pair immediately to the right, 9 E and 9 F, in which the first is 9 Ik, present the same peculiarity.

Referring to 1 E and 1 F, we see 9 Ik, and the 15th day of the month. Ik is the 14th day of the month in the Muluc years.

These examples are sufficient to render it more than probable that the method of numbering the days of the month on this tablet is as suggested. If so it limits very greatly the field of search for the interpretation of the unknown characters following the days mentioned, as we have a satisfactory reason for believing they are month symbols.

This, however, is not the only advantage gained. Take, for example, the symbols 10 S and 10 T, in regard to which there is no reasonable doubt. These indicate 11 Lamat, the 6th (5th) day of the month Xul. This combination can only occur once in a cycle of fifty-two years, to wit, in the year 10 Kan. From this and what is stated above we can safely infer that the four-year system and consequently the year of 365 days was in use in this ancient city when the tablet was made. These facts, if such they be, and the evidence of the peculiar method of numbering the days of the month, lead to the inference that there were intimate relations between the people of this city and those where the Dresden Codex was written, and that there is no very great difference in the ages of the two documents.

I can give other data in reference to the interpretation of this noted inscription, but will not ask further space in *Science* at this time. I will simply add that the phonetic value of the *hand* symbol which so frequently occurs is probably *Ch*.

CYRUS THOMAS.

THE NEW ELEMENT, MASRIUM.[1]

FURTHER details concerning the new element, whose probable existence was announced in a paper communicated to the Chemical Society at their meeting on April 21, are contributed to the number of the *Chemiker Zeitung* dated May 11. The mineral containing the new substance was discovered in 1890 by Johnson Pacha in the bed of an old river in Upper Egypt long since dried up, but of the former existence of which there are records dating back some 6000 years. Indeed, the name by which it is known in the neighborhood is "Bahr-bel'a-Mā," or "river without water." Here and there in the track of the old watercourse are small lakes whose water is of considerable repute for its medicinal value. Specimens of the mineral were sent by Johnson Pacha to the Khedivial Laboratory at Cairo, where it was examined by Messrs. H. Droop Richmond and Hussein Off, the authors of the paper laid before the Chemical Society. The mineral is found to be a fibrous variety of a mixed aluminium and iron alum containing ferrous, manganous, and cobaltous oxides. In addition, however, to these ordinary constituents, a small quantity of the oxide of another element would appear to be present, having properties entirely different from those of any yet known. This element the discoverers have termed *masrium*, from the Arabic name for Egypt, and the mineral has accordingly received the name of *masrite*. The symbol adopted for masrium is Ms.

The composition of masrite may be expressed by the formula $(Al, Fe)_2O_3 . (Ms, Mn, Co, Fe)O . 4SO_3 . 20H_2O$. The amount of masrium present is very small, averaging only about 0.2 per cent, but by working upon fifteen kilograms of the mineral a considerable quantity of the element in the form of various salts has been accumulated A typical analysis of masrite published in the Proceedings of the Chemical Society is as follows:—

Water	40.35
Insoluble matter	2.61
Alumina	10.62
Ferric oxide	1.63
Masrium oxide	0.20
Manganous oxide	2.56
Cobaltous oxide	1.02
Ferrous oxide	4.23
Sulphuric oxide	36.78
	100.00

Suspicions that the mineral contained some hitherto unknown constituent were first aroused by the fact that when it was dissolved in water, and sulphuretted hydrogen was passed slowly through the solution in presence of acetic acid, instead of the expected black precipitate of sulphide of cobalt a white insoluble substance was first precipitated. This white precipitate continued to form until the new substance in the solution was all used up, when black sulphide of cobalt began to be thrown down. By decantation before the formation of the latter, and subsequent washing with dilute hydrochloric acid, the white substance was isolated in a state of tolerable purity. It was found to dissolve in boiling nitrohydrochloric acid. The solution in *aqua regia* was evaporated in order to remove the excess of acid, and ammonium hydrate added, when a voluminous white precipitate of the hydrate of the new metal was thrown down. The hydrate was washed by decantation, and subsequently dissolved in the minimum excess of sulphuric acid. The solution of the sulphate of the new metal was next evaporated to syrupy consistency, water was added until complete solution was just effected, and the solution mixed with an equal bulk of alcohol. The effect of this addition of alcohol was to cause immediate precipitation of crystals of the sulphate of the new metal, a further crop of which was also obtained upon evaporation. By repeated recrystallization most of the small quantity of iron present was removed. In order to eliminate the last traces of admixed ferrous sulphate, the crystals were redissolved in water, and excess of sodium hydrate added. As the hydrate of the new metal is soluble in excess of soda, the hydrated oxide of iron was readily removed by filtration. Upon the addition of ammonium chloride the white hydrate was precipitated in a gelatinous form; the hydrate was redissolved in hydrochloric acid, and again precipitated and washed. The almost perfectly pure hydrate so obtained was then finally converted to chloride by solution in hydrochloric acid.

In order to obtain data as to the atomic weight of masrium the following determinations were made. A known quantity of the chloride solution was precipitated by ammonia, and the hydrate thus obtained was ignited, and the remaining oxide weighed. A second portion was precipitated by a solution of microcosmic salt in presence of ammonia, and the phosphate obtained ignited and weighed. The chlorine contained in a third portion was determined by means of silver nitrate in the ordinary manner. From the numbers so obtained the equivalent of masrium was calculated. A pure preparation of masrium oxalate was also obtained by precipitating the neutral solution of the chloride with ammonium oxalate, masrium oxalate resembling the oxalate of calcium in being insoluble under such conditions. The precipitated oxalate was washed, dried, and ignited in a combustion tube whose forward end was filled with copper oxide, when the salt was decomposed with elimination of its water of crystallization, which was absorbed and weighed in the usual manner. The residual oxide was also weighed,

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[1] From Nature.

and the oxalic acid, in another quantity of the salt, was determined by means of a standard solution of potassium permanganate. The crystals of the oxalate were thus found to contain 52.70 per cent of masrium oxide, 15.85 per cent of oxalic anhydride, and 31.27 per cent of water.

From the whole of the analytical data yet obtained, assuming, as the reactions of the salts would indicate, that masrium is a divalent element, the atomic weight would appear to be 228. An element of atomic weight about 225 is, indeed, required to occupy a vacant place in the periodic system in the beryllium-calcium group, and masrium appears likely to be the element in question.

Masrium has only yet been observed to combine with oxygen in one proportion, to form the oxide MsO. Masrium oxide is a white substance much resembling the oxides of the lime group. The chloride, $MsCl_2$, is obtained upon evaporation of a solution of the oxide or hydrate in hydrochloric acid. The nitrate, $Ms(NO_3)_2$, crystallizes from 50 per cent alcohol, and the crystals contain water, the amount of which has not been determined. The sulphate, $MsSO_4 . 8H_2O$, is a white salt which crystallizes badly from water, but which separates in well-developed crystals from 50 per cent alcohol. It combines with sulphate of alumina to form an alum, also with potassium sulphate to form a double sulphate. The oxalate above referred to, $MsC_2O_4 . 8H_2O$, is a white salt, soluble in acetic acid, and also in excess of masrium chloride.

The most important reactions of the salts of masrium, as far as they have yet been studied, are the following. Sulphuretted hydrogen produces no precipitate in presence of hydrochloric acid, but yields a white precipitate in presence of acetic acid. Ammonia precipitates the white hydrate of masrium from solutions of the salts; the hydrate is insoluble in excess of ammonia. Ammonium sulphide and carbonate produce white gelatinous precipitates, likewise insoluble in excess of the reagents. Ammonium phosphate yields a white precipitate of phosphate. Caustic alkalies precipitate the hydrate, but the precipitate is readily soluble in excess of the alkaline hydrate. Potassium ferrocyanide produces a white precipitate which is soluble in excess of masrium chloride, but not in dilute hydrochloric acid. Potassium ferricyanide yields no precipitate. Potassium chromate precipitates yellow chromate of masrium, which is soluble in a further quantity of masrium chloride. Potassium tartrate yields a white tartrate precipitate which dissolves in excess of the reagent, but the solution is not reprecipitated by the addition of ammonia.

Metallic masrium has not yet been obtained. Attempts to isolate it by heating the chloride with sodium under a layer of common salt, and by the electrolysis of a solution of the cyanide proved unsuccessful. The chloride, moreover, is not sufficiently volatile to permit of its vapor density being determined.

From the above interesting reactions, however, it will be evident that masrium possesses a strong individuality, although on the whole behaving somewhat like the metals of the alkaline earths and those of the zinc group. Further work will doubtless afford more definite information concerning its nature and properties. A. E. TUTTON

SOME NOTES ON THE VICTORIA NYANZA.

THE following observations on the Victoria Nyanza have been sent to the Royal Geographical Society by Mr. Ernest Gedge, who has spent a considerable time on the lake and in its neighborhood: "The appearance of the lake suggests the formation at some remote period of a vast trough or valley; the western coasts give striking indications of this, especially in Karagwé, where the cliffs come sheer down with deep water close in shore. Inland, behind these, can be noticed a succession of lines of fault, running parallel to one another, forming a series of terraces or steps, which finally culminate in the high grassy plateaus stretching away westwards. There is nothing either on this side or on its southern shores suggesting volcanic action; the geological structure consisting for the most part of gneissic formations and schists, with enormous boulders of porphyritic granite, the latter constituting the most prominent feature on its southern coasts, as well as forming a remarkable island in the lake, known as the "Makoko" or white rocks. On the northern shore outcrops of honey-combed iron stone and lava blocks are to be seen, and this change in the geological structure is accompanied by a corresponding change in the vegetation, from the sterile arid wastes so characteristic of the southern coasts, to rich tropical growth. The main visible sources of the water supply for this great reservoir are the Kagera, Nzoia, and Ngure Darash rivers; and these, though continually discharging a certain amount of water into the lake, are of no great size, except during the rainy season, appearing totally inadequate to maintain the equilibrium of the lake, when we consider the volume of water constantly being carried off by the Nile, as well as the loss that must be caused by evaporation from so large an area. This would lead one to suggest the existence of springs to make up the deficiency. The lake is of great depth in places, and the water fresh and clear, though flat and insipid to drink. Fish are plentiful, being mostly caught with a rod and line, the nearest approach to netting being a screen of grass mats, used as a sieve by the people in Lower Kavirondo, and the basket traps used by the Ba-Sesse. Amongst others is a Silurus, which has evidently been mistaken for the porpoise, owing to its shiny black body, and its habit of coming to the surface and indulging in porpoise-like gambols in calm weather. Hippopotami are not very plentiful, as they chiefly confine themselves to the coasts and rivers. Those that are found in the open water are, however, extremely vicious and much feared by the Ba-Sesse canoe-men, who, strange to say, are unable to swim. This is no doubt largely due to the fact of the lake being infested with alligators, rendering it dangerous for any one to enter the water. Cyclonic storms of great violence occur at certain seasons, and are most dangerous to small craft. These storms in August usually occur at daybreak, coming from the south-west, with much thunder and lightning. Following the coast-line for a time, they would suddenly sweep across the lake in a north-east direction, raising a tremendous sea, and on several occasions we were in imminent danger of being swamped. During this month I noticed that about 3 A.M. the wind was invariably off-shore, varying from the north-north-east to north and north-west. This would drop about 11 A.M., to be followed by a calm lasting to about 2 P.M., when the wind would again come up and blow strongly, in gradually increasing force, from the south-west to south, dying away again at night about 8 P.M. During November the prevailing wind was from the north–east. One of the most remarkable phenomena I witnessed was the apparent tide observable at irregular intervals, the waves coming in and overflowing the beach in exactly the same way as the tide on the sea-shore, the rise and fall lasting from half an hour to an hour or more. This