by the testimony of the minor phonetic elements there was more method and arrangement in these than we can expect from a Maya — Indian — scribe, and for this reason the writer is prone to condemn his own work, yet repeated trials with the phonetic list arranged by him have given such good results that he is of the opinion that with careful research some good results may accrue that will be of value to students of Maya and its paleography.

It may be added, in conclusion, that the glyph known to Maya paleographers as that of "The God with the Old Man's Face," has been analyzed — its minor elements suggesting that it is that of Hoobuil-Kanil-Bacub. The suggestion given by the minor elements is "Ho-ka-n-ba-ka." The association of this glyph with "The Bee-Keeper's Narrative" of the Troano, lends a strong probability that the interpretation is a correct one, and that a former analysis attempted was erroneous.

This article is intended to be suggestive. The writer holds himself in readiness to modify any of the statements made, if the contrary be proven, or he finds in the progress of his researches that new evidence obtained proves former suggestions to be erroneous, thus only can we diminish the field of error and enlarge that of the truth.

Mexico, Jan. 31.

PRELIMINARY NOTE ON THE DISTRIBUTION OF PLACE-NAMES IN THE NORTHERN HIGHLANDS OF SCOTLAND.

BY JOHN GUNN, ACTING SECRETARY, ROYAL PHYSICAL SOCIETY.

NOTHING, at the present day, exhibits in a stronger light the effects of the Scandinavian occupation of the Northern Highlands of Scotland than the frequent occurrence of Norse place-names. And this, it must be remembered, in spite of the fact that the invaders were never permanently able to establish their own tongue as the language of the country, except in the Orkney and Shetland Islands (which form no part of the Highlands) and perhaps in certain areas in the Hebrides. The Celts have always had a wonderful power of assimilating to themselves alien races which come among them, and although subdued and ruled over by the vikings and their posterity down to the present time, caused their conquerors to adopt their language, dress, laws, and customs. Yet the number of places named by the Norsemen and still retaining these names is very remarkable.

As to general distribution, these names are more numerous along the coasts than inland. The vikings did not care to settle far from the sea, where impassable mountains and thick forests, inhabited by a warlike and hostile people, hindered convenient access to the sea. Thus as we retire from the sea-shore the place-names assume a more and more distinctly Celtic character. But even in places where the Scandinavian nomenclature more persistently prevails it is interesting to note how only the larger areas and more striking features of the landscape bear Scandinavian names. A parish, with its streams, estates, local districts, and large farms may bear names derived from the Norse, but those of crofts, burns, pools in the rivers, boulders, etc., have, as a general rule, purely Gaelic designations, many of them, doubtless, dating from a much later period than that of the Norse occupation. In this connection it is somewhat curious to observe how few mountains bear Scandinavian designations; forming bold features in the scenery, most of them must have been well known to the vikings, whose names, if they ever named many of them, have come down to us in so very few instances.

Good examples of the facts above stated may be gleaned from the topography of the county of Caithness, as there the vikings found a surer and more permanent footing than on any other part of the mainland of Scotland. The name, Caithness, is itself compound, but was undoubtedly given by the Scandinavians, and signifies "the headland of the Calaibh," the last-mentioned word being the name of the Celtic tribe which owned the district, and resisted, although unavailingly, the invasion and partial conquest of their ancient possessions. Caithness is divided into ten civil parishes, viz., Thurso, Olrig, Dunnet, Canisbay, Bowes, Wick, Watten, Halkirk, Latheron, and Reay. All these are of Norse origin except the two last mentioned, and all, with the exception of Halkirk, have sea-coasts. Latheron and Reay are Gaelic, and these districts, along with the western portion of Halkirk, were the places in which the aborigines were left to dwell in comparative peace. Yet here, all along the coasts, we find numerous Norse derivatives, such as Skail, Lylester, Forse (occurring also in the form Forso), Berriedale, and many others. In the western Halkirk area, which lies far from the sea, we can only remember two Norse names, viz., Glutt and Rumsdale. In the Scandinavian area, however, we discover the aboriginal element to be remarkably strong. The Gael was, and is, naturally facile in topography, and gave a name to almost every object, natural and artificial, which came under his notice in a fairly permanent form. A constant pool of water, a boulder of peculiar color or somewhat uncommon shape or size, a corner of waste land, a ditch — all were named. He frequently added a word from his own vocabulary to a Scandinavian root, using oftenest *Ach* (a field) or *Bal* (a town or farm) in this connection. Thus, we get such compound forms as Achalipster, Achkipster, in which examples we have, in conjunction, the Gaelic *ach* and the Scandinavian *ster*, both words having the same meaning, and making the names tautological.

These remarks are merely intended as an introduction to a more particular examination of a subject of particular interest and of sufficient importance to have induced Sir Charles Wilson, Director of the Ordnance Survey, to request the coöperation of the Scottish Geographical Society in revising the place-names for new issues of the Survey maps. The council of the society thereupon nominated a committee to undertake the work; and this committee, under the presidency of Dr. James Burgess, C.I.E., is now engaged in an examination of all the place-names in the Highlands, and, where there is any doubt, authoritatively fixing the correct form of spelling.

NOTE UPON THE ABSORPTION OF SULPHUR BY CHARCOAL.

BY WILLIAM P. BLAKE, SHULLSBURG, WISCONSIN.

IN tearing down some heaps of pyritic zinc ores, where heap-roasting to expel the sulphur from the pyrite had been attempted, a part of the wood used as fuel was found at the bottom of the heap not only carbonized, but portions of it, such as small limbs of trees, and looking like ordinary charcoal, were saturated with sulphur. The original form of the wood and its structure, its grain-rings of growth, bark, etc., seemed to be perfectly retained, but the weight and solidity of the masses at once showed that some change had taken place, and this change it was easy to prove was due to the presence of a large amount of sulphur penetrating every part.

The fragments of this sulphurized carbon are hard and brittle, and break most readily at right-angles to the length of the original tree-limbs. The color is very nearly that of ordinary charcoal, but lacks the lustrous black, having instead a grayish-black shade, and when the compound is cut or scratched with a knife, it exhibits a sub-metallic lustre. Specific gravity 1.60.

In the May number of the *American Journal of Science* Professor W. G. Mixter[1] describes the deportment of charcoal with the halogens, nitrogen, sulphur, and oxygen. He points out the extreme difficulty in obtaining fairly pure amorphous carbon, it so tenaciously holds such elements either occluded in its pores or in combination. His experiments were conducted upon three varieties of amorphous carbon, viz., sugar charcoal, lamp-black, and gas carbon. He found that charcoal after exposure to chlorine retains a considerable quantity at high temperatures; one experiment upon heated lamp-black showing an absorption and retention of from 14.3 to 15.5 per cent, while gas carbon, ignited in chlorine and allowed to cool in a current of dry nitrogen, failed to absorb chlorine. He concurs with other recent writers on this subject that carbon and chlorine do not unite directly, but states that chlorine does combine with carbon at high temperatures when hydrogen is present in the carbon, the hydrogen being apparently replaced by chlorine; for, while gas

[1] Amer. Jour. Sci., Third Series, xlv., No. 269, May, 1893, p. 263.