

Correspondence.

Writing on Blue Prints.

To the Editor of the SCIENTIFIC AMERICAN:

In connection with the use of alkaline agents for writing in white on blue prints, one frequently sees this or that solution mentioned, but always with the disappointing statement that the solution will blur by spreading through the fibers of the paper.

I have thought it might be of interest to such of your readers as are using blue prints to know of a method which I have used for some time with entire success, consisting of mixing the bleach with a more or less thin gum arabic or mucilage water.

Oxalate of potash (10 per cent solution) is about the only alkali that will produce a pure white and satisfactory mark.

W. F. MOODY.
Denver, Col.

The Elimination of Titanic Acid.

To the Editor of the SCIENTIFIC AMERICAN:

I take the liberty of offering a suggestion which may perhaps arouse the interest of some inventor.

In spite of the millions of tons of iron ore containing metallic iron up to 60 to 70 per cent to be found in this country, there is no possible method of using this ore, because it contains an amount of titanic acid which renders smelting unprofitable. If the titanic acid could be removed cheaply, so that smelting would pay, a great industry would be opened in many countries.

Chemical experiments for the purpose of removing titanic acid have been made, and have succeeded; but they are expensive for commercial application.

Christiania, Norway.

A. JOHANNESSEN.

New British Standard of Weights.

The British government has taken the first step toward the adoption of the decimal system of weights. It has just been announced by the Board of Trade that, under a special order in council, it will sanction the use of a weight of 50 pounds, instead of the present standards of 112 pounds (called a hundredweight) and 56 pounds (called a half hundredweight). The 50 pounds is by this action made a legal standard of weight. This reform has been adopted after forty years of agitation by Liverpool merchants and later on by petitions to the government by the chambers of commerce throughout the country, and particularly by the chamber of commerce of that city. Liverpool has felt the necessity for the change more than any other city, as this is the leading *entrepôt* for American and colonial produce of bulk, the weighing of which is a considerable item in the handling and, indeed, in the ultimate cost of the shipments. More cotton, corn, provisions, and tobacco are imported into Liverpool than into any other city in the world, and by far the largest proportion of these imports comes from the United States; so the United States is peculiarly interested in the reform just instituted. The Liverpool Journal of Commerce comments approvingly as follows:

"All these great quantities are calculated by the American sellers in pounds avoirdupois, but by the British buyers they have had to be counted in hundredweights, quarters, and pounds, in accordance with our antiquated and absurd and anomalous system of weights. What is the consequence? To give a concrete example: The buyer wishes to ascertain, say, the weight of 100 pounds of tobacco; to do so the nearest weight he can employ is a quarter, or 56 pounds, to which must be added smaller weights until the exact quantity is ascertained. But two 50-pound weights will give him the exact amount at once; three will give him the weight of 150 pounds, four 200 pounds, and so on, smaller weights being used for fractions of 50 pounds. The consequence is an enormous simplification of calculation. It should be remembered that the men who weigh these materials at the docks are not, as a rule, mathematicians who can tell the time of day by algebra. They are largely day laborers, who have not had a superior education, and to weigh quantities with a set of weights necessitating the calculation of fractions of pounds, and thereby the use of dozens of small weights, necessitates a mental effort of which all are not capable, and the use of a multiplicity of weights which confuses them leads to errors and loss of time—and time is money. But by the adoption of a 50-pound weight a unit of calculation has been obtained which will sweep away a whole set of weights, prevent errors, and save confusion, time, and money. It should be remembered that the present complicated and wasteful method of calculating weights has to be gone through four times—first, when the goods are warehoused; second, by the customs, for the purpose of duty; third, in the counting-house; and fourth, in the factory—and in all these cases the same cumbersome system of calculation by hundredweights, quarters, and pounds has to be gone through, and the loss of time, convenience, and money quadrupled.

But by the adoption of a 50-pound weight, though four separate calculations will still be necessary, they can be done simply and quickly. The saving in bookkeeping will alone be great. The present system necessitates a maze of figures of different denominations; but by their reduction to the one common denominator of pounds weight whole columns of figures will be saved and the risk of mistakes minimized."

Section of Geology at the St. Louis Winter Meeting of the American Association.

The section met for two days with the Association, then joined in the annual meeting of the Geological Society.

Among the papers read that by Prof. L. C. Glenn, of Vanderbilt University, Nashville, Tenn., described some peculiar "dikes" of sandstone which occur in the western part of Kentucky and Tennessee. These dikes are vertical, or nearly vertical, walls of various widths and form a network in the Eocene clays of the region. The sandstone forming the dikes is somewhat laminated parallel to the walls. Sometimes there has been slight vertical faulting. The material of the dikes is micaceous and contains Eocene fossils in the form of casts. The fissures do not seem to have been connected in any way with the action of mountain-making forces. The region is one that has experienced severe earthquakes within recent historic time and it has suffered likewise in the geologic past. It is probable that the fissures described in this paper were formed as a result of earthquakes in Eocene time and that the dikes consist of the underlying sands which rose therein.

The deposits found in caves are always of interest through the light which it is hoped that they will throw on the question of the antiquity of man. Deposits containing fossils are rather rare in caves in this country, but important ones have recently been exploited in California and Arkansas. The results of the former, done by the University of California, were presented in a paper by Mr. W. J. Sinclair, which was read by Prof. J. C. Merriam. This cave, which is on Potter Creek, has furnished fossil remains representing a Quaternary fauna which has hitherto been imperfectly known. The Potter Creek cave in 1878 furnished the late Prof. Cope specimens of the cave bear, but the recent explorations in this and neighboring caves have brought to light more than fifty species of mammals and birds. Many of the forms are new to science. More than 7,000 specimens have been collected here thus far, and a complete record has been kept of the relation in which each was found. The deposits in the cave were found to be distinctly stratified. Some fragments of bone suggesting human workmanship have been found among the fossils.

The officers of the section for the meeting were: Prof. C. H. Hitchcock, of Hanover, N. H., chairman, in the absence of Prof. Israel C. Russell, of Ann Arbor, Mich., who was elected to the office last year; and Dr. G. B. Shattuck, of Baltimore, secretary. The officers elected for the ensuing year are: Chairman, Prof. E. A. Smith, of University, Ala.; secretary, Dr. E. O. Hovey, of New York city.

The Death of Sergeant Frederick.

Sergeant Julius Frederick, a member of the Greely Arctic expedition, died at Indianapolis, on January 6. The expedition under Lieut. Adolphus W. Greely was sent out in 1881 to establish one of a chain of thirteen circumpolar stations for scientific purposes. The party of twenty-five persons was left at Discovery Harbor on August 12, 1881, with equipment and provisions for twenty-seven months. Additional stores were to be sent in the summers of 1882 and 1883, but Greely was ordered, if these failed to reach him, to retreat southward not later than September, 1883. The members of the party made many excursions and observations; and as relief failed to reach them, they started south on August 9, 1883. All had kept well up to that time. They had to abandon their steam launch in the ice in October, and went into winter quarters at Cape Sabine, where they suffered greatly for want of provisions, and sixteen of the party died from starvation, one was drowned, and one was shot for persistently stealing food. The seven survivors were rescued by the third relief expedition, under Capt. Winfield S. Schley, on June 22, 1884, in so exhausted a condition that it was thought that had forty-eight hours more elapsed, they would all have died.

Death of Prof. Von Zittel.

Prof. Karl Alfred von Zittel, the well-known paleontologist and president of the Academy of Sciences, died at Munich January 6.

Prof. von Zittel was born in the Grand Duchy of Baden in 1839, and was a son of Karl von Zittel, a well-known statesman. He studied at Heidelberg and Paris, and later at the Imperial Institute of Geology at Vienna. After serving as an assistant at the Hof-

mineralien Kabinet there he was appointed professor of mineralogy at the Polytechnic at Carlsruhe, and in 1866 he became professor of geology and paleontology at the University of Munich and director of the paleontological museum there.

In 1873 and 1874 Prof. von Zittel took part in the Rohlfs scientific expedition to Egypt and Libya, and the valuable results of that expedition were due in great part to his work. He wrote a book on the expedition under the title "Contributions to the Geology and Paleontology of the Desert of Libya," and among his other well-known works may be mentioned his "Primitive Times: A Picture of the History of Creation," and his "Treatise on Paleontology."

Prof. von Zittel visited this country in 1883, and was present at the opening of the Northern Pacific Railroad.

Electrical Notes.

The electrical current offers a remedy for the consumptive, according to the Lancet, London. Experiments have been conducted to this end by Dr. J. Cunningham Bowie with a high degree of success, the doctor securing the best results with an alternating current of high frequency and low potential. A special apparatus was made for the work, one permitting of a great range of adjustment. In practice the current density ranged from 300 to 800 milliamperes and from 50 to 70 volts, and the application from 10 to 20 minutes. Almond oil containing iodine, thymol, and other antiseptics was used for intralaryngeal injections. The arrest of the lesion was brought about much more quickly than by the simple use of the antiseptic oils alone, and the doctor says he is entirely satisfied that the use of the alternating current promotes healing.

Peter Cooper Hewitt, the inventor of the vapor lamp which has been mentioned heretofore, has recently been granted a patent on a new form of his lamp. Up to the present time, the lamps have been constructed for installation in a vertical position, but the inventor has discovered that by placing the lamps in a horizontal position, a number of practical as well as æsthetic advantages are secured. The lighting of the room is said to be accomplished in a much more satisfactory manner, and the quality of the light is improved. Mr. Hewitt has also been granted a patent on an improvement in the construction of the lamps, by which the starting of the lamp is facilitated at a much lower potential. This is done by the addition of red sulphide of mercury to the interior of the lamp during the course of construction.

The report of the African Concessions Syndicate, just published, constitutes one of the most interesting items of recent news. The company in question has been formed to exploit the possibilities of the Victoria Falls on the Zambesi. These falls are over 400 feet high, and while the total amount of energy running to waste at Niagara is 7,000,000 horse power, the corresponding figure for the Victoria Falls in the wet season is 35,000,000. The railway has now been completed to within 70 miles of the falls, and will reach them before the end of next March. It is believed that it will be practicable to carry the electric energy generated at the falls economically even as far as the Rand, and it is hoped to work by means of it a large proportion of the South African Railway mileage, as well as to supply the power needed to the gold mines. American estimates are that, with conditions similar to those in Rhodesia, it will be possible to convey the current 330 miles and deliver it there at a cost of \$22 per kilowatt per annum, the load being on for the whole twenty-four hours of the day. Within a radius of 300 miles of the falls are included the Wankie coalfields, Bulawayo, the Gwelo, Sebakwe, Selukwe, Lomagunda, and Hartley gold fields, the northern copper fields, and about 900 miles of railway line; while a transmission of 600 miles would take in the whole of the South African gold fields. The site of the falls is said to be healthy throughout the year, and the whole region is thought to be more richly endowed with mineral wealth, including copper, gold, iron, and coal, than any similar area on the surface of the globe. At present only preliminary survey work is in progress, but it is expected to complete this very shortly, and work will then be begun with the building of a hydro-electric generating station, much on the lines of that at Niagara.

Zinc White from Mine Slag.

News received from abroad would seem to indicate that Prof. Ellershausen, a well-known German chemist, has invented a process of extracting zinc white from slag. He and Prof. Sir William Ramsay successfully experimented at the Hafaa mine in North Wales, showing that a ton of zinc white can be extracted from fifteen tons of slag by a far simpler and cheaper process than is now used in a roundabout production from spelter.

Great Britain imports about 200,000 tons of zinc white annually from the United States, Germany, and Belgium.