an anthropologist. It necessarily includes several departments, but in a period of three years a diligent student could be qualified for original research.

PLIOCENE MAN IN BRITAIN.

GEOLOGICAL readers are aware that the Cromer Forest Beds of eastern England are to be assigned to either the latest Pliocene or oldest Pleistocene. They are distinctly preglacial and contain remains of a subtropical fauna.

From an article in *Natural Science*, for January, it appears that Mr. W. J. Lewis Abbott has collected from these beds a series of chipped flints bearing 'a striking resemblance to the work of man,' and have been pronounced to be such by competent experts. One showed a plain 'bulb of percussion.'

As there seems no doubt about their deposition with the original strata, the only question remaining is their production, whether by the hand of man or natural agencies. There still remains some doubt even as to the flints from the plateau of Kent on this vital point.

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NOTES ON INORGANIC CHEMISTRY.

ON January 11th Professor Clemens Winkler, of Freiberg, delivered an address before the Deutsche Chemische Gesellschaft on The Discovery of New Elements during the last twenty-five years and problems connected therewith. He first considered the quantitative distribution of the elements, showing by Professor F. W. Clarke's tables that as far as concerns the outer ten miles of the earth, together with the atmosphere, one-half of all the material is oxygen, and one-quarter is silicon, and that these two elements, with aluminum, iron, calcium, magnesium, sodium and potassium make up over 7.5 per cent. None of the remaining elements occur in as great abundance as one per cent. In the process of cooling of the earth, and subsequent geologic action, many of the less abundant elements have become somewhat localized or concentrated; as, for example, chlorin in the sea and in salt deposits, the heavy metals in veins and lodes. Were this not the case many of the rarer elements must have escaped detection. An instance of this is scandium, discovered by Nilson in 1879, of whose oxid but a few grams exist. This element, and gallium, discovered by Lecoq de Boisbaudran in 1875, and germanium, discovered by Prof. Winkler himself in 1886, possess a peculiar interest, in that the properties of each had been quite accurately predicted by Mendeléef in 1871. Their discovery was a complete confirmation of the principles of the periodic law. The mineral gadolinite, with others closely kin, has been a fertile source of investigation, and the list of 'rare earths' that have been discovered in it is apparently by no means complete. Erbium, holmium, thulium, dysprosium, terbium, gadolinum, samarium, decipium and ytterbium have been discovered by various observers, but the independent existence of several of these is far from certain. Of several supposed new elements the non-existence is more sure; such are metacerium, russium, jargonium, austrium, norwegium, actinium, idumium and masrium. The same may, perhaps, be said of the recently *patented* lucium, kosmium and neokosmium. (These last do not derive their appellation from *kosmos*, but from Kosmann, their discoverer and patentee!). Work by Auer von Welsbach on his incandescent light led him to the decomposition of didymium into neodymium and praseodymium, whose beautiful red and green salts were well shown at the Chicago Exposition. The last elements considered by Professor Winkler were argon and helium. These apparently do not as yet fall into

harmony with the periodic system. The same may be said of tellurium and cobalt or nickel. Whether some or all of these elements are mixtures or whether their seemingly anomalous atomic weights must be explained in some other way does not as yet appear.

The action of the silent electric discharge in effecting chemical synthesis is being studied by Losanitsch and Jovitschitsch at the Königliche Hochschule at Belgrade. The apparatus used is an ordinary ozonizator, or, as they prefer to call it, electrizator. Mixed gases are led through the apparatus, exposed to the discharge of a Ruhmkorff excited by a current of 70 volts and three to five amperes. Carbon monoxid and water, also carbon dioxid and hydrogen, are condensed to formic acid; carbon dioxid and water yield formic acid and free oxygen; carbon monoxid and hydrogen give formaldehyde, which quickly polymerizes, apparently to a polymer glycolaldehyde. Carbon dioxid and methane condense to acetaldehyde, which soon forms aldol. A general method for formation of aldehydes is thus presented. Nitrogen and water condense directly to ammonium nitrite, a fact known to Berthelot, and considered to have a bearing on plant nourishment. Other interesting syntheses were obtained with sulfur compounds and with ammonia. In general, the reactions seem to be rather the reverse of those produced by heat.

The December *Zeitschrift für physikalische Chemie* contains a study by Paul and Krönig on the behavior of bacteria towards solutions of different salts. All salts of the same metal do not have the same germicidal effect upon the spores of the anthrax bacillus used for most of the experiments. Thus mercuric chlorid is more deadly than mercuric cyanid. Apparently those solutions containing the largest number of free ions of a metal possessing a specific poisonous character are most active. Mercuric chlorid is more completely dissociated in solution than the cyanid. Alkaline chlorids are often used to promote the solution of mercuric chlorid, but they also decrease the antiseptic power of the solution, since they diminish the dissociation and hence decrease the number of free mercuric ions. Dissolved in alcohol, mercuric chlorid has practically no effect on anthrax spores.

J. L. H.

SCIENTIFIC NOTES AND NEWS.

REVUE DE MÉCANIQUE.*

A notable addition to the list of technical journals has been made in the establishment of this monthly. Its editors, Messieurs Haton, Bienaymé, Bourdon, Brüll, Collignon, De Comberousse, Flamant, Hirsch, Imbs, Linder, Raffard, Rozé, Sauvage, and the responsible collaborateur, Richard, all stand among the foremost men of applied science and engineering of France. They include the distinguished head of the École des Mines, member of the Institute, the inspector-general of the navy, a famous inventor and constructor, a past-President of the French Society of Civil Engineers, two inspectors-general of roads and bridges, two professors at the Conservatoire des Arts et Metiers, the engineer-in-chief of *ponts et chaussées*, upon whom the French government is accustomed to rely for advice respecting all its public works and especially at its international exhibitions, the inspector-general of mines, and the engineer-in-chief, and also a representative of the École Polytechnique.

This first volume opens with a prospectus indicating the scope of the plans of the editors and the field to be occupied by the new journal. The leading article is an extensive paper, sixteen pages, by M. Dwelshanvers-Dery, of the University of Liege; *Détermination des données fondamentales dans un essai de Machine à Vapeur*, in which the famous author gives, in full detail, the

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