of Radcliffe-Brown in the '30's and '40's and has held the high middle ground among our transatlantic colleagues since. Ten of his numerous papers are reproduced in this book.

The British school seems to adhere to three axioms about social anthropology. The first is that a prolonged immersion in the life of alien peoples should be the central experience in the training of an anthropologist; one result of this emphasis has been a succession of detailed, finely wrought studies of non-Western (particularly African) societies. Second, the British, with some notable exceptions, largely eschew statistical formulations in favor of broader-ranging generalizations based on native theory and practice. Third, and perhaps most important, British social anthropology sees social structure as central, as *the* independent variable, and explains belief systems, ritual, economic activity, and so forth in terms of their relation to social organization based in kinship and group formation. This view of social enquiry has changed over the past decade, but it nevertheless pervades much of the material in this book.

The ten essays can be grouped into four parts, for the purposes of discussion: general social science issues (one essay), "bread and butter" issues (five essays), dynamic formulations (two essays), and divertissements (two essays). The general essay is a think piece devoted to the future of social anthropology. Goody sees British anthropology becoming more like American sociology, that is, more quantitative and statistically oriented, as though the future lay in beta weights and regression equations. This comes about as the subjects of anthropological enquiry become more Westernized, or decolonized, and their growing sophistication and *amour propre* demand a Kinsey approach rather than paper-and-pencil or "mud hut" efforts.

"Bread and butter issues" are the stuff of British social anthropology. They include the principles of group formation in traditional society and the processes of integration and fission. Consistent attention has been paid to jural rules—the conscious moral principles that order behavior in the domestic and political group. Social models have been generally built up from a focus on the individual, and attention has been paid to the manner in which his social identity is constructed by virtue of his participation in organizations of increasing size and complexity. Comparative studies have been important, the idea being that through comparison implicit measures of sociological constructs can be effected. Here two important clarifying essays appear. One is on the comparative study of descent groups, that is, subgroups of a society recruited on the basis of their kinship to each other through males (patrilineal), through females (matrilineal), or through both matrilines and patrilines (double descent). The question whether a society can be said to be characterized by double descent if the complementary line (matriline in a patrilineal society and vice versa) is recognized in a shadowy or residual fashion is raised but not settled. It is probably not very significant one way or the other, in the long run, but it is certainly useful for anthropologists to know what each other is talking about when they use these typological constructs, and the essay has proved valuable for that. Another essay, "The mother's brother in West Africa," is devoted to the evaluation of the notion of linearity, patrilineal and matrilineal. It has often been assumed that the "strength of linearity" in a society is both important and measurable, and correlates (divorce rate, strength of sibling bond, bride wealth) have been suggested on the basis of a putative measure of lineage strength; but so far we have not even managed an ordering relation, let alone anything more powerful—which suggests that perhaps notions like linearity are not very useful as ethnological constructs or for theory construction. Nevertheless, for the practicing ethnographer, such constructs are ineluctable; they organize a great many data and correspond to the way the subjects conceptualize their social world.

Like many other British social anthropologists, Goody is impressed by typology. He suggests, for example, that we should distinguish between kinds of incest (given the type of social system in which it is embedded) and kinds of adultery, in the hope that, if the anthropologists could only be reliable in their class assignments, comparative work could be carried out with productive accuracy, and the ideal of a comparative sociology could be realized to a greater degree than at present.

It is when Goody passes from the traditional concerns of his colleagues to the field work and to problems of dynamics that his ethnographic and synthetic gift comes to the fore. In an interesting essay on inheritance, social change, and the boundary problem, he takes as his independent variable not some element such as patrilineal descent but rather a relation, a process of interaction between social categories, and finds that he can explain socioeconomic variables by reference to that relation. In his conclusion he suggests: "An analytic frame that fails to allow for . . . conflict of interest and for the preventive measures associated with it has distinct limitations for a social scientist. A dominating interest in 'structure' can lead to a neglect of the dynamic forces that make both for continuity and change" (p. 141). His collation and analysis of a large quantity of intractable data are admirable. Similarly his handling of his data on assimilation in another essay reveals much of importance, hardly summarized in his statement: "While there are a number of factors involved in these differences in incorporation, marriage policy is overwhelmingly the most important: for most purposes the situation in Northern Ghana can be summarised in the proposition that the rate of incorporation . . . varies directly with the rate of marriage. . . . For outmarriage is more than an index of assimilation: it is the main mechanism whereby integration is achieved" (pp. 171-72).

These collected essays cannot be regarded as an introduction to British social anthropology, for they assume some prior knowledge. They are carefully reasoned expositions of the traditional subject matter. They are more than that, as well. When they deal with the rich data of Goody's field experience they become original and exciting, particularly when they deal with whole regions or cultural areas.

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Studies in Carcinogenesis

Occupational and Environmental Cancers of the Urinary System. W. C. HUEPER. Yale University Press, New Haven, Conn., 1969. xx + 466 pp., illus. $20.

As an investigator who has made numerous and substantial contributions to the field of chemical carcinogenesis and was the first to produce indisputable bladder cancer in animals with 2-naphthylamine, Hueper is well qualified to summarize this subject. The book contains 89 useful tables and has a bibliography of almost 1300 references.

The first four chapters consider what has been learned about the etiology and epidemiology of cancer of the urinary system under various conditions of exposure to chemicals, chiefly in industry. This section of the book highlights aromatic amines and nitro compounds. The fourth chapter contains a plan for the industrial physician who is responsible for the surveillance of workers in an environment where there may be an increased risk of urinary cancer; diagnosis, prophylactic measures, treatment, and the pathology of industrial urinary tumors are considered. Other chapters deal with the experimental production of cancer by aromatic amines and nitro compounds and with the possible carcinogenicity of endogenous aromatic amines such as tryptophan metabolites. Hueper has summarized the data that have been published regarding the effects of smoking and schistosomiasis on the excretion of urinary tryptophan metabolites. He classifies the suggestion that tryptophan metabolites are sometimes a factor in the etiology of bladder cancer as "unproven but interesting speculations." It is difficult to argue with this point of view. There are also chapters about the role of combustion products, ionizing radiations, parasites, and miscellaneous organic and inorganic chemicals which have been related by some investigators to the etiology of urinary cancer. The final chapter reviews the preventive and legal controls of urinary cancer hazards.

The author has not omitted mention of any significant factors that are known or suspected to be of significance in the etiology of urinary cancer. He has included consideration of viruses, bladder stones, estrogens, alkaloids and plant products, food additives, medicinal agents, and water pollution as possible sources of substances that may cause urinary tract cancer. The use of intravesical implants of vehicles containing test chemicals is given brief mention. The latter technique, he believes, "reflects the combined additive action of carcinogenic vehicle and a carcinogenic test chemical." Because of the "uncertain primary or contributory role played by the vehicle containing the chemical in inducing bladder tumors" he has not included a consideration of the data collected with this technique. On a related subject he concludes that "bladder stones do not induce cancers in this viscus by a prolonged, nonspecific, mechanical irritation upon the mucosa."

The major value of this book is that it offers a detailed and organized summary of a large body of literature such as is not available in any other single source. In a typical section Hueper presents a brief summary of a problem in environmental cancer followed by references to the information present in key publications about the subject, and gives his own interpretation of the data along with the interpretations of the authors of the original articles or other reviewers. He frequently points out opportunities for further work to clarify questions that have not been answered beyond doubt. There is usually a final paragraph in which he presents his own conclusions about the available information. For example, he concludes a discussion of arsenic with the statement that "the evidence at present does not support the view that arsenic is an established urinary carcinogen," a conclusion that few oncologists would dispute. The doubts that he expresses about the relationship between bladder cancer and cigarette smoking, although well presented, would not be as widely accepted.

Some readers may be critical of some of the author's interpretations of original data. However, the serious reader will value this book as an initial source or reference and may read the original articles to develop his own conclusions. A deficiency of the book is that there is no author index and the subject index is very limited.

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Beginnings of the Germ Theory

Analecta Medico-Historica, No. 4, Un Médecin et Biologiste, Casimir-Joseph Davaine (1812–1882). JEAN THÉODORIDÈS. Pergamon, New York, 1968. 238 pp., illus. Paper, $13.

In 1850, Pierre Rayer and Casimir-Joseph Davaine in a communication to the Société de Biologie of Paris reported the transmission of anthrax by the inoculation of healthy sheep with the blood of animals dying of the disease, and the finding of microscopic rod-shaped bodies in the blood of the dead sheep. Neither Rayer nor Davaine fully grasped the significance of their observations. Indeed, the latter was then interested chiefly in the study of the blood. Though this was the first report of the anthrax bacillus, the matter was not pursued further at that time. After reading of Pasteur's work, however, Davaine in 1863 returned to the investigation of anthrax and the rodlike bodies. He showed that healthy sheep became infected with the disease when these bodies, which he called bacteridia, were present in the blood, but not when they were absent. Furthermore, he did not succeed in isolating the bacilli in pure culture. Davaine's experimental studies rendered it highly probable that anthrax was due to the rod-shaped organisms in the blood. Although this view was shared by other investigators, there were still gaps in the natural history of the disease. Davaine thus prepared the way for Robert Koch to elucidate the obscurities of anthrax and to begin to clear up the mysteries of infectious diseases.

Despite Davaine's important contribution to the establishment of the germ theory of disease and of medical bacteriology, there has hitherto been no complete biography of him. This omission has now been admirably corrected by Jean Théodoridès. Based on a thorough knowledge of the sources and the context, this biography offers a rounded picture of Davaine as a physician, scientist, and man of his time. In his presentation of Davaine in his time and place, Théodoridès also makes a significant contribution to the history of French medicine and biomedical research during the 19th century.

Although Davaine was interested in medical research, he could pursue such activities only as a sideline. After graduating in 1837, he had to establish a medical practice in order to earn a livelihood. Eventually he became a very successful practitioner with a clientele at the highest social and political levels. He was appointed physician to the household of Napoleon III, and among his patients were members of the Rothschild and d'Eichthal families. Indeed, as Davaine had no laboratory of his own, most of his animal experiments were carried out in the house of his friend and patient the banker Adolphe d'Eichthal.

In spite of the demands of his medical practice, Davaine was active scientifically and in addition to his work on anthrax carried on studies in hematology, particularly on leucocytes, in parasitology, in teratology, and in pathological anatomy, both human and comparative. The bibliography of his writings indicates that from 1849 to 1881 there was hardly a year in which