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.

This apprehension of facts as related is essential and necessarily precedent to the discovery of principles which govern these relations. In this respect practical fruit is to result from the study of philosophy. Not simply philosophers, but even the students of philosophy, must get a more comprehensive grasp of facts and principles, as each is assigned its place in the whole system of knowledge. Truth is apprehended in its harmonies and wholeness. It is seen in its proportions.

If more attention were given to a careful study of philosophy as a system, rather than in its history, much of the conceit of knowledge which is so prevalent to-day would be unheard of. The specialist would soon discover that he was occupying a very small niche in the universe of knowledge; the broadest scholar that his horizon included but an infinitesimal portion of the sphere of truth.

BRITISH STONE CIRCLES. — III. DERBYSHIRE CIRCLES.[1]

BY A. L. LEWIS, TREASURER ANTHROPOLOGICAL INSTITUTE, LONDON, ENGLAND.

THE Peak district of Derbyshire, so justly famed for its scenery, possesses also many attractions for the archæologist, among which are two stone circles.

The larger of these, called Arbor Lowe or Arbe Lowe, is about six miles from Bakewell, and consists of an oval ring, the diameters of which were about 126 and 115 feet, the precise lengths being difficult to ascertain in consequence of the stones, which doubtless originally stood upright, being now all flat, and having fallen, some outside, some inside, and some across their original positions, while others are broken into fragments or buried in the soil. There were perhaps about forty stones, of which nearly thirty remain entire or in fragments, the largest being about twelve feet long, six broad, and four thick. The longest diameter of the oval ran nearly northwest and southeast, and somewhat more to the west and east, two of the stones seem to have stood back outside the regular line of the oval. Within the oval, and on the line of the longest diameter, but not in the centre of it (the distances from the northwest and southeast ends being in about the proportion of three to two), are the remains of some large stones — one fourteen feet long — which were apparently three in number, forming a "cove," ⌶, like that in the centre of the northern circle at Abury, the central stone of which faced the rising sun on Midsummer Day. Like the circles at Abury, the stones at Arbelowe are surrounded by a ditch, which is about seven feet deep and fifteen wide at the bottom, outside of which is an embankment, formerly perhaps ten feet high and eight wide at the top; Sir G. Wilkinson says somewhat more, but it may be that he took the maximum and I took the minimum of the measure. This embankment is now very irregular, and in one place a tumulus has been formed from the materials composing it, in which were found two Celtic vases and a bronze pin. This tumulus could hardly have formed part of the original plan of the monument, and would therefore seem to have been made after the latter had fallen into disuse. The embankment, like that at Abury, is not a true circle, and there is much similarity in the irregularities of both, but that may be quite accidental. There are two entrances, one southeasterly, in the same direction as the Kennet entrance at Abury, and one to the northwest, but not quite opposite to the other; altogether Abury and Arbelowe, notwithstanding the great difference between them in size, have more points in common than any other circle has with either. Just outside the southeast entrance are two small stones, quite as likely to have been taken from the interior as to be in their original places. Nearly three hundred yards to the southwest is a tumulus, called Gib Hill, about twenty feet high and as wide at the top, in which a small cist was found, two feet under the surface, which contained a vase, two worked flints, and an iron fibula with places for stones — probably a secondary interment. A bank of earth of doubtful antiquity runs from the embankment for some distance in a direction south of Gib Hill. These various earthworks have been supposed to give the form of a serpent to the monument, but Sir Gardner Wilkinson's plan shows this idea to be quite incorrect; this is a point for the visitor to verify.

On the moors at the top of the hills above Eyam is a small circle of a different character from Arbelowe; it is called the "Wet Withins," and consists of a bank of earth, about six feet wide and two high, inside which, but close to the bank, was formerly a ring of small stones about two feet high and of proportionate size, of which ten remain, out of perhaps twenty or more. The diameter of this circle is about one hundred feet, and some sixty feet to the north-northeast there is a barrow, eighty-three feet long (from northeast to southwest) and forty-six feet wide.

There are some other small remains of a similar character in Derbyshire, but I have not seen them myself, and doubt whether they are worth the trouble of a visit.

[1] No. 1, Abury, appeared in No. 529, March 24; No. 2, Stonehenge, appeared in No. 537, May 19. To those who may wish for more minute details of measurements than can be given in a short article, I would recommend "Stonehenge," by Professor Flinders Petrie, D.C.L. (Stanford, London).

CHARAKA SAMHITA.

BY F. A. HASSLER, M.D., PH.D., SANTA ANA, CAL.

THE student of Hindu literature has before him an ever-widening field of research. He must be prepared for glimpses and magnificent views of learning and wisdom which will astonish and delight him at every turn. The thoughts and the meth d of expression are different from those of other nations, and there is scarcely a subject, except, perhaps, electricity and steam, that has not been discussed by these ancient sages. The philosopher will find his theories, the anarchist his ideas, probed to the bottom, and thestudent of the supreme soul, high, noble thoughts, and even from this grand subject down to the every-day question of mistress and maid, we do not think of any matter that will not be found fully investigated in the pages of the Mahabharata.

So the physician of our day will find in the Charaka and other works of ancient India many views of health, disease, and remedies which he fondly imagined were jewels in the crown of modern science. When a young man wishes to study medicine, he may receive a little instruction from his preceptor, but places his chief reliance upon the teachings of some medical school from which he receives his diploma. This was not the custom in ancient India. There were no colleges. Every student became a part of his preceptor's household, was lodged and fed by him, and beyond a few light services was not asked for any return. It is plain that such teachers could not instruct all their scholars by word of mouth. This accounts for the immense number of medical works of ancient India.

We cannot tell the age of the Charaka, it is based upon a work of Agniveca, which carries us back to almost mythical times. The very name of this supposed author sounds like the mystery of long past ages, for it may be translated "the dwelling-place of fire." Ten years of study of the Mahabharata has led me to quite certain conclusions as to the time when that great work was written, and I should say that the style, of the first part at least, of the Charaka corresponds with that portion of the Mahabharata which I think was written about the sixth century before Christ, or, in other words, about the time of the rise of Buddhism. Whatever its age may be, this we know, it is exceedingly ancient. It is mentioned by Avicenna, Rhazes, and others, and is supposed to have been translated by the early Persian and Arabian writers on medicine. But we forget its age when we read its pages. The work is immense. An English translation, now being published by Doctor Kiviratna, the learned editor of several Sanscrit works and of a medical journal in Bengali, will probably cover from fourteen to fifteen hundred royal octavo pages. But it is not its size to which I wish to call attention, it is the wisdom and learning found in it that make it so valuable and interesting.

In a short article like this I cannot expect to do more than give the reader a glimpse of the work and a quotation here and there. We are told that in the earliest times some fifty-odd learned men assembled to study the science of life and the causes of disease; in fact, it was a medical convention similar to those of our day. The first conclusion they arrived at was that — "Freedom from disease is the excellent root of religion, profit, pleasure, and salvation. Diseases are depredators thereof, as also of happy life. This, therefore, is a great enemy of men that hath appeared.