

Correspondence.

Acetylene Gas Generators.

To the Editor of the SCIENTIFIC AMERICAN :

I have been greatly interested in your articles upon acetylene gas, and have some of your SUPPLEMENTS describing generators for same. Having just constructed a generator with small gas holder for my own use, I would like to inquire of you if they really are dangerous to use, as I have just received a small pamphlet asserting that they are. CHARLES WITNEY.

Santa Cruz, Cal., March 1, 1898.

[There is real danger in using acetylene; there is real danger in using dynamite; there is real danger in using any combustible gas. But, the danger in using acetylene is one of pressure and explosive mixture. If the generator is tight, does not leak, does not get hot enough to turn the water into steam, works at not over 20 pounds pressure (4 inches of water being sufficient for house burners), contains enough water, has no open flame near it (light should come through a pane of glass in the partition), never allows the pressure to get so high as to blow out the flame, if the carbide can is not left standing around open (a lighted cigar or pipe will explode acetylene air mixtures) and the lime removed outside, we think there is no danger. Wet generators are popular in Europe, especially for large plants.—EDS.]

The Cotton Crop of 1896-97.

A circular issued by Statistician Hyde of the Agricultural Department gives some information concerning the cotton crop of 1896-97, its value, the amount purchased by mills and the acreage planted, says Bradstreet's. The proverbial slowness of government publications is well exemplified thereby, because for nine months the succeeding crop, that of 1897-98, has monopolized the attention of the trade. It shows that the total cotton crop of 1896-97 amounted in commercial bales to 8,532,705, made up by the following States: Alabama, 833,789; Arkansas, 605,643; Florida, 48,730; Georgia, 1,299,340; Indian Territory, 87,705; Kansas, 61; Kentucky, 414; Louisiana, 567,251; Mississippi, 1,201,000; Missouri, 24,119; North Carolina, 521,795; Oklahoma, 35,251; South Carolina, 936,463; Tennessee, 236,781; Texas, 2,122,704; Utah, 123; Virginia, 11,539. It is stated that the large and increasing amount of raw cotton taken directly from the current crop by mills from the cotton-growing States is more than ever an important factor in estimating the annual production. Ten years ago only about six per cent of a crop of 6,500,000 bales was used by those States, while during the year 1896-97 they used over 11 per cent of a crop of over 8,500,000 bales. The number of mills in operation during the year was 402, the number of spindles 3,344,327, and the number of bales bought 981,991. The investigation of the production of Sea Island cotton shows that the crop of 1896-97 was the largest one on record, the States of Georgia, Florida, South Carolina and Texas having produced 104,368 bales. The next largest crop was that of the preceding year, estimated at about 93,000 bales. The production of Georgia was 64,668 bales; that of Florida, 26,431 bales; South Carolina, 10,769; Texas, 2,500. The total value of the uplands crop was \$285,810,606, which gave an average of 6.65 cents per pound of that sold, and the total value of the Sea Island crop, \$6,000,958, an average price of 16.58 cents per pound. The total acreage during 1896-97 was 23,273,269, the number of bales raised 8,532,705—an average of 0.37 bale per acre.

A Musical Wheel.

The bicycle has reached another phase of its constant development through a novel and highly interesting invention, consisting in a musical instrument which may be attached to any bicycle and plays popular airs, without the aid of the rider, in a loud and melodious manner, when the machine is in motion. This instrument constitutes an entertaining companion for the bicyclist on his roamings, which are frequently rather lonely; it is so much more welcome as it will be a companion entirely submissive to the rider's wishes. It has been invented, patented and placed upon the market by a firm in Hamburg, and is fittingly called "troubadour," after the wandering musicians of the middle ages. We had occasion recently to attend a trial ride in the Hamburg Zoological Garden with this new musical instrument, and cheerfully confirm the excellent effect produced. The director of the concern had the cycles provided with the new musical apparatus pass before us ridden by employes, and we heard a loud-sounding, well-timed music, after the style of the "herophone." This novelty is sure of great popularity among cyclists. It will also be beneficial in a hygienic respect, as excessively fast riding will be prevented. As a matter of fact, the music only sounds well when the rider does not exceed a velocity of 15 kilometers (9.3 miles) per hour. We will add that in future a sort of orchestra band may be formed for the popular cycle parades by means of these instruments tuned to the time. As is well known, the music has been the most difficult part of these parades.—Echo vom Gebirge.

Science Notes.

A Natural Hot Water Heating System.—Boise City, Idaho, is to pipe into its houses warm water of 170 degrees temperature from a subterranean lake 400 feet beneath the surface.—New York Evening Post.

According to The Electrical World, the value of the instruments and machinery exported from the United States during 1897 for scientific purposes was \$3,054,453, which was an increase of half a million dollars as compared with the exports in 1896.

According to Petermann's Mittheilungen, there is a town of 60,000 inhabitants in Syria, not far from Latakia, in which there is not a single physician. The name of this unfortunate place is Hamah. As is the case with most of the towns in that country, diseases of the eyes are exceedingly common, and an oculist who is willing to rough it and to suffer many discomforts could doubtless gather in numerous shekels.

Herr Krupp, of Essen, has given 10,000 marks to the Berlin Geographical Society for a gold medal to be awarded yearly for geographical discovery. It will be called the Nachtigal medal, after Krupp's friend, Gustav Nachtigal, the African explorer, and, where merits of candidates are otherwise equal, will be given in preference first to discoveries on the African continent and next to exploration in Germany's colonies elsewhere.

In the twenty-three libraries of Berlin which are either public or belong to official bodies there are over 2,000,000 volumes. The royal library contains over 1,000,000 volumes, the university library 158,000, that of the royal statistical bureau 136,000. The war academy collection consists of 88,000 volumes, that of the general staff of 69,700, and that of the royal chancery 72,600 volumes. The twenty-seven city libraries have only 76,000 volumes between them.

A. A. Noyes and W. R. Whitney claim to have experimentally established the law according to which solid substances are dissolved in their own solutions, and they express it in the following terms: "The rate at which a solid substance dissolves in its own solution is proportional to the difference between the concentration of that solution and the concentration of the saturated solution." This law has been proved to be correct in the case of substances so widely differing in chemical nature and physical properties as benzoic acid and lead chloride, and it is therefore assumed by the authors to be of general application.—Jour. Am. Chem. Soc.

A photographic method of measuring the height of a balloon, and at the same time comparing the results with those furnished by barometric readings, is described in La Nature for January, by M. L. Cailletet. The apparatus consists of a camera with one lens pointing downward, by means of which a photograph of the country below the balloon is taken; at the same time a lens at the top of the camera projects on the upper side of the sensitized film an image of the dial of an aneroid barometer placed above the apparatus. By measuring the distance between any two points on the photographic view, and comparing with a map of the district, the altitude of the balloon can be accurately found, and the law connecting it with the barometer reading verified experimentally.

Lindemuth suggests that it may be possible to produce variegated specimens of almost any species of plant by grafting upon it a form with colored leaves, not necessarily of the same species, but of a nearly allied form. It is found that if a variegated form of one species be grafted upon a normally colored plant of another, the green plants produce variegated shoots. Thus a green plant of *Malvastrum capense* on which a variegated *abutilon* had been grafted produced variegated shoots below the graft; vice versa, a green plant of *Kitaibelia* grafted on a variegated *abutilon* became variegated and gave vigorous cuttings, which, when grown in the open, remained variegated. *Althea officinalis* when grafted on the same *abutilon* also became variegated. *Petunia hybrida* grows vigorously if grafted upon *Nicotiana glauca*.—Gard. Chron.

The reports of the asylum at Cairo as to the native patients there exhibiting the nature of the mental disturbance associated with the excessive use of hashish show some remarkable facts. It appears that in 41 per cent of all the male patients hashish alone or in combination with alcohol caused the mental symptoms, while this was the case with only 7 per cent of the females. As to whether there is a special recognizable form of mental disturbance produced by hashish, authorities conclude that, in a considerable number of cases in Egypt, the hashish is the chief if not the only cause of such mental disease. The usual types of the disease are hashish intoxication, that is, an elated and reckless swaggering state, with optical illusions and hallucinations. Acute mania is another form of hashish insanity, involving terrifying hallucinations, restlessness, sleeplessness, incoherence and exhaustion; again, this kind of insanity takes on the form of weak-mindedness, the patients being quiet and well behaved, but overtalkative, easily pleased, excitable about small things and unconcerned as to the future.

Recent Archæological News.

Golf links have been opened on the grounds of the Villa Pamphili-Doria, Rome.

Themistocles' grave has been discovered by a Greek named Dragatsis on Cape Krakari. Its authenticity, however, is not beyond doubt, though the place where it was found fits in with the descriptions of Plutarch and Diodorus Siculus.

Mr. Bernhard Berenson is engaged in the very laborious task of sifting and cataloguing all the drawings by the Florentine painters, with authentic criticism and appreciation. The illustrations will consist of about two hundred facsimiles. The book will be printed in Berlin at the Imperial Press, and published in London by Lawrence & Bullen, probably next year.

M. Eugene Müntz, in a letter to The Athenæum, describes a torso of Minerva of Pentelic marble which was acquired by the Museum of the Ecole des Beaux Arts in 1841. It came originally from the Villa Medici at Rome. Herr Fürtwangler believes it was made for the eastern pediment of the Parthenon, from which the other sculptures went to the British Museum. It seems quite possible that Rome, as well as London, laid hands on many Athenian masterpieces.

Of more than ordinary literary interest is a book issued by a Leipzig firm under the title "Tabubu," being a close translation by Leon Ritter of an Egyptian papyrus found in 1864 by the late Brugsch Bey in Thebes. The original is in demotic script, and some leaves of the manuscript were missing when first discovered. The story is not only very entertaining, even in the modern sense, but it is also peculiar in furnishing proof that the Faust problem was known to the Egyptians several thousand years ago.

At Trieste the important discovery has been made of a Van Dyck. This canvas of the celebrated Flemish painter represents a young princess of the ducal house of Gonzaga of Mantua. The history of this Van Dyck is sufficiently curious. In the month of September of the year 1628, on the death of Duke Vincent II., Mantua was taken by the German troops. The imperial army was largely composed of deserters, who made no delay in sacking the place. All the objects of art, sculptures and paintings which the Gonzaga family had accumulated in Mantua were carried off by the German reiters, and among them was this painting by Van Dyck. After many adventures, too long to enumerate, it was stranded at Trieste, where it has just been found.

At a recent auction sale in London the authentic remains of Ptolemy II., King of Egypt, Antiochus Soter, King of Syria, and Alpina, Queen of Babylon, went under the hammer. The royal party were inclosed in a three-partitioned, glass-fronted case. They looked somewhat battered after 3,000 years of retirement, but Ptolemy, whose physique was the finest, was complete. Antiochus was perforated with small holes and his right arm was lying at his feet. Alpina retained a matted and dusty remnant of her raven tresses, but her eyes had suffered sadly, looking as though she had been engaged in unqueneenly fisticuffs. The auctioneer presented the distinguished trio with letters of introduction from antiquarians and a recommendation, but refused to be personally responsible. He encouraged possible purchasers by pointing out the notoriety which must ensue from having their names sent all over the world, and dwelt upon the handsome living made possible by traveling with the mummies, giving exhibitions to countless spectators. Despite such allurements, bids were not forthcoming until the auctioneer himself started the bidding at \$50. Finally the lot fell for \$375 to a dealer of the name of Cross, of Liverpool.

A discovery in Rue du Cloître, Notre Dame, Paris, the street along the left side of the cathedral from the parvis, is likely to modify some of the theories about the history of the site, says The London Architect. Cæsar speaks of Lutetia as "the fortress of the Parisii placed on an island of the river Sequana," and the earliest settlement would therefore appear to be on the island of which Notre Dame occupies a part, and for a long time was confined to it. A bishop's church was founded there about A. D. 365, which supplanted a pagan temple. In the excavations on the sites of some houses which were demolished in the Rue du Cloître, at about 16 feet below the surface, remains of a wall 9 feet thick have just been discovered. The question arises, was the wall a part of the ancient temple or of a different building? The stones are apparently Roman work, for Roman names are roughly cut on them. But the masonry appears to have formed part of an amphitheater, another part having been discovered in 1847 beneath the parvis or open space in front of the cathedral. The discovery is so recent the French archæologists cannot be expected to explain it forthwith. M. Sellier says it is a portion of the Gallo-Roman wall of the ancient site, but apparently Notre Dame stands on the arena of an amphitheater rather than on the site of a temple, unless the stones were removed from the amphitheater at the Rue Monge to form a defense against invasion.