is used largely by the Chinese as a source of starch which they make into a kind of tapioca.

Beans are the great standby of the Chinese and the "soy bean" is the most important. There are a vast variety of other beans and they are boiled, baked, made into soup, and are even made into a bean cheese. In preparing this cheese the beans are soaked in water for thirty-six hours. They are then reduced to a paste and the mass cooked. This is strained through a coarse cloth, thereby making a white fluid much resembling milk and having some of its characteristics. A crude salt is added which coagulates and precipitates the protein material in this fluid, and the mass resulting is kneaded into small square cakes so common on the Chinese grocers. Sauce is also made of the beans, and a kind of macaroni, looking very much like old-time yellow taffy. Most of the beans are sprouted or germinated and are eaten as green vegetables and in nearly all Chinese groceries may be seen bucketsful of sprouted beans, the young plants curling around the kernel. They have been soaked in water until the hulls were softened and the growth started. Watermelon seeds are also commonly eaten, and for the variety chiefly used they are boiled for thirty-six hours before they are fit to eat. Purslane is extensively used as a pot herb and ginger, both the roots and stalks are eaten in great quantities as are also several varieties of bamboo shoots. Many of the products are imported from China, but most of them are now grown along the banks of the Sacramento and are brought every morning to the groceries in the Chinese quarters of San Francisco.

THE PATENT OFFICE EXHIBIT AT THE PARIS EXPOSITION.

The Patent Office holds such a unique place in the life and activities of America, that it is only fitting that in the closing exposition of the century we should be represented by an adequate exhibit of what the patent office really means, and the important part that it has played in aiding us to surmount the ladder of industrial supremacy. The patent office exhibit will be in the charge of Principal Examiner Edward Bruce Moore, Esq., who sailed on March 29. The exhibition, which will not be large, will be of unusual interest, embracing some 208 models, which will reflect the inventive genius of America. Heretofore it has been the custom at expositions to show the time-honored models of the early inventors; this year, however, a new plan has been adopted which bids fair to be an immense success. This is to confine the exhibit of this year to models representing the basic principles of electricity, as applied to the arts, and to commerce. A special act of Congress was necessary to allow the models to be removed from the country. Delay in legislation resulted in the necessary curtailment of some of the exhibits. The early models of Edison, Brush, Thompson-Houston, Maxim, etc., will be most interesting. The first electric motor of Joseph Henry will also be a most important exhibit, dating as it does from 1834. The electrical propelling machinery of Davenport (1837) is also noteworthy. The first printing telegraph invented by Edison in 1873 will be displayed. The early telephone and phonograph models will also probably be much sought after. The selection of Mr. Moore is an admirable one, and is a compliment to and recognition of his ability.

M. TRILLOT ON COLOR PHOTOGRAPHY.

M. Trillot has recently presented to the French Académie des Sciences an account of some experiments which he has made in the direction of color photography. Starting from the well-known fact that in a photographic plate the image is formed of a precipitate of silver in the amorphous state, whose granules are dispersed throughout the thickness of the supporting film, the experimenter wished to find out whether this amorphous silver could be transformed into a series of superposed films or laminae, and in this case color effects would probably be produced by interference. To solve the problem it was necessary to find a process for dissolving the precipitated silver contained in the film, and then to find a reagent which would precipitate it again in the laminated form. It was found impossible to treat the image in a liquid bath, as the solvent in this case attacks the image and carries away a part of the silver. The desired result is obtained by exposing the image to certain vapors which act upon the silver without altering the gelatine. Nitric acid vapor was found to be the best suited for the purpose, and the plate, after going through a process of cleaning, polishing and hardening, is placed in a vessel containing commercial nitric acid. After a few seconds' exposure to the vapor, the image is seen to diminish, and it finally disappears entirely, the plate becoming transparent and the precipitated silver being dissolved to a seemingly colloidal state in the interior of the film. In order to make the image reappear in the laminated state, it is exposed to hydrogen sulphide containing water vapor, upon which the image is seen to reappear, presenting a metallic appearance. By continuing the treatment the outline of the object is distinguished, and finally a strong coloration, having a metallic luster, appears on various parts of the image. If the treatment is prolonged, these colors fade out and be-

come diffused. The process being stopped at the proper moment, the plate is dried, and upon examination of the glass or gelatine side by reflected light, a polychrome image of strong color is perceived. The colors on the two faces of the plate are often complimentary, seeming to show a dissymmetrical arrangement the reflecting structure. These colors are quite stable, but change momentarily when exposed to moisture.

Generally speaking, there is no definite relation between the natural colors of the object and those produced upon the plate by this process, but on the other hand, it is possible to cause a localization of certain colors desired, especially where the different parts of the image present considerable variations in thickness, and these colors may be made to approach more or less to the natural colors of the object.

To show what may be done by the process, M. Trillot presented several positive plates of the same subject, in which the colors green, red, and white are localized upon the corresponding parts of the image, which in this case represent foliage, red tiled roof and white walls. It will be seen that it is of importance to use orthochromatic plates in applying this process. M. Trillot is making further experiments, and expects to be still more successful in producing a polychrome image.

OUR EXPORTS OF IRON AND STEEL.

No feature of the marvelous growth of our commerce is more striking than that relating to exports of iron and steel. The total foreign commerce of the United States in the year just ended has for the first time crossed the \$2,000,000,000 line, and the total exports of the manufacturers of iron and steel have for the first time crossed the \$100,000,000 line. In the calendar year, 1890, the total exports of iron and steel amounted to only \$27,000,000, but in 1899 they were \$105,689,645. In the same period the importations of manufactures of iron and steel have decreased with nearly equal rapidity, the importations of 1890 being \$44,544,140, while those of 1899 were \$15,799,206. The striking feature of this rapid growth in our importation of manufactures of iron and steel is the fact that European countries are taking largely from us in these lines.

In builders' hardware, for instance, the United Kingdom took nearly \$2,000,000 worth in the year just ended, and Germany more than \$1,000,000 worth; and the exports to the United Kingdom of sewing machines were \$1,285,609 in 1899, against \$806,401 in the preceding year, and the trade in the same line with other countries was also gratifying. For new and ingenious machinery the world seems now to be looking to the United States. Exports of electrical machinery increased from \$917,453, in 1897, to \$2,523,644 in 1898, and \$3,143,336 in 1899, and metal working machinery from about \$4,000,000 in 1897 to nearly \$7,000,000 in 1899. Railway engines increased from \$3,000,000 in 1897 to nearly \$5,000,000 in 1899; typewriting machines from \$1,566,916 in 1897 to \$2,776,363 in 1899. Such lines of machinery as cash registers, laundry machinery, printing presses, shoe manufacturing machinery, fire and stationary engines show a marked growth.

In 1880, the production of pig iron in tons in the United States was 3,835,191 tons. The value of iron and steel manufactures exports was \$15,422,874, while the imports amounted to \$63,956,853 in manufactures of the same line. Nineteen years later, in the calendar year 1899, the pig iron production amounted to 13,620,703 tons, while the exports of iron and steel manufacture amounted to \$105,689,645, while the imports in the same line shrunk to \$15,799,206.

DEATH OF PROF. PEPPER.

Prof. John Henry Pepper, an author and analytical chemist of some distinction and inventor of the so-called Pepper's Ghost, is dead. He was born in 1821, and became famous through the illusion known as "Pepper's Ghost," which was perfected by him from a rough model devised by Henry Dirck. By it the reflection of the figures of the actors behind the scenes were thrown upon the stage by a system of mirrors. These reflected images had all the semblance, and repeated all the actions of the living originals, but were, of course veritable apparitions. The illusion was a great success when first produced and realized \$60,000 in six months. The ghosts were exhibited for a long time in the London Polytechnic and curious effects were wrought with them in various ghostly dramas. An attempt was made to utilize the system for the ghostly manifestations in "Hamlet," "Macbeth," and "The Corsican Brothers," but the plan did not seem to succeed very well on account of the fact that the specters though plainly to be seen by the audience were invisible, for optical reasons, to the actors upon the stage so that it was almost impossible to secure perfect harmony of action between the shadow and the substance.

It is proposed to build a suspended bridge at Duluth, over the ship canal, similar to that over the Seine at Rouen. The city power house is to supply the current,