

the types have been subjected. Professor Ripley undertakes its solution by an analysis of each of the ethnic elements, such as language, skull-form, complexion, hair, stature, etc. Numerous maps, diagrams, and photogravures put the reader at a glance in possession of the relative localization of these traits. The theories of their origin and distribution, as advanced by the principal students of the subject, are brought forward and examined. The author evidences both a thorough acquaintance with the subject and a freedom from bias in reaching his conclusions which cannot fail to command for them the most careful attention.

ANOTHER INTERPRETER OF THE MAYAN HIEROGLYPHS.

It is a gloomy duty to chronicle the victims to the story of the Mayan hieroglyphs, but a duty it is.

One of the latest is Herr A. Eichhorn, of Berlin. He has discovered that about 24,000 years ago the ancestors of the Mayas dwelt on an island in a now dried-up lake in Central Asia. They there developed a science of astronomy, mathematics and philosophy, which they embalmed in their heraldic insignia, their hieroglyphs and in the grammatic and etymologic construction of their languages. On reaching Central America, say about 12,000 B. C., they continued their relations with Europe until 1500 B. C., the Pelasgi and Leleges being really Mayas. About the ninth century of our era the Northmen visited Yucatan, and brought from there the Gothic style of architecture into Europe. Mayas, Nahuas and Toltecs are, in fact, the same people and speak the same secret language, as Mr. Eichhorn proves by an analysis of many words. Their common calendar system he explains with ease. It is entirely theosophic and symbolic.

Does the reader wish more? Then let

him buy Mr. Eichhorn's work, a handsome quarto of 128 pages, entitled 'Nauual, oder die hohe Wissenschaft der architectonischen und künstlerischen Composition bei den Maya-Völkern.' (Berlin, Max Spielmeier.)

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NOTES ON INORGANIC CHEMISTRY.

A STUDY of ozone from a technical standpoint by E. Andreoli appears in the *Journal of the Society of Chemical Industry*. Theoretically, one should be able to produce a kilo of ozone per electric horse-power, but in practice only ten or twelve grams are obtained. By improvements in the apparatus for producing ozone, the author increases the production to thirty and even fifty grams per horse-power, making the cost of ozone about three shillings a kilo. Among the improvements in the apparatus are passing the air directly between the electrodes, thus avoiding two glass dielectrics; a minimum distance between the electrodes, made possible by discarding the glass dielectrics; increase in surface (and number) of electrodes; use of electrodes covered with numerous sharp points. The author proposes a large number of technical applications of ozone, such as purification of drinking water, cleansing of beer casks, preparation of wood for instruments and furniture, bleaching of starch and dextrin, oxidation of drying oils, purification of wine and brandy, etc. It does not appear, however, that any of these proposed uses have been tested practically and on a large scale.

An investigation, by S. A. Andrée, of the amount of carbon dioxid in the atmosphere, abstracted in the *Chemisches Central-Blatt*, shows but slightly varying quantities at different elevations. Air collected on a balloon ascent from the height of 1,000 to 3,000 meters contained 3.23 parts carbon dioxid per 10,000; from 3,000 to 4,300

meters, 3.24 parts, while at the earth's surface the amount is 3.03 to 3.20. Nansen found, when crossing Greenland, that at elevations of 2,300–2,700 meters, and with a temperature of -20° , the amount of carbon dioxid was as great or even greater than at Stockholm. It seems now well settled that the old figure of 4 per 10,000 as the content of the atmosphere in carbon dioxid is decidedly too large, and that the amount varies locally within quite narrow limits, but with a tendency to increase slightly with the elevation. The cause of this variation is, as yet, unexplained, but the consumption of the gas near the surface of the earth by plants would seem to be a factor.

A SERIES of experiments on the resistance of cements to sea water was begun in 1856 at the harbor of La Rochelle, and is described in the *Thonindustrie-Zeitung* by E. Candlot. The experiments consisted in placing cubes of cement of different compositions, 60 centimeters long, where they would be covered by the sea at high tide and exposed to the air at low water. Blocks of cement without sand disintegrated more rapidly than those containing sand, and the best mixture was one volume of cement with from one to two volumes of sand. Such blocks lasted from twenty to thirty-eight years. This mixture corresponds to the least porous material, that is, the cement suffices to completely fill the interstices between the grains of sand. An excess of lime or magnesia in the cement is detrimental; this occurs when the quantity of silica and alumina is insufficient to saturate these bases. The best cement is that which requires least water for mixing, relative to the amount which it can hold chemically combined when 'set.' Portland cement was found to require very little excess of water, and hence gave the densest and least porous results and the maximum durability.

J. L. H.

SCIENTIFIC NOTES AND NEWS.

A PERMANENT CENSUS BUREAU.

WE are glad to note that Senator Chandler, Chairman of the Committee on the Census, reported favorably, on May 10th, the bill providing for taking the twelfth census and for the establishment of a permanent census service. This bill was drawn up by the Hon. Carroll D. Wright, Commissioner of Labor, in accordance with a joint resolution of Congress, and demonstrates the advantages of securing expert scientific advice in regard to proposed legislation. The main provisions of the bill are as follows:

It provides for a permanent census office at Washington, the duties of which shall be the taking of the twelfth and succeeding decennial censuses and the collection of other statistical information in intervening years. The Director of the Census and the Assistant Director are to be Presidential appointees, but the latter must be an experienced practical statistician. The other officers, including five chief statisticians at an annual salary of \$3,000 each, will be appointed under the civil service rules.

The sum of \$75,000 is to be appropriated for the organization of the office. It is estimated that the annual cost will be less than \$500,000, and that the decennial enumeration with the tabulation of results will cost an additional sum of about three or four million dollars. The permanent census bureau would consequently cost less than the eleventh census, for which some eleven and a half million dollars were expended. It is estimated by Mr. Wright that two million dollars of this sum can be charged directly to the fact that the force was not under civil service rules.

The bill provides for taking the census hereafter on April 15th in place of June 1st, as at the latter date the people are scattered from the cities. It is proposed to omit from the decennial census certain items regarding vital statistics, mortgages, Indians, etc., included in the eleventh census, these being in part relegated to other bureaus and to the separate States. The office would, however, issue annually accounts of agricultural products and biennially accounts of manufactures. Statistics of deaths and births would be obtained from the registration records