ferent mineral combinations. The microscopical association of ingredients discovered here are not, as such, however, at all new or strange, but are merely a phanerocrystalline repetition of types which have long been known. As stated above, the basalts may be arranged into three divisions, the behavior of each being quite different from that of the rest; and, accordingly to the principles valid in macroscopical petrography, they are three separate and well characterized types of rock. With respect to the chief silicate, which is free from iron and rich in alumina, that always accompanies the never-wanting augite, which is rich in iron and poor in alumina, there exist the following: *a,* feldspar-basalts, characterized by the presence of plagioclase, usually wanting in leucite, occasionally with some nepheline, which correspond to the more distinctly grained dolerites and anamesites; *b,* nepheline-basalts, occasionally containing some leucite, and, when rich in nepheline, usually free from feldspar, corresponding to the nephelinite, for instance, from the Löbauer Mount, Saxony; *c,* leucite-basalts, which are almost always free from feldspar, but generally contain nepheline in comparative abundance, although less than the leucite. Contrary to the previously entertained opinion, therefore, feldspar is not a principal ingredient of all so called basalts. The members of all the three groups always bear magnetite, almost always olivine, and sometimes titanic iron. Mellilite and haüyne only occur separately, and are limited to the nepheline and leucite-basalts.

The microscope also proves that the separation into three groups not only refers to the massive, proper basalts, but to all the basaltic lavas. These latter are divided into:

Feldspar-basalt-lavas.
Nepheline-basalt-lavas.
Leucite-basalt-lavas.

And not only all the varieties of constituent combinations which are met in the proper basalts, but all the most special relations presented in their microscopical structure, are exactly repeated in the basaltic lavas. Whether a basalt is a feldspar, a nepheline, or a leucite rock must always be decided in each case with the microscope; for the simple black *ensemble,* common to them all, completely hides the difference of their interior mineralogical composition, and even the most careful chemical analyses do not afford material for a rigid determination.

Yet it becomes evident, by a comparative review of the examinations thus far made, that, taken in general, the basaltic occurrences assembled together in one region differ but little in their composition. The stronger contrasts are obtained when rocks from different regions are compared. For example, the German basalts of the Siebengebirge, and the enormous basaltic and anamesitic depositions of Scotland, the Western Islands, the Faeröer, and Iceland, are all feldspar-basalts, and not a particle of leucite has yet been discovered in them. The proper basalts of the Erzgebirge, between Saxony and Bohemia, on the other hand, bear only leucite and nepheline, and are free from feldspars. No lava from the environs of the lake of Laach, Rhenish Prussia, has been examined in which there was not to be observed an abundance of leucite. For aught that is now known to the contrary, leucite is totally wanting in the numerous basalts and lavas of Central France (Auvergne, Velais, Vivrais, Cantal), which bear feldspars, and are free from, or poor in, nepheline.

The nepheline-basalts sometimes contain leucite, and the leucite-basalts usually bear nepheline; so that these two groups appear to be much closer connected with each other than either of them with the feldspar-basalts. Moreover, the nepheline and leucite groups often occur together in one region; for instance, at Erzgebirge, Rhön, in Germany, and Northern Bohemia. And where feldspar-basalts are abundantly developed, there is little probability of finding with them members which are rich in leucite and nepheline, the latter almost always occurring separately.

These rules, deduced from a comparative study of European basaltic regions, are found to hold good of the occurrences along the Fortieth Parallel in Western America. Notwithstanding the enormous number and extent of development of the basaltic eruptions here, the rocks are, with very few exceptions, and those confined to the eastern limit of the examined territory, feldspar-basalts; which, in general, are no doubt the most frequent type in all parts of the globe. If on this account the petrographer finds himself confined to the monotony of one general type of composition, and searches in vain for those interesting mineral combinations exhibited by the leucite and nepheline-basalts, he is amply compensated by the great number of remarkable and charteristic varieties of microscopical structure offered by the numerous feldspar-basalts.

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PHYSIOLOGY

Brain Makes Fuel of Alcohol, Yale Researchers Discover

A NEW BRAIN fuel is announced as a result of the recent experimental work of Dr. Harold Himwich and Dr. L. H. Nahum of the Yale Medical School faculty, who have just discovered that the brain can oxidize alcohol. Knowledge of what the brain can burn is exceedingly meager, lactic acid being the only previously known substance which the brain is supposed to oxidize.

But Dr. Himwich and his associates in the physiological laboratories at the Yale Medical School have used the respiratory quotient as an index of what the brain can use for food and have come to the conclusion that it can oxidize alcohol. The respiratory quotient is a ratio between the carbon dioxide produced and the volume of oxygen consumed during the oxidation of any substance. For lactic acid and for normal brain the values are one. But for alcohol and for blood from dogs in alcoholic state and even for brain after it is removed from rats which have previously been given alcohol, all values fall below one.

"We feel," says Dr. Himwich, "that these preliminary experiments, even though few in number, indicate that the brain can oxidize lactic acid and alcohol simultaneously. Some energy may be derived from this oxidization but since the presence of alcohol interferes with the normal functions of the nervous system, the oxidization of alcohol by the body, and particularly by the brain, an organ which usually oxidizes only lactic acid, serves as a protective device to rid the brain of a toxic substance."

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