

**Tin Discoveries on Lake Superior.**—Some time since, the technical journals very generally circulated a circumstantial account, detailing the discovery of abundant and valuable deposits of tin on the north shore of Lake Superior, and purporting to be the result of personal examination of the field. As nothing either confirmatory or contradictory of this account has since appeared, it may be of interest to state that a correspondent of the *Engineering and Mining Journal*, who recently resided in the region of the alleged discoveries, writes to the editor a letter, in which he casts the gravest doubts upon their genuineness, and intimates that the whole statement bears the appearance of having been a systematically devised attempt at swindling.

**New Method of Mounting Stereoscopic Views.**—By PROFESSOR HIMES.—Instead of affixing the photographic prints to the usual stiff cards, they are mounted in a book, about  $3\frac{3}{8}$  by  $3\frac{1}{4}$  inches, on leaves of heavy paper of double that size, fastened by their centres on short guards, like maps in an atlas, each book containing about a dozen such double leaves. A piece of smooth paper is placed between the halves of each stereograph after mounting, and the book subjected to pressure, as of a copying press, for an hour or more. By opening such a book at any of these double leaves, and sliding it between the wire guards of a Holmes stereoscope, like an ordinary stereograph, an effect equal in all respects to that of the card stereograph is produced. Since the pictures can be readily examined by simply turning the leaves, and may be compactly stowed away, it is claimed that there is comparative freedom of the photographs from injury by mechanical, chemical, or atmospheric influences, whilst the facility of reference to any particular picture is greatly increased, especially when collections are properly arranged and classified; for which purpose each book is supplied with blank index and title pages. It is suggested that collections of stereographs on this plan, illustrative of different subjects, scientific and otherwise, or supplementary to books upon such subjects, might be placed in libraries, accessible to the public, with almost as little risk of injury as the books; a few simple instruments hung near such cases being the only addition necessary. The range of purely scientific subjects susceptible of stereoscopic illustration might increase under such encouragement.

**The Artificial Production of Low Temperatures.**—By PROF. EDWIN J. HOUSTON.—A need long experienced in science, viz: the

means of obtaining exceedingly low temperatures, seem at last to have been met by a German invention recently re-patented in this country. We allude to the "Windhausen Ice and Refrigerating Machine." Though introduced almost solely for practical purposes, mainly for the cheap production of artificial ice, the machine contains latent possibilities, which we hope will at once be utilized, that open up the most promising field to the original investigator, and bid fair to enrich science with stores of new facts.

Hitherto the lowest temperatures have been obtained through the rapid evaporation of solid carbonic acid dissolved in ether, or with liquid protoxide of nitrogen and bisulphide of carbon. These methods require much time, skill and caution, and are seldom employed. The Windhausen process, however, accomplishes the same result, with less trouble. A steam engine is employed to condense air to, say, two or three atmospheres. The heat developed by the compression is drawn off during the passage of the condensed air through pipes in a series of chambers, in which cold water is flowing. The cooled air is then allowed to expand into a cylinder under a gradually diminishing pressure, the expansion being attended with the development of great cold. It is claimed that under a pressure of but 35 pounds to the square inch, a reduction of — 54° F. has been obtained, a surprisingly low temperature, considering the means employed.

The following modifications of the apparatus would render its cold-producing power almost unlimited:—

1st. A communication between the expansion cylinder and the chambers through which the condensed air is conducted before it is allowed to expand. Supposing this outlet regulated by a cock, a blast of very cold air could replace the running water, and reduce the condensed air to a very low temperature.

2d. The introduction of a second compressing cylinder, with which the condensed air, after being cooled, could be still further compressed, again cooled, and finally conducted into the expansion cylinder. Under a pressure of, say, 60 atmospheres, a considerable mass of air at the temperature of say — 100° F. would, in its expansion, produce a reduction of temperature greater perhaps than any yet obtained. Since by means of the communication between the expansion and cooling chambers, the condensed air can be lowered to any temperature obtainable in the expansion cylinder, there would appear to be no other limit to the reduction of temperature save what would arise from the strength of materials, or the liquefaction and subsequent freezing of the nitrogen, or the oxygen of the air, or of the air itself.

Among the advantages that we may rationally expect to accrue from the apparatus thus modified, are the following :

1st. The confirmation or otherwise of the "absolute zero," as determined by the expansion or contraction of gases by heat or cold.

2d. The liquefaction and subsequent solidification of many of the incoercible gases, the determination of their physical peculiarities as liquids or solids, together with their crystalline form.

3d. The action of intense cold on the chemical affinities of certain gaseous compounds.

4th. The action of intense cold on the color of certain chemical compounds.—*Dept. Physics Central High School.*

**Artificial Alizarine.**—In substantiation of the growing importance of the manufacture of the artificial madder, referred to in a former item concerning the utilization of waste products, some remarks of Mr. J. W. Russell, before the Chemical Section of the British Association for the Advancement of Science, are directly to the point.

From his statements it appears almost certain that the industry of growing madder will shortly be extinguished altogether, and the lands and labor, now almost exclusively devoted to its cultivation in many parts of Germany and France, turned into other channels of production. Mr. Russell concludes his remarks as follows: "The alizarine mud, as I have called it, containing but ten per cent. of dry alizarine, is equal in dyeing power to about eight times its weight of the best madder, and is, moreover, the pure substances required for the dyeing in place of a complicated mixture (the natural madder) containing certain constituents which have a positively injurious effect on the colors produced. \* \* \* \* The demand for, and supply of, artificial alizarine are increasing at a most rapid rate, and yet its manufacture seems hardly to have commenced. The value of madder has much decreased; and, in fact, judging from what occurred in the year of revolution and commercial depression (1848), when the price of madder fell for a time to a point at which it was considered it would no longer remunerate the growers to produce it, that point has now again been reached, but certainly from a very different cause. Last year, artificial alizarine, equal in value to about one-fourth of the madder imported into England, was manufactured in this country. This year the amount will be much greater. Thus is