detect the time required for the transmission of magnetic effects through space, and another attempt to find some relation between gravity and electricity. The Diary proper ends with a short study of regelation. The number of the last paragraph is 16041. There have been added a few entries found in scattered manuscript notes which are sufficiently consecutive to be worthy of publication. The most important one of these sets of notes presents the study, with Mr. Gassiot, of the stratified discharge in vacuum tubes. The most interesting one is that with which the record closes, on March 12, 1862, in which Faraday describes his endeavor to find some effect on the lines of the spectrum when the source of the light was in a magnetic field. No effect was perceived. The effect was later discovered by Zeeman, who, in his paper of 1896, mentions Faraday's experiment, and ascribes its failure to the inadequate resources of the period. This experiment is probably the last one tried by Faraday.

The Index is in a separate volume of sixty-four pages. In it the entries are often grouped under general heads, such as Electrostatics, Gravity and Electricity, Magnetism, etc., very much as they are given in Faraday's own index to the "Experimental Researches." An interesting feature is the occasional inclusion of short quotations in Faraday's own words expressing his opinions about the matter which he is investigating.

Even in the years covered by these volumes, in which Faraday's health and memory were failing, he showed on occasion his wonderful rapidity of working. There are days in these years in which the work done compares favorably with that recorded in the days of his prime. He apparently could not work so often, but when he did he worked just as well as ever. That his output in these years contained no startling discoveries may depend on the fact that he had already made all the discoveries of major importance which he could have made with the appliances that he had at his command. At least nothing of any importance was done by experimental methods until after the lapse of over twenty years, when improved methods of obtaining high vacua made possible the work of Crookes, from which the modern development of physics may date its origin.

Nothing like this Diary has ever appeared in the history of science. Generally scientific investigators publish papers in which their discoveries are presented in an orderly fashion and in which only positive results are given. Here we have everything that went through Faraday's mind, and we can see the way in which his thoughts developed and took form in experiment. We see the failures as well as the successes, the trivialities as well as the great achievements. It exhibits his personal qualities, his intellectual honesty, his indefatigable persistence, his modesty and candor better than his papers do and more convincingly than can be done in any biography. It is without parallel as a revelation of the working of a great scientific mind.

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HUMAN ECOLOGY

Human Ecology. By J. W. BEWS. pp. xx + 312. London, Oxford University Press, 1935.

BOOKS which skirt the subject of human ecology are appearing in increasing numbers. They may not bear the title. The expression may be absent from their text. But if an author approaches human history as a problem involving the mutual reactions of mankind with a variant and shifting environment, he is writing human ecology; and the output of these works is abundant. The trouble is they are merely fragmentary considerations of a gigantic whole.

Complete success in such a task requires infinite knowledge. The partial success that can be regarded as a possible goal requires a synthesis of all science. A master of human ecology, therefore, belongs among the minor gods. What we must be satisfied with is an erudite inquirer who approaches the subject in a scientific spirit, but who, of necessity, overemphasizes the genetic, the psychological, the sociological or the physiographical aspects of the situation. We have here an example.

Mr. Bews, principal of the Natal University College, is a distinguished botanist, a student of bionomics, who has set out to apply the methods used in the more limited field in determining why we have become what we are. The reader will find the book instructive, because the author has a real flair for epitomizing the essential facts gleaned from the large, well-selected and up-to-date reference list. He will also find it engaging in parts where the plant lore and the ethnographic lore of Africa are considered, for Mr. Bews has first-hand knowledge of these matters. Whether he will gain any very clear insight into the way ecological factors have affected the trend of human evolution is something else. If he does, he must depend largely upon his own synthesis.

The work is introduced by General Smuts, who, since the success of his biological philosophy of holism or, as we call it in this country, emergent evolution, is as much in demand for introductions as the late president of Harvard was for cut-stone mottoes. Four chapters of background building follow, where man's heredity, his environment and his response to his environment are considered. Then comes a chapter on psychological doctrines. This is succeeded by two chapters on general anthropology and three chapters on the ecology of the wood gatherers, the plant cultivators and the herdsmen. Finally, there is a disser-

tation on the origin and development of social strata within the group and a plea for human ecology as a science.

It must be reiterated that some of these essays are extremely well done. The chapter on ancient man is a gem. But one has the feeling that the book is a series of blocks and not a building. The author appears to have gathered together a group of special libraries and to have abstracted their contents systematically and accurately, but separately. The result might be called "a contribution toward a source-book for students of human ecology." It hardly is a textbook on human ecology. There is an exhibit of warp and woof of various colors, but they are woven into no fabric. The author deserves great credit, nevertheless, for his philosophical approach to the subject as an organic whole.

It is to be hoped that Mr. Bews will write a second book with this one as a basis. One would like to know just what part has been played by genetic variability, by meteorological factors, by proximity to sea or lowland or forest or mountain, by presence or absence of various plants and animals, by religion and taboo, and by a thousand and one other matters, on the development of the various clans of the human race. Doubtless there would be errors of omission, faulty conclusions, incorrect emphases and other forgivable sins committed by any one undertaking such a stupendous task. What of it? It would be an interesting and stimulating adventure. And at least an introduction could be written without much more of an expenditure of time than Mr. Sarton has taken for his history of science.

E. M. EAST

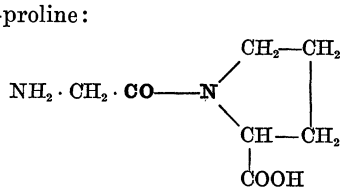
SPECIAL ARTICLES

A NEW TYPE OF ENZYME IN THE INTESTINAL TRACT

THERE are two different types of peptide linkage in proteins. The majority of amino acids possess an α-amino group and are connected with each other in proteins by peptide linkages CO—NH, analogous to the linkage in glycylglycine:

$$NH_2 \cdot CH_2 \cdot \mathbf{CO}\text{——}\mathbf{NH} \cdot CH_2 \cdot COOH$$

However, proline and hydroxyproline have only an α-imino group and are connected with other amino acids by means of a particular type of peptide linkage lacking a peptide hydrogen, analogous to the linkage in glycyl-*l*-proline:



It was found in 1932[1] that peptide linkages of the second type are split by erepsin, but not by pancreatic juice.

It could now be shown that the action of erepsin on substances like glycyl-*l*-proline is due to a special enzyme. In contrast to the principal proteolytic enzymes of erepsin, dipeptidase and aminopeptidase, the new enzyme is not appreciably inhibited by cyanide.

The fact that in some proteins (collagen, gelatin) more than one quarter of the peptide linkages[2] require the action of the new enzyme lends significance to its presence in the intestinal mucosa.

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1 M. Bergmann, L. Zervas, H. Schleich and F. Leinert, *Zeits. physiol. Chem.*, 212: 72, 1932; M. Bergmann, L. Zervas and H. Schleich, *Ber.*, 65: 1747, 1932.

2 M. Bergmann, *Jour. Biol. Chem.*, 110: 471, 1935.

THE ALCOHOLIC ADMISSIONS TO BELLEVUE HOSPITAL[1]

DURING the 34-year period of 1902–1935, inclusive, the Psychiatric Division of Bellevue Hospital has recorded 256,755 separate alcoholic admissions. From this average of over 7,500 alcoholic admissions per year a large source of material is available for psychiatric, medical, sociological, economic and public health studies. Data relative to the admissions per annum, the admission rate per capita population, both crude and specific, and the changing proportion of female admissions are recorded in this paper.

The total admissions (Fig. 1) rose from 5,830 in 1902 to a maximum of 11,307 in 1910. In 1911 a downward trend in alcoholic admissions began, and in 1919 7,962 admissions were recorded. War-time prohibition went into effect on July 1, 1919, and the eighteenth amendment became effective on January 17, 1920. In 1920 there occurred a precipitous fall in the number of alcoholic admissions to a low of 2,091, with about the same number of admissions in 1921. From 1922, when there were 4,083 admissions, the trend was upward, reaching 9,542 in 1933, the largest number of admissions since 1910. In 1934, the first

1 Observations on the admission rate per capita population and the sex distribution, 1902–1935. From the Departments of Medicine and Psychiatry, New York University College of Medicine, and the Psychiatric Medical Service of the Third (New York University) Medical Division of Bellevue Hospital, New York.