DISTRIBUTION OF SPECTROSCOPIC DOUBLE STARS.—In the April number of *L'Astronomie*, Prof. P. Stroobant, of the Observatoire Royal de Belgique, using Campbell's second catalogue of spectroscopic binary stars, published in 1910, shows that representatives of this class of stars are most abundant in the neighbourhood of the Milky Way—a similar result to that already found by E. Zinner for variables of the Algol type, to which the spectroscopic doubles bear a strong analogy. Stroobant shows that in this condensation the stars in question obey the law of distribution found by Pickering for the helium stars, being almost precisely proportional to the number of class B stars amongst the binaries.

JADE IN CHINESE SECULAR LIFE AND RELIGION.[1]

THE sumptuous monograph on the Bishop collection in New York entitled "Investigations and Studies in Jade" is so rare as to be inaccessible, and consequently there is room for another work on the subject. The authorities of the Field Museum of Natural History of Chicago were well advised to entrust the Blackstone expedition to Tibet and China to Dr. B. Laufer, and to encourage him to describe the jade objects he collected in a comprehensive monograph. As a matter of fact, his specimens largely supplement, and only slightly duplicate, the wonderful collection in New York, as most of them were exhumed from ancient graves, whereas the majority of the specimens in the Bishop collection are modern. Similarly, his monograph supplements the other; he does "not deal with jade for its own sake, but as a means to a certain end; it merely forms the background, the leading motive, for the exposition of some fundamental ideas of Chinese religious concepts which find their most characteristic expression and illustration in objects of jade."

The oldest Chinese term for jade is just as general and comprehensive as our word, and includes nephrite, jadeite, bowenite, and occasionally serpentine, &c.; at present only the first two are acknowledged as true jade by the Chinese. The jades of the Chou and Han dynasties are made of indigenous material from the Shensi province, but the supply was exhausted long ago, and about the beginning of the Christian era Turkestan became the chief source for the supply of jade to China, Yünnan and Burma also contributing later. The importance of the trade in jade can be realised when one remembers that "for the last two millenniums Turkestan has furnished to China the greater supply of her jade, wrought and unwrought, and the most colossal boulders of the mineral were constantly transported from Khotan to Si-ngan-fu and Peking, over a trade route unparalleled in extent and arduousness in Europe, and requiring a four to six months' journey."

In dealing with stone implements, Dr. Laufer points out that none of Palæolithic type have as yet been found; all are polished, they are found scattered in certain parts of the country, and are generally scarce. In the present state of our knowledge it is not justifiable to speak of a Stone age in China, and still less of a Stone age of the Chinese, since at the time when they were settling and spreading they were already in possession of metal implements. Four centuries ago Chinese antiquaries spoke of "thunder-axes," and in the eighth century they were described as "stones of the God of Thunder"; sometimes they were made of jade.

The ancient spade-shaped stone implements of the Kolarian-Mon peoples were reproduced in jade and bronze in the Han period, but in the earlier Chou period there was a bronze currency of similar shape. The first sovereign of the Han dynasty (B.C. 206–195) announced his accession to the throne by sacrificing to heaven an engraved jade tablet, a custom which continued for a thousand years or so; these writing tablets were developed from the ancient bamboo slips or wooden splints which served as writing material before the invention of paper.

There is a correlation between the jade objects used in nature-worship and those buried in the graves of the Chou era. Heaven, earth, and the four quarters were six cosmic powers or deities, and the jade carvings serving their worship were nothing but the real images of these deities under which they were worshipped. Anthropomorphic conceptions are lacking in the oldest notions of Chinese religion, and therefore no anthropomorphic images are known. The shapes of these images are geometric in design: a jade disk, round and perforated, representing heaven, a tube surrounded by a cube earth, a semicircular disk the north, &c.

a *b* *c*

FIG. 1.—*a*, Plain type of tongue-amulet; *b*, tongue-amulet carved in shape of realistic cicada—upper face; *c*, tongue-amulet showing conventionalised form of cicada. From "Jade: A Study in Chinese Archæology and Religion."

In addition to the use of jade in religious worship its employment in coins, seals, and personal ornaments is fully dealt with, and a very interesting account is given of the various kinds of jade amulets for the dead, other objects being buried besides these. The belief prevailed that jade had the property of preserving the flesh of the body and keeping it from decay, and it was also believed that immortality could be obtained by eating from bowls made of a marvellous kind of jade called "the perfection of jade." Among the amulets worn by the corpse, those placed on the tongue were the most important, and were shaped in the outline of that organ; many are in the form of a cicada, doubtless as an emblem of resurrection; indeed, the

[1] Field Museum of Natural History, Anthropological Series, Publication 154. "Jade: A Study in Chinese Archæology and Religion." By B. Laufer. Pp. xiv+370+68 plates. (Chicago, 1912.)

philosopher Wang Ch'ung said, "The vital spirit of a dead man leaving the body may be compared to the cicada emerging from the chrysalis." There were also eye, lip, and umbilical amulets.

Dr. Laufer has a very extensive knowledge of Chinese literature and of folk-usage and beliefs, and as he has discussed the matters studied with Chinese savants, we have a remarkably complete and discerning monograph, which will appeal alike to connoisseurs, artists, ethnologists, and students of comparative religion and folklore. There are sixty-eight plates, six of which are coloured, and 204 text figures, most of which are reproductions of Chinese drawings. The Field Museum of Natural History is to be congratulated on the publication of a monograph worthy of its most important and interesting collection of jade objects.

A. C. HADDON.

FIG. 2.—Incense-burner carved from white jade in open-work, Ming period. From "Jade: A Study in Chinese Archæology and Religion."

TECHNICAL EDUCATION IN INDIA.[1]

A REPORT on the results of an inquiry into the relation of technical instruction in India to the actual requirements of employers, which has recently been published, contains some valuable suggestions on the industrial outlook in that country. The inquiry is, however, strictly limited in scope. The report is not concerned with the general question of technical education, nor with the organisation or improvement of local industries; it deals with the more restricted and definite question of the value of the instruction now provided in Indian technical institutes in qualifying the students of those institutes to undertake positions as managers, heads of departments, foremen, and assistants in engineering, and in some few other industrial works.

Extensive inquiries have been made from the heads of engineering firms in different parts of India and also from the directors of instruction and the managers of some of the principal schools and technical institutions, and the results of these inquiries are embodied in certain definite recommendations, which have for their object the bringing into closer relation of the teaching of the schools with the actual needs of employers. The writers of the report, whilst giving due weight to the views of British engineers and educational authorities, have wisely recognised the fact—too often overlooked—that the conditions of industry differ very widely in India and in Western countries, and that the character, disposition, and aptitudes of native students must be considered in any proposals as to their education and training. The endeavour to impose upon institutions in India methods of instruction which may be well adapted to European students has produced results which are by no means satisfactory, and those who approach the problem of education from a scientific point of view realise that the character of the student, which is a product of his environment, must be considered in all educational schemes, and that the conditions of his training must be adapted to his habits and surroundings. This fact is recognised by the writers of the report when, at the outset of their inquiry, they state:—"It is useless training a man in mechanical engineering who will not take off his coat and work, whose physique will not stand the strain, or whose social customs make manual work repugnant."

The efforts already made to organise and develop education in India have clearly shown that the native student has a strong preference for studies dealing with the theories and principles of his subject over those demanding severe practical work or protracted scientific investigation. In many of the higher branches of handicraft the Indian is proficient, and it is a matter of some regret that greater efforts have not been made to develop technical instruction along lines which would have improved, and given greater artistic value to, many of the native industries. That suggestion, however, opens up a subject beyond the scope of the inquiry with which the report deals. The main object of the Commissioners was to ascertain what arrangements can be made for systematic co-

[1] Report on the Inquiry to Bring Technical Institutions into Closer Touch and More Practical Relations with the Employers of India. By Lieut.-Col. E. H. de V. Atkinson, R.E., and Tom S. Dawson. Pp. 100. (Calcutta, 1912.)