stones. These mortars are either of wood or iron. The pestles weigh from 250 to 350 pounds each, and are of iron or wood shod with iron, and are moved as in the common stamp mill by cams or levers passing through slots in handles. The grain is there pounded from 40 to 70 minutes, a more protracted pounding being fatal to the integrity of the unbroken kernels. The last named process is extremely primitive, and it has even been called barbarous, for it does not differ essentially from that in use by cannibal tribes. Dr. Schneider, in his "Life among the Battas of Sumatra," says: "The rice which is the principal food of the people is always kept in the hull and thrashed out day by day as it is needed. The thrashing is done with hard wood pestles eight or ten feet long in wooden mortars made from a stump or log." The process most used in this country is the same as was introduced by Dr. Calvin Emmons in 1812, having the pestles shod with sheet iron and serrated by iron wires, which break more or less of the grain, rendering it unfit for market as first-class rice.

After the rice is hulled it is passed through an inclined revolving cylindrical wire screen, the gratings of which grow coarser toward the lower end. It is thus assorted into a number of products. At the upper end of the screen the flour passes through, next the eyes and small pieces of broken rice, then the "middling rice," which consists of larger fragments of the smaller grains, and lastly the prime rice, or best and mostly unbroken grains. The prime rice as it falls through the screen descends to the "polishing" or "brushing screen," which is a vertical cylinder laid up and down with shreds of sheep skin, and made to revolve rapidly within a wire screen. The rice falling down in the space between these is swept free of the flour which adheres to it, and is discharged below in a perfectly clean and polished condition.

The hulling of the rice, including that which requires the use of the stones, the pestles, and mortars, as well as the polishing, is all done at the rice mills, which are run by steam or water power, and of which there are only about twenty-five in the United States. These are located at Charleston, Savannah, New Orleans, and at other centers of rice culture. All the rice which is produced must be sent to the mill to be hulled, polished, and thus made ready for the market, though the product is sometimes shipped to New York, as well as to Europe, in the hull, and is subjected to the process of separation at the place of destination.

A small rice mill has been invented by a Brazilian, which is now being manufactured and introduced in this country. It is three feet square and five feet high, and has a capacity of 80 to 150 bushels a day. This machine will take the rice in the hull, or rough rice, as it is called, and prepare it for market, excepting that it cannot polish it. It leaves upon the grain the outer skin, which, as it contains gluten, adds materially to the nutritive qualities of the rice. Usage, however, demands that the rice should be polished, which makes the grain more attractive to the eye, but really renders it less nutritious.

Were it not for the polishing requirement, which can only be done at the large mills, which are often located many miles from the plantation, each farmer could hull his own rice with one of the small machines, and thus much time and expense of transportation would be saved.

Improvements in the methods of rice culture have not kept pace with those in other departments of agriculture; in fact, the course generally pursued is of the most primitive character. The crop, however, is more profitable than wheat, and vast tracts of cheap land in parts of Louisiana, Texas, Alabama, and Mississippi could be utilized in the cultivation of this cereal. In Louisiana the cost of production per acre is from $20 to $28, and the average yield is 45 bushels. It can be sold for from 75 cents to $1.25 per bushel, according to quality and the season.

If more rice were grown the price would be lower, and it would then be more generally used for food. Large quantities of it are imported every year, as the home product is not sufficient to supply the demand. The figures given below show the quantity raised in this country and that which was imported since 1881:

	Foreign.	Domestic.
1882	351,100 bags.	390,000 bbls.
1883	378,300 "	325,000 "
1884	333,600 "	410 000 "
1885	246,400 "	600.000 "
1886	208,000 "	615,000 "
1887	410.000 "	448,000 "
1888	491,000 "	
1889 to June 1, 1890	Not complete.	Estimated 515.000 "

With the invention of better machinery for cultivating rice and preparing it for market, and the exhibition of more energy and enterprise by the planters, a department of agriculture will be developed which will be very profitable to those engaging in it, and which will add greatly to the wealth of the country, and at the same time cheapen a nutritious and healthy food.

OXALIC acid dissolved in water and mixed, if desired, with a little tartaric acid will remove ink stains from white paper.

POSITION OF THE PLANETS FOR JUNE.

MARS

is evening star. The radiant planet, under his present conditions, has a majestic bearing as he treads his starry path over the celestial highway, rising, on the 1st, before the sun sets, and reaching the meridian at 11 h. 26 m. P. M. A glance at the southeast in the early evening will reveal his presence, his ruddy color distinguishing him from the other planets. Mars is nearest to the earth on the 5th, continues to retrograde during the month, and is in conjunction with Beta Scorpii on the 7th, being about 2½° south.

Mars sets on the 1st at 3 h. 56 m. A. M. On the 30th he sets at 1 h. 34 m. A. M. His diameter on the 1st is 20".8, and he is in the constellation Scorpio.

VENUS

is evening star. She increases in size and brilliancy as she approaches the earth, and charms every observer who beholds her as she makes her way westward, being visible for two hours after sunset. The evening star and the crescent moon will form a lovely celestial picture on the evening of the 19th.

Venus sets on the 1st at 9 h. 21 m. P. M. On the 30th she sets at 9 h. 30 m. P. M. Her diameter on the 1st is 11".6, and she is in the constellation Gemini.

JUPITER.

is morning star. He is finely situated for observation, as he rises soon after 11 o'clock in the southeast, on the first of the month, and soon after 9 o'clock at its close. Jupiter and Venus are both above the horizon for a short time on the last few evenings of the month, the one rising a few minutes before the other sets.

Jupiter rises on the 1st at 11 h. 16 m. P. M. On the 30th he rises at 9 h. 18 m. P. M. His diameter on the 1st is 41".4, and he is in the constellation Capricornus

SATURN

is evening star. He is now moving easterly or in direct motion, and when the month closes it will be easy to see that he is receding from Regulus. He is on the meridian, on the 1st, at 5 h. 22 m. P. M., so that he must be looked for in the west.

Saturn sets on the 1st at 0 h. 8 m. A. M. On the 30th he sets at 10 h. 19 m. P. M. His diameter on the 1st is 16".6, and he is in the constellation Leo.

MERCURY

is morning star. He reaches his greatest western elongation on the 24th, at 1 h. A. M., when he is 22° 21′ west of the sun, and visible to the unaided eye as morning star. He is in conjunction with Neptune on the 10th, being 2° 38′ south.

Mercury rises on the 1st at 4 h. 27 m. A. M. On the 30th he rises at 3 h. 14 m. A. M. His diameter on the 1st is 12".0, and he is in the consteliation Taurus.

URANUS

is evening star, holds nearly the same position northeast of Spica, and is visible to sharpsighted observers. He is one of the six planets visible to the naked eye during the month, the others being Mars, Venus, Jupiter, Saturn, and Mercury.

Uranus sets on the 1st at 2 h. 10 m. A. M. On the 30th he sets at 0 h. 15 m. A. M. His diameter on the 1st is 3".8, and he is in the constellation Virgo.

NEPTUNE

is morning star. He rises on the 1st at 4 h. 12 m. A. M. On the 30th he rises at 2 h. 22 m. A. M. His diameter on the 1st is 2".5, and he is in the constellation Taurus.

Venus, Saturn, Uranus, and Mars are evening stars at the close of the month. Jupiter, Neptune, and Mercury are morning stars.

History at the University of Pennsylvania.

The University of Pennsylvania is almost the only institution of learning in the world which has a professorship and a course devoted to the history of the United States. When the Wharton School of Finance and Economy was established, American history wasexpressly laid out as a branch of the instruction. Some years later, with the advent of Professor John Bach McMaster, whose "History of the People of the United States" has given him a national reputation, a new impetus was given to the course in American history at the university, until now it stands high in value and in popular favor.

The theory of Professor McMaster's instruction is perhaps as unique as the college's stand with regard to this special branch of general history. Text books are eschewed altogether, lectures and a printed syllabus taking their place. Students are referred, wherever it is possible, to original documents for their information, and maps and diagrams are always required to accompany the theses which are from time to time prepared by the members of the classes, the professor holding that historical knowledge which cannot be illustrated by means of a map or diagram is not knowledge at all. It is hoped that before long the Wharton School can be equipped with a lantern and complete set of historical slides, thus doing away with the use in lectures of ponderous and time-worn maps. The earliest contributions from those interested in the university's departure in the branch of history will probably be applied for this purpose.

PHOTOGRAPHIC NOTES.

Water-Developing Plates.—The following is the formula used by Dr. Backelandt for coating the backs of his water-developing plates:

Pyrogallic acid	154 grains.
Salicylic acid	15 "
Gum or dextrine	154 "
Alcohol	1 fl. dr. 21 minims.
Water	5 fl. drs. 25

This is allowed to dry at the ordinary temperature. Development takes place by immersion in water with the addition of a very small quantity of ammonia.—*Photo. News.*

The Acid Eikonogen Developer.—It has been found by some experimentalists that the keeping qualities of the eikonogen developer are much improved if it is made acid, or nearly so. With regard to this, the following formula is recommended by Mr. T. H. Voigt, chairman of the Photographic Society of Frankfort-on-Main:

Solution No. 1.

Water	500 c.c.
Sodium sulphite	25 grammes.
Eikonogen (previously pulverized)	5 to 6 "

As soon as the eikonogen has completely dissolved, 20 c.c. of a mixture of 500 c.c. of a saturated solution of sodium sulphite and 40 c.c. of hydrochloric acid are added to the above (Solution No. 1).

Solution No. 2.

Water	500 c.c.
Carbonate of soda	20 grammes.
Carbonate of potash	5 "

To develop a cabinet plate, 30 c.c. of solution No. 1 are poured over the plate in the dish, and the latter is well rocked, so that the plate is entirely covered by the solution. Previously, 10 c.c. of solution No. 2 have been poured into a measure; if it is probable that the plate has been over-exposed, at first 5 c.c. of solution No. 2 are added to the developer in the dish; if, however, it is found that the plate has been correctly exposed, the remaining 5 c.c. of the alkali solution are also added. It will be noticed that with this method of development only about one-third the quantity of the alkali which is usually taken is used. It seems that the minute quantities of the chloride of soda and chloride of potash which are formed by the addition of the hydrochloric acid increase the energy of the developer.—*H. E. Gunther, in Photo. News.*

Monument to Marshall, the Finder of Gold in California.

On Saturday, May 3, the statue of James W. Marshall, the discoverer of gold in California, was unveiled at Colomo, El Dorado County, near the spot where the first gold was found. The Legislature provided the funds for this monument, which was designed by F. Marion Wells, the accomplished sculptor, who has executed his task with skill.

The statue represents Marshall in the dress of the period. He is facing the river. In his right hand he holds a golden nugget, while with his left index finger extended he points to the exact spot where the ever memorable discovery was made. The statue is grand in proportions and workmanship, and the design is quite historical.

The monument is 39 feet 6 inches in height, and is of admirable proportions. The cap of the pedestal is 5 feet square, on which the statue of Marshall is placed. The statue is heroic in size, being 9½ feet in height, representing Marshall dressed in miner's garb.

On the west side of the monument are the words: "Erected by the State of California, in memory of James W. Marshall, the discoverer of gold. Born October 10, 1810. Died August 10, 1888. The first nugget was found in the race of Sutter's mill, in Coloma, January 19, 1848."

MIXTURE FOR TOYS.—Fine ground argillaceous slate 50 per cent, rag paper paste 20 per cent, and 30 per cent of burnt plaster are mixed with the necessary volume of water to form a paste, which is then cast in moulds, the moulds having been previously daubed with finely ground slate, powdered plaster, or fat. A sufficiently thick crust will form in a few minutes, when the residuum of the mixture must be poured out of the mould. The mixture, which is unbreakable, hardens very rapidly. The castings thus produced may be immersed in paraffin or stearine, or they can be japanned. In the latter case it is desirable, so as not to consume too much paint, to first apply a coat of quick-drying boiled oil, and when the oil has become hard the article is to be painted.

Vaseline Harness Composition.

Prussian blue, in fine powder	¾ oz.
Lampblack	4 "
Treacle	2 "
Soft soap	2 "

Mix together in a large Wedgwood mortar, previously warmed, and add—

Vaseline	6 oz.
Cerasin	5 "
Yellow resin	½ "

Melted together; then sufficient turpentine to give the composition the proper consistency. Mix thoroughly.—*Chem. and Drug.*