

thickets of brush-wood. He remains with us until late in the spring, indeed the other wrens have young ones before he thinks of leaving for his northern "summering place." Last year I saw some on the 22nd of April. I sent one of them to Washington where the "bird doctors" pronounced it "aztecus."

5 *Salpinctes obsoletus*, Rock Wren.

This bird hardly deserves a place to itself, being quite uncommon and differing little in appearance and mode of life from the Cañon wren, which seems to represent it with us. It is more common further west. Indeed, this is the most easterly record in Texas of its occurrence.

METALLIC CARBIDES.

BY F. P. VENABLE, CHAPLE HILL, N. C.

THIS name is given to compounds formed by the direct union of carbon with the metals. They are not numerous nor do they seem to be easy of formation and it is very difficult to prepare them in a pure and definite form. Consequently they have been but little studied so far. None of them are known to occur in minerals of terrestrial origin.

Interest in these bodies has been heightened of late by the discovery of new ones, and by the instructive decompositions of some of them.

First as to the general mode of formation. They are usually formed by the action of intense heat upon the metal in the presence of carbon. The form of this carbon is capable of being greatly varied. Graphite, amorphous carbon and many hydrocarbons can be used. The carbide is especially formed when the metal is being extracted from its compounds, that is, in the nascent state. Several metals thus unite with carbon in the process of manufacture, as zinc, copper and notably iron, and the presence of the carbides renders the metal hard and brittle. The purification and analysis of these bodies is not at all an easy problem, and hence little or nothing is known of their formulas or chemical constitution. Five or more formulas have been assigned to iron carbide, and, of course, several may exist, still the correctness of any of these formulas is questionable.

The heat of the ordinary furnace is sufficient to form the carbides of the metals already mentioned. For others, more recently discovered, as the carbides of aluminium, of calcium, of barium, etc., the intense heat of the electric furnace is necessary. The first of these, aluminium carbide, is a most interesting body, of a light golden yellow color, it can be gotten from the electric furnace in a mass of corundum and metallic aluminium. It was described first by Sterry Hunt. Though it will stand intense heat in the air without appreciable change, yet really it is undergoing change all the time as is proved by the odor of hydrocarbons coming from it and the fact that left to itself in air it crumbles in a few weeks into a mass of white alumina. A few shining golden scales of the pure substance can be separated, but so far no analysis has been given to the world.

All of these carbides, under certain conditions, give off their carbon in the form of hydrocarbons. The same smell can be detected in all during their decomposition. In some cases, as iron and zinc, the decomposition is caused by the action of an acid. The carbides of the earths decompose in moist air and more rapidly in water. Calcium carbide decomposes the most energetically of them all. The evolution of the hydrocarbons would be called violent. Of course, the hydrogen needed for the reaction comes from the decomposition of the water or from the hydrogen acid.

A most interesting fact recently published in the scientific journals, is that the calcium carbide on decomposition yields lime and pure acetylen gas. The acetylen seems very pure. A thousand cu. cm. of the evolved gas was passed into an ammoniacal solution of copper chloride, and not a bubble went through. All was absorbed and precipitated. This is very important because the modes of preparing acetylen in common use are tedious or expensive, and hence this important hydrocarbon has not been as carefully studied as it otherwise might have been.

The formation of hydrocarbons by the decomposition of iron carbide has furnished a basis for one of the theories as to the origin

of petroleum. If great quantities of iron carbide existed beneath the earth's surface and were subjected to decomposing influences, such oils and gases as are found in petroleum regions might very easily be formed.

So far there has been little utilization of these carbides commercially. One of the purer forms of iron carbide is used in a process for preparing metallic sodium, and the iron carbide in cast iron confers upon it many of its useful properties. If these bodies can be produced cheaply enough, however, there is strong probability that certain of them will prove very useful.

PHILOSOPHY IN THE COLLEGE CURRICULUM.

BY HOLMES DYSINGER, CARTHAGE COLLEGE, CARTHAGE, ILL.

STUDIES under the name of philosophy are to be found in almost every college curriculum. Either because the subject is too vague or abstruse for the comprehension of the average student, little more than elementary psychology, which is rightly regarded as a necessary part to the introduction to the subject proper, and a brief discussion of practical ethics, are taught in most of the schools outside of the few real universities. While the number of subjects advocated for introduction into the college course is increasing constantly, one so fundamental as philosophy should not be neglected. Apart from its theoretical value, it has practical bearings upon the intellectual range of a man, regardless of the system he adopts, that commend it to the thoughtful consideration of educators.

The subject-matter with which philosophy deals bears a peculiar relation to all other subjects in the course, in as much as its office is, partly at least, to systematize and explain all the principles of the particular sciences. This gives the unity so desirable in a course of study, and so essential to the thoroughly-trained mind. From this it serves the highest purpose in education and deserves a prominent place in every course of liberal culture.

The philosophical powers of man are last in order of development. The subject-matter makes it necessarily so. It is the most abstruse of all forms of knowledge. The mind in its unfolding passes up through perception and conception to the realm of widest generalizations and the discovery of the principles that are assumed in all our thinking. Philosophy deals with forms of knowledge that stand at the farthest remove from that furnished in so-called presentation—the first development in the mind's unfolding.

When the mind reaches that stage of development in which it apprehends the principles fundamental to all knowledge, it turns in upon itself and critically examines its own processes and assumptions to determine the certainty of being and the validity of our knowledge. This is the highest stage in man's intellectual ascent. Here he stops. He has completed the circuit of the globe of knowledge. He started with the facts furnished in sense and consciousness, and ends in the principles that underlie and embrace all knowledge. These stand accredited in his own thinking. Beyond this the mind of man cannot penetrate.

That many students cannot attain this stage of knowledge is evident to all who have taught the upper classes in our colleges; that but few who attempt it get further than the outer court, is to be expected; but that all are greatly benefitted intellectually would not be denied by those who have looked into the merits of the case and examined the evidence with impartiality. A few additional facts will give our reasons for this conclusion.

Notwithstanding its abstruseness, as a discipline in thinking and in logical method, philosophy has no equal. Facts as furnished by the senses and distinguished from principles are not dealt with in philosophy, but the relation of facts to one another and to all things else. All these in a system of philosophy deserving of study or worth elaboration must be included in their relations of coördination and subordination. The unity of all being is the ultimate problem of philosophy. A narrower range and lower ideal may satisfy science, but it cannot attain to that which comprehends all knowledge. Only the mind well disciplined in logical method can grasp the facts, but the one who attempts to do so will develop a power that is the possession of few and the desire of all.