it produces sporangia, *i. e.*, non-sexual organs, in which spores are differentiated. All that morphologists ask of Prof. Bailey is that he use the same criterion with plants as with animals, applying, by a common grammatical figure, sex terms to the organs that produce sex cells, and to the plants that carry the sex organs. It is for this reason that it is proper to call a bull a male animal and a cow a female animal. But if the embryo produced by the union of their sex cells grew into an animal 1,000,000 times the size of the bull or the cow, and one of its giant cells formed within itself a bull and another within itself a cow, we should certainly not be justified in applying sex terms either to the monster or to any of its organs.

When Prof. Bailey asks to have the figurative use of the sex terms *extended so as to obscure the distinction between the sexual and non-sexual phases of the plant*, he asks us to return to a confusion from which botanical language has been happily delivered, and from which it is the duty of botanists to deliver 'common language.' This deliverance can be brought about simply by using untechnical terms already coined and by avoiding the use of sex terms for a purely vegetative organism. 'Staminate flowers' and 'pistillate flowers' are phrases quite as untechnical as 'male flowers' and 'female flowers,' and they have the advantage of avoiding the perpetuation of obsolete ideas.

Were the question merely one of morphological consistency it would be of comparatively little moment. But it is a question of clearness or confusion of ideas. If the mental eye, as it looks upon plants, be not single, the the whole mind will be full of darkness; and if the morphological light that is in the student be darkness, how great is that darkness! To advocate one set of ideas for common language and another for technical is to advocate a return to that chaos of which the professional botanist himself was scarcely conscious until the light of the doctrine of the alternation of generations broke forth. In its light it behooves us to order our use of language that applied botany will be helped toward a clearer view of plant life.

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SCIENTIFIC LITERATURE.

Antropometria Militare. By DR. RIDOLFO LIVI. Parte I. Text and Atlas. Roma. 190+ 419 pp; 23 plates.

The first part of Dr. Livi's great work on the anthropometry of Italy has recently been issued by the Director of the Italian Army Medical Journal. The work ranks easily among the most important contributions to anthropology. The fact that in past years Dr. Livi has contributed some of the most fundamental results of his extended and careful investigations to the Archivio per l'antropologia e la etnologia and presented others that are not less interesting to the Roman Anthropological Society and to the Eleventh International Medical Congress (Rome, 1894) has made the complete presentation of his data only the more eagerly expected. The present part contains the purely anthropological results of his investigations, while the second part will be taken up by hygienic and in a more general way sociological statistics.

The investigations are based on measurements and observations upon men born in the years 1859–63 and enlisted in the Italian army. The anthropometrical data that were collected are the following: Stature, circumference of chest, weight, length and breadth of head. Besides these a number of descriptive features were observed: Color of eyes and hair, complexion, character of teeth, form of forehead, of nose, of mouth, chin and face. These data have been worked up in the following detailed tables:

For each military district (Mandamento):

1. The frequency of statures in groups of from 5 to 5 cm.

2. The frequency of the various colors of the hair and of the eyes and that of the pure blonde and of the pure dark type.

3. The average cephalic index and its distribution in groups from 5 to 5%.

For the larger districts (Circondario) the preceding data are summarized and the following are added:

1. The relation between stature and color of hair.

2. The relation between stature and color of the eyes.

3. The relation between color of hair and color of eyes.

4. The relation between stature and cephalic index.

5. The relation between the cephalic index and color of hair.

6. The distribution of the cephalic index for each per cent.

For the provinces the previous data are summarized and the following are given in addition:

1. The distribution of the circumference of the chest in groups of 5 cm.

2. The relation between stature and circumference of chest.

3. The distribution of statures for each cm.

4. The frequency of the principal descriptive characters, form of hair, complexion, nose, face and chin.

These results are presented in a most attractive manner, on an atlas which brings home some of the salient results of Dr. Livi's extensive work at a single glance.

It is not possible to enter into all the important results which the author by the judicious use of good statistical methods has reached. From a general point of view the most important is perhaps the final proof of the fallacy of the theories of Dr. Ammon in regard to the effect of natural selection upon the development of the type of civilized man. A number of years ago Tönnies pointed out the weakness of his arguments (Ztschr. für Psychol. u. Phys. der Sinnesorgane), but it remained to Dr. Livi to finally prove the real cause of the phenomena which Dr. Ammon had observed, namely, that the inhabitants of the towns of Baden are more dolichocephalic than those of the country. Dr. Livi has shown that everywhere the cephalic index of the town population is nearer the average than that of the country population. Consequently in a brachycephalic region, such as Baden, the people of the towns are more dolichocephalic, while in dolichocephalic regions the reverse is the case (p. 86 ff.). The satisfactory explanation of this fact is that the town population are more mixed than the country population is. The author has proved that the same facts may be observed in regard to the distribution of color of hair and eyes and of statures, and I think that in this observation he has given a very strong proof of the heredity of stature.

Among other points of biological interest I mention the detailed investigation of the influence of the altitude of habitat upon the various measurements. The clearest and best pronounced example of such an influence that the author has found is that upon the circumference of the chest which increases with increasing altitude. The stature decreases quite considerably in the mountainous districts. The color is lighter than in the plains. The two last phenomena the author is inclined to attribute to an earlier arrest of development due to more unfavorable social conditions, but he does not deny the possibility of other influences of altitude upon the development of the human body. The observation that among the primitive Americans the stature also decreases with altitude seems to me to indicate that social conditions alone do not sufficiently account for the phenomenon.

Of special interest are also the detailed investigations on the correlations of the various observations, for instance, of the proportions of the head and the color of the hair which show clearly that the dark people are the more dolichocephalic ones, and that tall people have more frequently wavy hair than short people.

Most of the relations of measurements or observations treated by Dr. Livi are based on stature, *i. e.*, the individuals are grouped according to stature and the correlated changes of the other measurements have been recorded. While the results thus obtained are of great value it would probably have been better to treat them as correlations, that is to investigate also the reverse relation. The undue weight which is thus given to stature as compared to all other measurements would have been obviated by this means. This mode of treatment would have been the more desirable, as stature is one of the measurements which depend to a considerable extent upon the influence of environment. Besides this the distribution of stature as recorded by Dr. Livi is, as he himself points out, not that of the total population, as all those individuals who are unfit for military service are not included in the records. Thus all of less than 154 cm. stature are excluded, and among the others who were rejected for other reasons the lower

statures probably prevail. For this reason his average statures are all too high, and the distributions of statures appear more assymetrical than they would be if the total population were considered.

The remaining portion of the volume is taken up with a detailed discussion of the geographical distribution of the various anthropometric types. It is not possible to enter into this interesting subject at this place, and it may suffice to call attention to the important results that the author has reached. Historical events relating to the settling of certain portions of Italy are reflected with remarkable accuracy in the charts showing the distribution of types. I mention, for instance, the occurence of a tall dolichocephalic type near Lucca, and the peculiarities of the type inhabiting Carloforte as compared to the rest of the inhabitants of Sardinia.

This exhaustive work will always remain the basis of all studies on the anthropometry of the people of the Italian Peninsula.

FRANZ BOAS.

Electric Lighting, a Practical Exposition of the Art for the Use of Engineers, Students and Others interested in the Installation or Operation of Electrical Plants. Vol. I. *The Generating Plant.* By FRANCIS B. CROCKER, E.M., Ph. D., Professor of Electrical Engineering in Columbia University. 8vo. VIII. 444 pp. New York, D. Van Nostrand Company.

In the preface the author states his belief—and he is undoubtedly correct—"that electric lighting has reached a sufficiently perfected and established state to allow of its being treated in a fairly satisfactory and permanent manner."

According to the plan adopted by the author, the subjects treated in this volume are taken up in the following order: Two chapters are devoted to the introduction and historical matter; the third discusses units and measures, and the fourth treats of the classification and selection of electric lighting systems. The clear and candid statement of reasons which should influence the selection of a system makes the fourth chapter of great practical value.

It is evident, however, that Prof. Crocker advocates the use of the direct current where many engineers would prefer to use an alternating system; and while he very properly quotes the value of human life as one of the factors which should influence a decision, he seems to neglect the fact that good work and materials will render any current in commercial use practically safe, while want of care in wiring and poor insulation will, through the fire risks involved, make either system an indirect menace to human life, far more serious in its nature than the direct danger threatened by the employment of high voltage alternating currents.

Two chapters follow which consider location and buildings, and then the author proceeds to the consideration of sources of energy, prime motors, and the mechanical connections between engines and dynamos. The chapters devoted to these subjects fill two hundred pages, or nearly one half of the volume.

After these come two chapters in which the design and construction of electrical machines is briefly treated. There is no lumber in this part of the work, and the reader will miss the time-honored descriptions and illustrations which have been so prominent in electrical textbooks for the last fifteen years.

The next chapter is one of the most valuable in the book; it is largely taken from a work by Prof. Crocker and Dr. S. S. Wheeler, and contains more direct and practical instruction as to the care and use of electrical machinery than can be found in the same number of pages elsewhere.

The author knows his subject and knows how to tell what he knows, a rare combination one is sometimes tempted to believe.

The remainder of the work, about sixty pages, is devoted to accumulators, switch-boards and apparatus, and electrical measuring instruments.

The distribution and utilization of electricity for the purpose of illumination are subjects reserved for a second volume.

A very valuable feature of the book is found in the abundant reference made to books and papers treating single topics more fully than the limits of this work will allow.

It is practically impossible to give in a treatise of moderate size more than a small part of the matter absolutely necessary for the use of