slightly the efficiency. Larger proportions of these oxids are prejudicial, especially those of neodymia and yttria.

Commercial calcium carbid has, as is well known, a reddish brown color. Moissan has lately studied this color and finds that it is due to the presence of iron, even traces of which give it a decided tint. He finds, however, that the pure calcium carbid crystals are colorless and transparent.

Apropos of the disputed occurrence of copper as a normal constituent of plants, Professor G. B. Frankforter, of the University of Minnesota, describes, in the last *Chemical News*, a very interesting occurrence of metallic copper disseminated in the pores of an oak tree in Minneapolis. The tree had died, and, on cutting it up, the presence of copper was so noticeable as to attract attention. Microscopic examination showed that only the outer annual rings contained an appreciable quantity of the metal, which was in the form of fine flakes, some of them 1.5 mm. in diameter. The copper appeared to be very pure. It seemed as if the tree had begun to absorb the metal only in the last few years, and that this had occasioned its death. The origin of the copper was uncertain, though the soil is known to contain native copper. The fact that the copper was in the native state would raise the question as to whether this is the usual form in which it occurs in plants. Another question might be raised as to whether plants take up any of the copper which is so largely used in fungicides, and as to whether this would eventually destroy a tree on which it was used.

Up to within a comparatively short time the physical chemistry of solutions has been almost confined to those in which the solvent is water. Attention is now being turned to other solutions, and very interesting questions arise as to the applicability of the theory of electrolytic dissociation and other theories which have been worked out only with aqueous solutions. We have already noticed in these columns the work of E. C. Franklin, of the University of Kansas, on liquid ammonia as a solvent. In the January number of the *Journal of Physical Chemistry*, L. Kahlenberg and A. T. Lincoln, of the University of Wisconsin, detail a number of experiments with different non-aqueous solvents as to electrical conductivity. The solvents used were methyl and ethyl alcohol, acetone, ethyl acetoacetate, benzaldehyde, and nitro-benzene. The substances dissolved were the chlorids of iron, antimony, bismuth, arsenic, tin and phosphorus. The molecular weights were also determined by freezing point depression with nitrobenzene as a solvent. The results obtained are not uniform enough, nor large enough in number, to be used for any generalization, but the following significant sentences occur at the close of the paper: "The general outlook at present appears to be that, in order to harmonize the molecular-weight determinations in many non-aqueous solutions with the relatively high electrical conductivity of the latter, the assumption that combination between solvent and dissolved substance takes place will have to be made. *Can it be true that, after its glorious success in explaining the properties of aqueous solutions of acids, bases and salts, the dissociation theory will need the help of its old rival, the hydrate theory (perhaps in a somewhat modified form), to explain the facts in the case of non-aqueous solutions?*" The authors call attention to the ideas of Werner regarding the existence of hydrated metal ions in solution, a theory which partakes of the nature of the two rival theories of solution. While Werner's theory may be in many respects unsatisfactory, it deserves to be better known among chemists, and may foreshadow something of the direction chemical thought will take, in the development out of the present valence theories.

J. L. H.

CURRENT NOTES ON METEOROLOGY.

WATERSPOUTS OFF THE COAST OF NEW SOUTH WALES.

An incident quite unique in the history of waterspout observation occurred on May 16, 1898, off Eden, New South Wales. On this day fourteen complete waterspouts, and six others, more or less incomplete, occurred in the space of five hours. It so happened that a mining engineer, Mr. D. R. Crichton, was engaged in making certain observations with a theodolite in Eden at the time when the waterspouts began to form off-shore. Mr. Crichton made the most of his very exceptional opportunity;

watched the spouts carefully through the telescope of his theodolite, and obtained some definite measurements as to the height of the largest spout. According to his calculations the height above the sea of the top of the inverted cone was 5,014 ft. The cones at the top and bottom of the spout were about 100 ft. in diameter, and the length of each cone from its base to the points at which the sides of the spout appeared parallel was about 250 ft. Mr. H. C. Russell, the Government Astronomer of New South Wales, has published an admirable, illustrated account of this remarkable series of waterspouts, together with a record of previous waterspouts, and some observations as to the conditions under which these phenomena occur. (Journ. Roy. Soc., N.S.W., Vol. XXXII., 1898.)

ANNUAL REPORT OF THE CHIEF OF THE WEATHER BUREAU.

THE *Annual Report* of Professor Willis L. Moore, Chief of the Weather Bureau, emphasizes once again the wide scope of the work of the Bureau and the value of this work to the public at large. The extension of the meteorological service to include observations at various stations in the West Indies, Mexico and Colombia has already been referred to in these Notes. The observations made during the International Cloud Year are under discussion and will soon be published. The total number of forecasts distributed during the year, exclusive of those published in the daily papers, was, approximately, 23,531,500. Sixty-four per cent. of this distribution was by logotype cards, sent through the mail or carried by messengers; 23% by maps and bulletins; 10% through cooperation of railroad, telegraph and telephone lines; 3% by telegraph and telephone lines at the expense of the Bureau. Weather maps to the number of 5,239,800 were distributed. A section of the Climate and Crop Service has been established in Alaska. A meteorological chart of the Great Lakes has been issued monthly during the season of navigation.

METEOROLOGICAL CHART OF THE GREAT LAKES.

THE *Meteorological Chart of the Great Lakes*, dated January 4th, contains a summary, for the year 1898, of the storms on the Lakes, the number of disasters and of lives lost, the values of the vessels lost, and the causes of the disasters. Thirty-nine vessels were totally lost, all as the result of gales. Of the partial losses (104), 22 were due to fog and 82 to gales. The number of lives lost was 96. The relative frequency of fog over the Lakes during the season of navigation (April 1st to December 15th) is shown by five different styles of shading.

NOTES.

A NOTABLE work on the physiological effects of high altitudes has recently been issued. It is an English translation—entitled 'Life of Man on the High Alps' (London, 1898)—of a book originally written in Italian by Professor Angelo Mosso, of Turin. According to *Nature* (January 26th) this "is the first attempt that has been made to present the various complex physiological phenomena which man exhibits at high altitudes in such a form as to be easily understood by those who are not trained physiologists."

IN his Presidential address before the Royal Meteorological Society on January 18th, Mr. F. C. Bayard stated that in the British Isles only two shillings and sixpence per square mile is voted by the government for the support of meteorology. This amounts to one-third of a farthing per head.

R. DEC. WARD.
HARVARD UNIVERSITY.

CURRENT NOTES ON ANTHROPOLOGY.

MEGALITHIC MONUMENTS.

AT the last meeting of the German Anthropological Society, Professor Virchow delivered a long and elaborate address on the 'megalithic monuments' of Europe. He rejected all theories so far advanced as to their builders, and left it as a question for the future to settle.

Mr. W. C. Borlase, probably the best authority on the subject, is the author of a work in three volumes on 'The Dolmens of Ireland.' His descriptions are excellent, but in his search for their constructors he loses himself in the maze of Irish legendary lore, and falls into the common error of supposing that because the same stories are told and the same superstitious practices obtain concerning these monuments in Ireland, Spain, France and Germany there must have been relations and borrowing. This