Book Reviews

Elsevier's encyclopaedia of organic chemistry. (Vol. 13, ***Tricyclic compounds;*** Series III, ***Carboisocyclic compounds.***) E. Josephy and F. Radt. (Eds.) New York-Amsterdam: Elsevier, 1946. Pp. xx+1265. Single volume, $104; serial price, $91; subscription price, $78.

Volume 13 is the second to appear in this projected compilation in the English language and the second in Series III. In due time, the systematic description of all organic compounds appearing in the scientific literature will have been included. Elsevier has not attempted to cover those compounds described in patents; on the other hand, the well-known Beilstein does refer to the patent literature, although the writer is not informed whether the coverage has been world-wide or limited to German patents.

With the availability of only two volumes of the eventual 20 of Elsevier, a detailed comparison with its counterpart, Beilstein, is not warranted at this time. Of greatest immediate value to the reader may be the description of one or two compounds selected at random and appearing in both Beilstein and Elsevier.

In Elsevier (p. 236):

"*9-Chloroanthracene,* $C_{14}H_9Cl$, golden-yellow needles (alc.), m. 103° (1876 Perkin), m. 106°, M_α 68.14, M_D 69.39, N_β 72.81, M_γ 77.53 (1923a Krollpfeiffer); green in fuming H_2SO_4, addn. of water causes a brown ppt.—Fmn. Anthracene with 1 mol. of Cl_2 in CS_2 → dichloride fusion → 9-chloroanthracene (1876 P.). From anthracene and *tert*-butyl hypochlorite (1931 Clark)."

At the bottom of the page on which this description appears is a notation: "References, pp. 258, 259." By turning to page 258, one finds the references listed under the date of appearance.

In Beilstein (Vol. V, p. 663):

"*9-Chlor-anthracen,* $C_{14}H_9Cl$. B. Man lässt Chlor auf Anthracen einwirken und schmilzt das hierbei enstehende Anthracendichlorid (Perkin, *Chem. N.*, *34*, 145; *Bl* [2] 27, 465).—Goldgelbe Nadeln (aus Alkohol). F: 103°. Sehr leicht löslich in Äther, CS_2, Benzol. Verbindung mit Pikrinsäure s. Syst. No. 523."

In Elsevier (p. 805):

"*9,10-Diethylphenanthrene,* $C_{18}H_{18}$, m. 105–6°.—Fmn. From diethylphenanthrone (p. 891) as the dimethyl compd. (1908 Zincke; cf. 1913 Meerwein)."

In Beilstein (Vol. V, Suppl., p. 839):

"*9,10-Diäthyl-phenanthren,* $C_{18}H_{18} = \begin{matrix} C_6H_4 \cdot C \cdot C_2H_5 \\ \| \\ C_6H_4 \cdot C \cdot C_2H_5 \end{matrix}$. B Aus 9,10-Diacetylphenanthren durch Reduction mit Jodwasserstoffsäure und rotem Phosphor (Willgerodt, Albert, J. pr. [2] 84, 392). Blättchen (aus Alkohol). F: 90–91°.

"Als 9,10-Diäthyl-phenanthren (?) wird ein bei 105–106° schmelzender Kohlenwasserstoff angesprochen, der bei der Reduktion von 10-oxo-9,9-diäthyl-9,10-dihydrophenanthren mit Jodwasserstoffsäure ensteht (Zincke, Tropp, A. *362*, 254: vgl. Meerwein, A. *396*, 249) und einmal bei der Reduktion von 9-Äthyl-9-propionylfluoren mit Natriumamalgam in saurer Lösung erhalten wurde (Meerwein, A. *405*, 174)."

The formula index appearing in each volume of Elsevier is to be preferred to the name index in each volume of Beilstein, although a complete formula index is indeed available covering all volumes of Beilstein.

This and the previous Volume XIV have merit and are reference works with which all organic research men should be familiar.

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James McKeen Cattell, man of science. Vol. I: ***Psychological research;*** Vol. II: ***Addresses and formal papers.*** A. T. Poffenberger. (Ed.) Lancaster, Pa.: Science Press, 1947. Vol. I: Pp. 586; Vol. II: Pp. 507. $10.00.

Here is a unique history of the rise of experimental psychology for the first 50 years. It is an on-the-spot commentary by our most authoritative commentator giving an up-to-date report of progress from year to year. In his capacity as spokesman or public relations man for psychology, Cattell has blazed many new trails and fought many a battle for psychology among the sciences. These volumes will be news for the student of today and will stand as a historical classic.

Volume I is a condensed report of the author's personal achievements as a pioneer experimenter in this field. Emphasis is laid upon the historical background of each problem and a discussion of the significance of the method involved. Volume II is a parallel collection of the author's public addresses giving a chronological account of the emerging new psychology. Prof. Poffenberger, as editor, has shown great skill in the selection and chronological organization. Every word of the text is in Cattell's own words as originally published in journals but so selected as to make interesting and economical reading of the story of the rise of psychology in America. Two brief biographical sketches of the author are appended, one by Prof. R. S. Woodworth and the other by Dr. Lyman Wells.

Since the whole is a condensation of the author's 167 articles listed in the chronological bibliography and since the original articles were written as models of brevity and clarity, the space allotted for this review does not

permit an adequate summary of the content, a detailed critique of the author's theories, or historical evaluations.

A review of these volumes reveals Cattell distinctly as a historian for psychology, an experimenter, an organizer and director of societies, a prolific editor and publisher, a financier, a champion for democracy, an artistic writer, and an educator. A word of comment on each of these issues based upon the reading of the two volumes is in place.

As a historian he is objective, critical, operational, interpretative, and entertaining. He is objective in that he reveals the growth of psychological concepts by illustrations from his own experiments and in that his public addresses always deal with some concrete or strategic issue of the day as a contemporary report. He is critical because he adheres to the sanctions of the physical sciences and urges and exemplifies their extension into the mental sciences as far as possible. He is operational in that he avoids mere names and classifications for situations and aims to describe them by precise statement of conditions and techniques of the experiment. He is interpretative in that, in opposition to the prevailing early exclusive trends toward pure psychology, he plays up the usefulness of psychology and shows how psychology can be scientific and at the same time useful. Well grounded in the classic traditions and a lover of good literature, he will be long remembered as an artistic writer and speaker. There is a remarkable euphany in his art of deliberate and adequate communication of fact. In all his approaches he writes as a contemporary reporter of event after event in chronological order. He has had the ears of all the sciences and has done more than anyone else to gain a place for the emerging psychology in the brotherhood of the sciences.

As an experimental psychologist he was a pioneer who came in on the ground floor with the first American group to register in the Leipzig laboratory. He thus got his inspiration from Wundt in the psychophysical approach; but he soon asserted his originality and independence by taking up the technological approach of which Wundt did not approve. He was the first to offer a laboratory course in psychology. Under the head of mental measurements he was the first to introduce differential psychology as applied to anthropology, ethnology, genetics, and education. And by his appointment in the University of Pennsylvania he became the first psychologist to bear the title "Professor of Psychology," psychology having up to that time been carried under the name of philosophy or physiology.

He took his cue for a psychological laboratory from the material sciences and aimed to make it a natural science. He thus made early contacts with naturalists, mathematicians, geneticists, physicists, and astronomers. He was early associated with Sir Francis Galton and laid foundations for mental statistics, which became his chief interest in later life. His chief tool was the "probable error," which someone has said became his god. Even in this he adhered firmly to psychophysical principles and proceeded step by step to exemplify mathematical treatment under laboratory control, breaking new ground and setting up new techniques. This is well illustrated by his psychometric laboratory, set up in Columbia University.

Cattell had but little interest in classroom teaching. His chief method of instruction took the form of comradeship in research and conferences in seminars. He always had something new to report and thus gained a world-wide following through his conferences and the press. He lived through the period of schools, but he did not become an adherent of any school as a partisan; he did not found any school of his own; he profited rationally from every new improvement and was sympathetic to newcomers. He was always ready to trace the ancestry of new ideas and to criticize their ideologies.

Cattell, "a person cast in heroic mode" (Woodworth), stands out most conspicuously in his capacity as editor-publisher. There are to his credit as founder, editor, or financier the following publications: *The Psychological Review* (with J. M. Baldwin), *Science*, *The Naturalist*, *The Scientific Monthly*, *School and Society*, and the two scientifically organized directories, *Biographical Directory of American Men of Science*, and *Leaders in Education*. There are four outstanding features in these ventures: first, the journals were so remarkably well edited that each in turn was taken over as the official organ of the national society in each of the respective fields covered; second, through the recognition of research as a mark of eminence he raised the national level of scientific standards in the respective fields; third, while all were hazardous risks, he managed them so well that each became a model in the field of publication; and fourth, he revealed his devotion to science by his generosity in turning over certain of these publications as gifts to the organizations served.

Academic democracy was Cattell's avocation; he pursued it as a hobby and drove this horse hard. He took peculiar delight in lambasting presidents, head professors, and all sorts of authoritative practice in education and society. Here he found the best outlet for wit, humor, and extravagance and fought valiantly. This brought him into conflict with Columbia University. A law suit resulted in vindication of his position and financial victory but also in his being dismissed from the university under wartime pressure in 1917. This early retirement gave him time and freedom as a scholar-at-large. One must note, however, that success in his championship for democracy in his own ventures was in large part due to the free use of his iron hand.

The publication of these volumes by the Science Press under the direction of his son, Jaques Cattell, is a worthy memorial to the founder of the institution. The editing by one of the author's pupils is a highly commendable work. One can only request that an index be provided in future editions.

As a contemporary of Cattell, the present reviewer has witnessed the unfolding of this history from year to year and going through the material in the present form has revived precious memories of the great pioneer in psychology.

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