

NOTES ON INORGANIC CHEMISTRY.

AN account is given in the *Chemiker-Zeitung* of a dangerous accident occurring in the shipment of sodium peroxid. The material was destined for Japan and was in nine cases of sixty kilos each. It was contained in thin zinc boxes. In unloading, one of the first two cases exploded with a very loud report, a number of workmen were injured, several fatally, and a fire was caused. Serious consequences to the shipper may ensue, for the cases were merely labeled 'chemicals,' no evidence of the dangerous nature of their contents being furnished.

IN the manufacture of superphosphate for fertilizer, when apatite is used, large volumes of hydrofluoric acid are evolved, which contaminate the atmosphere very seriously, aside from being a commercial loss. A process has been devised by C. Elschner, which is described in the *Chemiker-Zeitung*, for the recovery and utilization of these gases in the form of fluorsilicic acid. This is used in the manufacture of artificial stone, and for hardening bath for both soft limestone and soft sandstone. A patent has also been issued for the utilization of fluorsilicic acid as a medium for preserving stable manure. The crude acid is absorbed by burnt and ground clay. This is dried again, pulverized and sprinkled upon the fresh manure in conjunction with a second powder consisting of either a mixture of sulfuric acid and kieselsäure or a ground bisulfate. It is claimed by the use of these powders all the valuable constituents of the manure are perfectly preserved.

A SERIES of articles on hydraulic cements by O. Rebuffat has appeared in the *Gazzetta*, from the laboratory of the School of Engineering at Naples. The natural puzzolana mortar is, when used under sea water, changed into a hydrated aluminum silicate containing little lime, and this silicate is very slightly influenced by the sea water. It seems to be much better to use the cement in the way generally used a few years ago that is, by grinding the puzzolana to an extremely fine powder rather than to mix it with sand. Artificial puzzolana can now rarely be made on terms which will enable it to compete with the natural product.

SOME time since Professor Fittica of Marburg

announced that he had succeeded in transmuting phosphorus into arsenic. Professor Clemens Winkler seemed to be the only chemist who took Fittica's astounding claims seriously enough to refute them. Winkler showed that Fittica's results could indeed be obtained, but the arsenic was due, not to transmutation from phosphorus, but to impurity in the phosphorus. Fittica seems not to have availed himself of Winkler's offer of a specimen of phosphorus free from arsenic, with which to repeat his transmutation experiments. Now a rather extended paper by Fittica appears in the *Chemical News*, apparently translated from the *Chemiker-Zeitung*, in which the author not only repeats his claim to have transmuted phosphorus into arsenic, but also claims, by varying the method, to obtain small quantities of antimony. He claims that Winkler's failure to obtain arsenic from pure phosphorus is due to his neglect to follow Fittica's method with exactness. A dozen years ago Fittica gave public utterance to the expression that at heart all chemists are still alchemists, in the sense of believing possible the transmutation of metals. Now he considers he has justified this expression.

A SERIES of experiments have been carried out by Alex. de Hemptinne for the purpose of determining whether in general an influence is exerted by magnetism on the equilibrium of a chemical reaction. These are described in the *Bulletin* of the Royal Belgian Academy. The reactions included the solution of iron in hydrochloric acid, the catalytic action of the hydrogen ion upon the saponification of methyl acetate and upon the inversion of sugar, and the union of hydrogen and chlorine. In all these cases the quantitative effect of a magnetic field was less than the probable error of experiment, so that it may be concluded that in these cases, at least, the influence of magnetism, if it exists at all, is very slight.

J. L. H.

CURRENT NOTES ON METEOROLOGY.

MONTHLY WEATHER REVIEW.

THE *Monthly Weather Review* for August (dated October 16, 1900) contains a number of articles of more than ordinary interest. A report on 'Meteorological Observations during the Burn-

ing of the Plant of the Standard Oil Company at Bayonne, N. J., July 5, 6, and 7, 1900,' by W. H. Mitchell, notes the formation of cumulus clouds over the smoke from the fire, and the fact that the surface winds were drawn in towards the fire from a distance of over half a mile. The 'Climatology of St. Kitts, W. I.,' by W. H. Alexander, Observer Weather Bureau, discusses observations made in 1892-1899. Professor A. J. Henry considers 'The Hot Weather of August, 1900.' The initial movement which led to the hot wave during August was the slow drift of an area of high pressure southward and southwestward from southern New York, where it was located on August 4th, to the Ohio and Upper Mississippi valleys, in which region it culminated about the 8th. The warm weather extended from the Rocky Mountains to the Atlantic, and within this general area of high temperature there were small areas of excessive heating, as near St. Paul and St. Louis. At St. Paul the monthly mean temperature was 77.2° , a higher average than has before been recorded there, and at St. Louis, also, the August mean was higher than any previously observed there. Two additional points are of special interest. From August 6th to August 11th, when the highest temperatures were recorded in Pennsylvania, Maryland, the District of Columbia and Virginia, the winds were from a northerly quarter. Secondly, between the 6th and the 11th the diurnal variation of the barometer at Washington was almost tropical in its regularity, and was very marked. Professor Abbe calls attention to the fact that a *Monthly Statement of Average Weather Conditions*, giving a brief discussion of the average weather conditions of each month as determined by long observation, is hereafter to be issued by our Weather Bureau. These statements are prepared in response to a popular demand for something in the way of a long range weather forecast. The first of these statements, that concerning August weather, is printed in this number of the *Monthly Weather Review*. Professor Abbe also has a paper on 'The Influence of the Lakes on the Temperature of the Land,' in which he concludes that "the direct influence of the lake water upon the temperature is appreciable for a few miles only; the indirect in-

fluence, by reason of the formation of cloud and rain, may be felt for 50 miles."

CLIMATE OF CORDOBA (ARGENTINA).

UNDER the direction of Mr. Walter G. Davis, the Argentine Meteorological Office is issuing a series of reports on the climate of Argentina with a rapidity and to an extent which is certainly phenomenal. The latest volume, XIII., bearing the date 1900, embraces 620 pages, 33 of which concern the Annual Reports of the Director for 1894 and 1895, and the remainder of which (*i. e.*, 587 pages) consists of meteorological tables for Cordoba. These tables are a continuation of those published in Vol. IX., of the *Anales* of the Argentine Meteorological Office, which ended with the year 1893. The number of years included in the present volume is five, ending with 1898. The completeness of tabular presentation is admirable, there being, for example, twenty-six distinct tables giving the results of observations on evaporation alone. It is impossible to overestimate the value of the data contained in such reports as this.

R. DEC. WARD.

AN EXPLOSION OF SCIENTIFIC INTEREST.

A SINGULAR though not unprecedented accident took place at the Mammoth mine, in Utah, recently, illustrating applied thermodynamics in an interesting but fatal manner, causing the death of one and the severe injury of another of the engineers of the mine.

The cylinder of an air-compressor exploded while in operation in regular work, and with such violence as gave evidence of more than the action of the normal air-pressure in its production. The back cylinder-head and the cylinder itself were shattered; the violence of the explosion was terrific. The two men were thrown across the room and badly mangled and one instantly killed. Fragments of metal and of flesh were found outside the building and a long distance away. The air-pressure, at delivery from the compressor, was but 80 pounds per square inch. The cause of the explosion is presumed to have been the compression of the vapors of petroleum given off by oil used for lubrication in too large quantity and of too light