Value of Photography in Scientific Research.

An interesting account of the services of the camera in scientific research has been prepared recently by a member of the Royal Photographic Society of Great Britain. It is generally admitted that the camera in recording scientific observations often serves to verify results with a thoroughness which no other test can. The English writer goes so far as to say that photography, in association with the telescope and spectroscope, has placed modern astronomy on an entirely new basis. The meteorologist by the aid of the camera has been able to study the form and nature of clouds, and the shape and character of the lightning flash. It has enabled zoologists to trace the real character of animal motion, and it is the only accurate means of reproducing the forms of organisms too small for the eye to see. The physicist has, therefore, been able to investigate phenomena in which changes occur too rapidly for the eye to detect. It is further claimed that whenever the observer of natural phenomena finds it necessary to make an accurate record of his observations, the camera is indispensable. Photography is also extensively employed in anthropology, geology, geography and archæology.

A New Hurricane Signal.

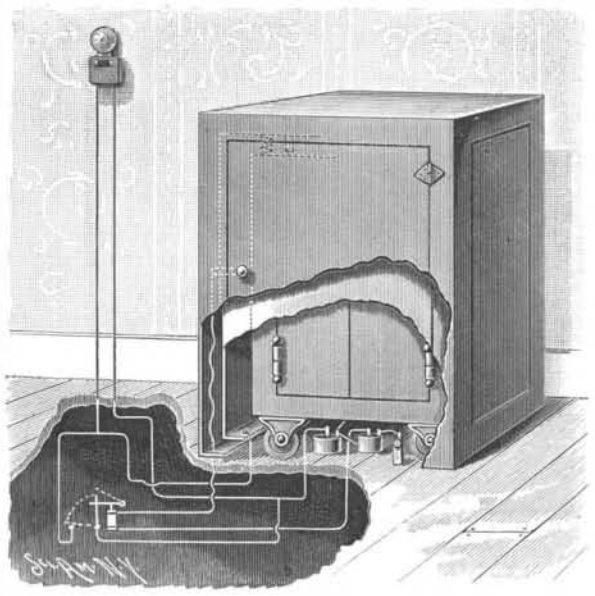
The Weather Bureau at Washington has caused the adoption of a new wind signal to be known as the "hurricane signal," to be used after January 1, 1895, as occasion demands. The signal consists of two red flags with black centers displayed one above the other. It will be used to announce the expected approach of tropical hurricanes and the dangerous storms which move not infrequently across the lakes and the North Atlantic coast. These flags will be of the same size and pattern as the one now used for the storm signal, except that the pennants will be omitted. There will be no distinctive night hurricane signal provided, but if the new signal be displayed during the day and is not changed before dark, the usual night storm signal will be displayed in its place. The direction of the storm signal will of course depend as usual upon the message accompanying the order to use it.

A CHINESE MODE OF PUNISHMENT.

In China they employ many modes of imprisonment and of punishment, the variety and magnitude of crimes being remarkable. Of these latter, perhaps, the most vulgar and common is infanticide. In Canton alone, it is said by those who are in position to know, thousands of infants are destroyed annually by their mothers. Our engraving, which is from a photograph, shows the form of punishment of three women for committal of this crime. They are yoked together between two boards made with openings just large enough to admit the neck. This apparatus is called the canja, and is the cause of unspeakable torment to the poor wretches who are doomed to its embrace.

AN ELECTRIC BURGLAR ALARM FOR SAFES.

According to the improved provision for the protection of a safe, represented in the accompanying illustration, the safe is inclosed by a metallic envelope or casing, which does not touch the safe and is insulated from it, the envelope having a door opposite the safe door. For this invention a patent has been issued to Messrs. James W. Gilstrap, of Spurgeon, Mo., and William D. Gilstrap, of Racine, Mo. The envelope or



THE GILSTRAP BURGLAR ALARM FOR SAFES.

casing rests on springs mounted on insulating blocks on the top of the safe, and depending from the envelope are top contact blocks, which strike the safe and close an electric circuit through an alarm when the springs are compressed. There is also an outer envelope which does not touch the inner one, but is in electrical circuit with the safe, this envelope resting on the floor, and also having a door opposite the safe door. A spring near this door acts as a circuit breaker when the door is opened, and in case either envelope is raised, it strikes either the safe or the other envelope, closing the circuit and sounding an alarm, a battery beneath the safe or other convenient place being connected by one pole with the safe and the outer envelope while its other pole connects with the bell. A closed circuit battery is also connected with contact lugs in the floor, which connect with the outer envelope, a wire leading from the other pole of the battery to a circuit closer composed of an electro-magnet and a hinged armature, normally resting on the magnet, but raised by a spring when the circuit is broken. When the circuit through this battery is broken, the drop falls, as indicated in dotted lines, and strikes upon the free ends of wires forming branches of the open circuit wires, thus closing a circuit through the bell and sounding an alarm.

The Arboretum.

Loudon, I believe, coined the word arboretum, about 1833 or 1834, but classified collections of trees and shrubs had been formed after the systems of Jussieu and De Candolle ten years or more before that date. Probably the collection of the Royal Horticultural Society, at Chiswick, near London, attracted the greatest attention because of the accessions of rare and new species.

No arboretum that I have visited, or seen described, has been eminent for beauty of grouping, or for giving more than a fragmentary idea of the vegetable kingdom.

The systems of botany have been partly responsible for this, but the imitative faculty of the designers even more so, and the result has been in many cases a really tiresome lineal repetition of closely allied forms.

To-day, however, the aboretum may be made beautiful, for not only has the botanical classification been very greatly improved, but we are advanced so far along the speculative and experimental stages that the best and most suitable typical forms may be selected for the harmonious grouping of the varied cohorts of vegetable life adapted to a given climate.

It has been stated recently in the Tribune that "5,000 kinds of trees" would be included in the arboretum forming in North Carolina. This is undoubtedly an error, but if it were possible, it would be very unadvisable to multiply mere varieties to that extent.

The whole flora of New Jersey contains less than 2,000 species (exclusive of mosses, fungi, etc.), and it cannot be anticipated that any hardy collection of plants in a given spot in this country will exceed about 4,000 species and distinct varieties. These, if purchased in single plants, would average less than fifty cents each.

School gardens giving a good illustration of all the hardy orders could get along with about 1,500 plants, and for purposes of comprehension, such collections would be better than the larger ones, which are impossible to be retained in the mind.

Trenton, N. J. JAMES MACPHERSON.

Eating Ice.

The following thermodynamical problem is stated and solved by the Engineer: "A boy eats two ounces of ice. Let us see what is the approximately thermodynamic equivalent of the work he has made his interior do, assuming he takes five minutes to eat it. In melting the ice he will require eighteen units to reduce it to water. To raise it in temperature to that of his inside he will require seven more units, or a total of twenty-five British thermal units. Taking the mechanical equivalent as 777 foot pounds, this will be equal to 19,425 foot pounds. If the boy weighs 100 pounds, he will have called upon his stomach to do as much heat work as would, with a machine having unit efficiency, raise him 194 feet high, or a rate of heat extraction equal to nearly an eighth of a horse power."

A CHINESE MODE OF PUNISHMENT.