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.

What shall be the means of checking them? Having said this, they betook themselves to meditation."

They did not discuss questions of life and health only, but moral and religious subjects also, and their effect upon life in general. The wind, or breath, disorders of the billiary system and phlegm, or improper secretions, seem to have been fully recognized as causes of bodily diseases, while passion and darkness of mind brought about mental disorders. Long lists of drugs and directions for their proper use are given, and there is abundant evidence that the properties of vaccine matter were well known. We are told that "He who knows how to apply these in disorders is conversant with the science of medicine." And listen to the following in regard to drugs and those who use them: "He who is acquainted with their applications according to considerations of time and place, after having observed their effects on individual patients, should be known as the best of physicians. An unknown drug is like poison, or weapon, or fire, or thunder, while a known drug is like nectar. Drugs unknown by name, appearance, and properties, or misapplied even if known, produce mischief. Well applied, a virulent poison, even, may become an excellent medicine, while a medicine misapplied becomes a virulent poison. Only a physician who is possessed of memory, who is conversant with causes and applications of drugs, who has his passions under control, and who has quickness of decision, should, by the application of drugs, treat diseases."

Thirty-two kinds of powders and plasters and six hundred purgatives are next described, after which a chapter on food and its proper use gives us as good advice as is to be found in any treatise published in this learned nineteenth century. Great stress is laid upon the proper care of the teeth, and a list of plants is given from which brushes can be made, there not being manufactories of such articles as there are now.

"As the chief officer of a city protects his city, as the charioteer protects his chariot, after the same manner should the intelligent man be attentive to everything that should be done for the benefit of his own body." Therefore, bodily, mental, and, if we may so call it, religious hygiene is discussed at length, and many excellent rules given.

The question of the duality of the mind and of its connection with the understanding and the soul leads us into all the intricate mazes of Hindu philosophy, but are here discussed in such a lucid manner that one is not bewildered and can easily follow the line of thought with pleasure and profit.

"The objects of the mind are ideas. Here, again, the proper, excessive, scant, and injudicious correlation of the mind with its objects, or of the mental understanding with its objects, becomes the cause of the normal or abnormal condition of oneself." In other words, a man is sane or insane according to the proper or improper agreement of the mind and its ideas, the ideas the understanding conceives; and, therefore, "One should act in such a way as to preserve one's normal condition, in order that one's untroubled senses and mind might continue in an untroubled state; that is to say, by keeping oneself in touch with such objects of the senses as are productive of beneficial results; by properly achieving such acts as deserve to be achieved (and abstaining from such acts as should be abstained from), repeatedly ascertaining everything by a judicious employment of the understanding; and, lastly, by resorting to practices that are opposed to the virtues of the place of habitation, season of time, and one's own particular nature or disposition (as dependant upon a preponderance of this or that attribute or ingredient). Hence all persons desirous of achieving their own good should always adopt with heedfulness the practices of the good."

Selfishness was never a cause of happiness, and we are told "one can never be happy by taking or enjoying anything alone without dividing it with others." And this advice is good in every age of the world — "one should not trust everybody, nor should one mistrust everybody."

Hindu works teach that everyone should have complete mastery of his body and his senses, hence we frequently come across such a sentence as this: "One should not suffer oneself to be overcome by one's senses."

A very interesting chapter is that which treats of "The Aggregate of Four," that is, "the physician, nurse, drugs, and patient." Each is considered and as good advice as can be found given for the guidance of three of the aggregate. One thing, the first of the four, is taught which it were well to remember in our day; that is, that time must be considered in the treatment of all diseases, and one must not try to force a cure.

It would take more time and space than are at our disposal for us to consider all of even the four parts of the Charaka that have been published so far, but if any of our readers are interested, we would be glad to give them any information in regard to the work or the other publications of the learned editor of this great monument of ancient Hindu wisdom and leaaning.

A NEW THEORY OF LIGHT SENSATION [1]

BY CHRISTINE LADD FRANKLIN, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.

THE reasons which make it impossible for most people to accept either the Hering or the Young-Helmholtz theories of light sensation are familiar to every one. The following are the most important of them:

The Young-Helmholtz theory requires us to believe: (*a*) something which is strongly contradicted by consciousness, viz., that the *sensation* white is nothing but an even mixture of red-green-blue *sensations;* (*b*) something which has a strong antecedent improbability against it, viz., that under certain definite circumstances (e. g., for very excentric parts of the retina and for the totally color-blind) all three color-sensations are produced in exactly their original integrity, but yet that they are never produced in any other than that *even* mixture which gives us the sensation of white; (*c*) something which is quantitatively quite impossible, viz., that after-images, which are frequently very brilliant, are due to nothing but what is left over in the self-light of the retina after part of it has been exhausted by fatigue, although we have otherwise every reason to think that the *whole* of the self-light is excessively faint

The theory of Hering avoids all of these difficulties of the Young-Helmholtz theory, but at the cost of introducing others which are equally disagreeable; it sins against the first principles of the physiologist by requiring us to think that the process of building up highly organized animal tissue is useful in giving us knowledge of the external world instead of supposing that it takes place (as in every other instance known to us) simply for the sake of its future useful tearing down; it necessarily brings with it a quite hopeless confusion between our ideas of the *brightness* and the *relative whiteness* of a given sensation (as is proved by the fact that it enables Hering to rediscover, under the name of the specific brightness of the different colors, a phenomenon which has long been perfectly well known as the Purkinje phenomenon); the theory is contradicted (at least the present conception of it) by the following fact—the white made out of red and green is *not the same thing* as the white made out of blue and yellow; for if (being mixed on the color-wheel) these two whites are made equally bright at an ordinary intensity, they will be found to be of very different brightness when the illumination is made very faint.

Nevertheless, the theory of Hering would have to be accepted if it were the only possible way of escape from the difficulties of the Young-Helmholtz theory. But these difficulties may be met by a theory which has the following for its principal assumptions.

In its earliest stage of development vision consisted of nothing but a sensation of grey (if we use the word grey to cover the whole series black-grey-white). This sensation of grey was brought about by the action upon the nerve-ends of a certain chemical substance set free in the retina under the influence of light. In the course of development of the visual sense the molecule to be chemically decomposed became so differentiated as to be capable of losing only a part of its exciting substance at once; three chemical constituents of the exciter of the grey-sensation can therefore now be present separately (under the influence

[1] Abstract from the Proceedings of the International Congress of Experimental Psychology, London, 1892.