most readable and teachable geography book on Europe, it is indeed high praise.

The Van Valkenburg-Huntington combination is a fortunate one, for these internationally known geographers represent European and American schools of thought; they are veteran travelers; they represent teacher as well as seasoned writer; they represent vigorous youth and sage maturity. The text will certainly not disappoint those who seek good authority in books.

The painstaking efforts of these authorities have resulted in a book which can be readily accepted as trustworthy in facts presented as well as conclusions drawn.

The book is on the whole interestingly written. The material of many regions is presented so vividly and with such clarity that one can readily see the writer treads familiar ground. In a few places, however, the style tends to become over-factual and uninteresting.

The book is, with its basic study of Europe as a whole followed by a logical sequence of countries within major regions, essentially pedagogical. However, it might have been improved by placing a few of the chapters of part one at the end of the book to act as a résumé for the detailed regional studies. Neither the balance between physical, economic and cultural subject-matter nor the space allotted to the individual countries can be adversely criticized, but perhaps too much space (225 pages) is given to part one, "Europe as a Whole."

The large number of maps, many of which are original, is a distinct asset to the book. On the whole, the cartographic work is excellent, though a few maps could have been improved by using more distinctive types of cross lining. On the mineral production map one can scarcely distinguish between the full dots and the half dots. The reviewer is of the opinion that it is unfortunate that no pictures were included in the book. A limited number of well-chosen pictures would have been a valuable asset even were it necessary in that event to leave out a few maps.

The mechanical make-up of the book is of the usual high John Wiley and Sons standard.

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The Geographic Pattern of Mankind. By JOHN E. POMFRET, xix plus 428 pp. Appleton Century Company.

"THE Geographic Pattern of Mankind" in the words of the editor "provides an imposing array of 'cases' by which geographic principles may be tested or to which they may be applied." These cases are selected from many sections of the world and include Equatorial Africa, Java, India, China, Japan, Russia, the Mediterranean Lands, South America, the Caribbean Lands, the United States and Western Europe.

In describing the life and pointing out relationships in these areas, Mr. Pomfret easily holds the reader's interest with a wealth of intriguing factual material. In fact he excites the curiosity so much in several places that the reader wishes to learn more about the particular subject and looks for a footnote that may lead him to a source of wider knowledge. Here he is disappointed, for a dearth of references is available for either actual quotations or for much material that must have been gathered from outside sources.

Although a treatment of "cases" makes up the major portion of the volume, this section is preceded by four chapters concerned with the elements of geography—"Human Geography and Culture," "Primary Laws," "The Elements and Theory of Climate" and "Climatic Types." The author's idea of laying the groundwork for a clearer understanding of the chapters to follow seems commendable, yet he failed to include any discussion of soils and physiography, and in his treatment of climate he failed to call attention to any of the well-known climatic classifications. Moreover, the careful reader is likely to question several generalizations and statements which fall short of exactness, both in the beginning chapters and in that section of the book devoted to "cases."

In spite of the shortcomings just pointed out and regardless of the fact that the book marks no new pathway in geography or supplies little that is original in approach, it is worthy of some of the editor's praise—"it surveys with rare judgment the various elements of modern civilization and shows with keen appreciation of values the many ways in which man is adjusting himself to diverse physical environments in various parts of the earth."

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SPECIAL ARTICLES

THE INVASION OF THE BODY BY ANIMAL POISONS

THE bleb formed by the intradermal injection of saline extracts prepared from the ground bodies of spiders, bees or mosquitoes rapidly flattens out and the injected fluid spreads through a large area of the dermis. A similar bleb formed by the injection of water or saline solution remains localized until the fluid is absorbed. The contrast is brought out if some inert colored material, such as dilute India ink, is added. With such an indicator measurements taken after 24 hours show that the area of spread of the

insect extracts are several times as large as that of the control. Parallel tests carried out with extracts of grasshoppers, ants, dragonflies and a number of other non-poisonous insects did not show any greater spread than that shown by saline alone.

The invasion of the tissues by these insect poisons can not, however, be compared with the extraordinarily powerful spreading power of snake venom. Fresh or desiccated venom from rattlesnakes in high concentration gives areas of spread as much as 20 times the area of the control. Dilutions as high as 1/100,000 still give areas of spread larger than that from saline solution. Cobra venom has similar properties. As a control to these tests extracts from the supralabial glands of such harmless species as chicken snake and pine snake proved to be devoid of any diffusing factor. This spreading action of the poison is shared if at all only to a limited extent by the extracts of several organs studied, including testicle, both from poisonous and non-poisonous snakes.

Naturally, the striking invasive power of the snake venom, as shown by the intensity of the local and general effects following snake bite, has always been known. It has even been pointed out that some fraction in the toxic complex must favor the rapid passage of the active components into the tissues and the blood. It is obvious that such a tremendous local diffusion of the snake secretion is not indispensable for the toxin to exert its action on the nervous centers. For instance, we have studied the poison from six different species of toads and, despite the fact that some of them killed the rabbit after a few hours, the local symptoms were either negligible or simply non-existent.

The progress of the venom through the inoculated animal could perhaps be interpreted not as due to a selective permeation by a specific factor but to a sort of passive "flooding" of the highly damaged tissue by the venom components. In order to test this objection the rattlesnake venom has been treated by heat and hydrochloric acid, both of which treatments practically suppressed the local toxic power. Such detoxification left the spreading factor in the venom little impaired in activity. Moreover, the intradermal injection of unmodified venom into the dead rabbit or into the skin which has been nailed down on a board produces spreads which in their initial phases are identical with those taking place in the living animal. Of course, there is neither hemorrhage nor edema in the former case and a slight superficial necrosis around the needle puncture is noticed only with the venom at high concentration.

The simultaneous injection of venom together with vaccine virus or *Staphylococcus aureus* brings about a marked enhancement of the resultant lesions. The venom in these tests was used either heated and at high concentration or unheated and at high dilution. The heated venom also sharply and rapidly localizes the dyes injected into the blood stream, a phenomenon which has been noted with other materials having the spreading property.

From the experiments so far reported it would seem that the mechanism of invasion of the tissue by the venom of insects and *Ophidia* is essentially the same as the one already described by us for invasive bacteria.[1] In the case of staphylococcus a split of the necrotizing toxin from the spreading factor has been recently achieved in our laboratory. At present an attempt is being made to dissociate the spreading and toxic factors in snake venom.

Thus, a factor or a group of factors, the essential physiological property of which is to increase to a marked degree the permeability of mesodermic structures,[2] is found in such widely separated forms as poisonous insects, poisonous *Ophidia*, malignant mammalian tissues[3] and normal mammalian tissues, especially testicle.[4] It was the last-mentioned organ that was first found to possess a powerful enhancing action for infections.[5]

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SEXUAL PHASES IN THE QUOHOG*

THE question of change of sex in Pelecypod mollusks has received much attention during the past decade. Orton[1] has described the alternation of male and female phases in the European oyster (*Ostrea edulis*); Roughley[2] found that *O. cucullata* was likewise protandric and Amemiya[3] in his experimental work on *O. gigas* concluded that the sex of each oyster is determined during the winter, and that the preceding sexual phase has no influence upon the following ones. Coe[4]

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* Published by permission of the U. S. Commissioner of Fisheries.

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