qualities of initiative and leadership and marked aptitudes for teaching or investigation.

During their service in the Army Air Forces the aviation physiologists have had an opportunity to develop certain of those talents and to acquire experience along other lines which should contribute to their success in civilian scientific activities. It is worthy of mention that many of them assumed difficult administrative duties which they handled with notable success. It has been necessary for them to instruct large groups of Air Forces personnel in the biological problems of flight and to arouse the interest of men with little knowledge of elementary science. It has been their duty to apply biology to the practical problems of technological warfare. Of especial significance is their broadened intellectual horizon and a new interest in problems of human biology. This wartime training of a carefully selected group of biologists will enhance their value to teaching and research groups with which they now become associated.

Among the men who are seeking civilian positions there are general physiologists, zoologists, mammalian physiologists, entomologists, embryologists, pharmacologists, anatomists, biochemists, plant physiologists, botanists and museum curators. Each of them holds a doctorate from a well-known university.

The Army Air Forces appreciates the notable effort these scientists have made to establish and execute a pioneer program of great value to our military effort. In order to aid them in their return to civilian occupations, we invite correspondence from teaching and research institutions which have positions available for such individuals.

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SCIENTIFIC BOOKS

CULTURE GROWTH

Configurations of Culture Growth. By A. L. KROEBER. 882 pp. University of California Press. 1945. $7.50.

IN general the reviewer finds himself in agreement with the author on the following conclusions regarding the "higher values" of esthetic and intellectual endeavor: (a) that they appear in bursts or constellations of genius; (b) that "geniuses are the indicators of the realization of coherent pattern growths of cultural value" (p. 839), which follow from the belief "that all human beings are the products of their culture to a much greater degree than we ordinarily imagine" (p. 838). The continuation of the preceding sentence, "and that cultures appear to grow in patterns and to fulfill or exhaust these," however, raises questions in the reviewer's mind which this book does little to answer. It is true that the author adds, "Why cultures behave in this way, especially in their intellectual, esthetic, and nationalistic aspects, is not clear; but it seems to be one of their most distinctive properties" (p. 838).

This savors a little of the mysticism of which he earlier, and rightly, accuses Spengler. Is there some pattern of culture growths ordained which must be fulfilled or exhausted? I see no reason why we should believe this to be the case, why "accidental" events should not be allotted a large share in the determination of cultural patterns. I use "accidental" here not in the sense of uncaused events but rather in the sense of events which, with existing knowledge, can not be seen as the necessary outcome of the existing historical situation. As one who likes to believe he is a scientist I can see no place either for belief in "pure accident" in human history or for an ordained order of development which man can not change by his own actions. Whether he can change it as he would wish is another matter.

Just as Kroeber's view of genius leads him to assume that most people with the innate capacity of great cultural achievement are "never realized" because there is nothing in their cultural inheritance which demands their particular genius, so one might argue with equal cogency that there is many a period in history when cultural achievement is low because there does not happen to be some genius to synthesize the cultural patterns into some structure which posterity will recognize as significant. In other words, I can accept Dr. Kroeber's interpretation of the role of genius in the development of culture without accepting any particular growth of culture as inevitable in the sense that man can not modify it if he so desires. Perhaps these are contradictory conceptions, but they do not seem so to me.

But if there is something inevitable about the growth of any particular cultural configuration and if it is the fulfilment of some promise contained in its early conception, then this compulsion must be exercised by the customs, attitudes of mind and institutions of the given community and they in turn must have something inevitable about their development. That this is the case I can not believe, nor do I think Dr. Kroeber believes this; hence, I am puzzled to account for what appears to me to be a frequent reiteration of the idea that cultures fulfil and exhaust their patterns. If all this means is that when cultural

achievements no longer express vital aspects of community life they no longer have "higher value," well and good; but if he means that these "higher values" which come to fruition are inherent in the early phases of a culture and are the only possible outcome of these early phases, then I can not follow. This is what I mean when I say this view savors of mysticism.

Many questions are inevitably raised by such a discussion of culture. Why are science and philology considered integral parts of cultural patterns while technologies (agricultural and industrial, and those dealing with communication and transportation) are omitted? Why is music considered a "higher value" than the invention of a loom or a wheel or a new system of taxation? After all, the "higher values" treated of in this essay are of little importance to mankind as a whole when compared with the values of social and economic changes which apparently are excluded from "Configurations of Culture Growth." The real surprise of the book is to find an anthropologist using "culture" in the narrow sense of those arts and intellectual pastimes which have never concerned more than a small group of the intellectually and socially elite.

This is a stimulating essay and one which will provoke considerable reaction, but as a foray into the frontiers of sociology by anthropology, which recently shows much inclination to regard itself as the fundamental social science, it leaves much to be desired.

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CHEMICAL EMBRYOLOGY

Embryologie Chimique. By JEAN BRACHET. 509 pp. Liege: Editions Desoer; Paris: Masson & Cie. 1944.

THE appearance of this book is one of the most pleasant surprises that has followed V-E day. Even for normal times this would be considered an excellent book. But having been written and published during the German occupation of Belgium, under the difficult conditions which we now know prevailed there, with an unpleasant sojourn in prison by the author, as a hostage, it is all the more remarkable. It is, in fact, hard to see in what ways this text could be improved, or better serve the purpose for which it was written.

The author states that his book is aimed at biologists or those with some biological knowledge (an elementary knowledge of organic chemistry and biochemistry is also implied) and hopes to be able to attract some of them into the fertile field of chemical embryology. It is written in a simple and direct style and should be readily intelligible to any one with an elementary knowledge of French.

The field of chemical embryology may be said to have been established as a separate entity by Joseph Needham as a result of the publication in 1931 of his monumental, three-volume treatise with that title. It is perhaps an unfortunate designation, for it may imply simply a description of the chemical substances present in embryos in the sense that morphological embryology means a description of the form of embryos. That Needham did place much emphasis on that line of work is understandable in view of the lack, up to that time, of any coordinated treatment of the data pertaining to the chemical constitution of the developing egg. It is of interest to note, however, that Needham's recent work along this line is entitled "Biochemistry and Morphogenesis." It is evident that the analysis of development must proceed at the biological as well as at the chemical level and that it often involves both levels of investigation at the same time; for some of the most interesting modern work is that in which chemical techniques and the more classical methods of experimental embryology are combined. Brachet, despite the title of his book, is quite evidently fully aware of this, and has, in fact, written a well-rounded treatment of the recent work in experimental embryology. He did not have access to Needham's new book (1942) which covers essentially the same ground. Perhaps this is fortunate, for it is especially valuable to have such a text written without the strong influence exerted by one of the most prolific writers of our time. As a result more significance can be attached to the similarities as well as to the differences that appear in their discussion, evaluation, interpretation and criticism of the same material.

The first chapter in Brachet's book describes methods that have been employed to determine, locate and follow changes in various chemical constituents. Included are succinct accounts of the techniques devised by Linderstrøm-Lang and Caspersson. Chapter II deals with the chemical basis of the determination of sex. Here much space has been given to the work of Moewus and Kuhn on Chlamydomonas. To the reviewer, who has heard much private comment on the shortcomings of that work, and has seen some published criticism such as that of Philip and Haldane, the emphasis given to it by Brachet seems somewhat out of proportion, particularly since independent confirmatory evidence is still lacking. Chapters III, IV and V concern the ripening of the gametes, fertilization and segmentation. Minor criticism may be leveled here at his adoption of the unnecessary and unsatisfactory terms andro- and gynogamones coined by M. Hartmann. If one wishes to avoid the implications of Lillie's *fertilizin,* then *ovulin* used by Dalcq and a corresponding term *spermulin* are available.