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MAN'S MOST CREATIVE YEARS: THEN AND NOW

By Professor HARVEY C. LEHMAN

OHIO UNIVERSITY

IN previous articles the present writer has presented age-curves which set forth the chronological ages at which world-famous geniuses have either achieved or first published their best work.¹ The present study is an attempt to discover whether or not the age-curves thus far obtained are destined to hold for future as well as for past centuries. Although one can not be entirely certain as to what will happen in the centuries that lie ahead, it seems quite possible that a review of what has occurred in the past may provide one with a preview of what is likely to occur in the immediate future.

As a means of investigating the age-changes that may already have taken place the writer has partitioned some of his data upon the basis of the periods

¹ H. C. Lehman and W. S. Gamertsfelder, *Psychological Review*, 1942, 49; 319-344. (A bibliography of 9 articles of this series is to be found on page 343. In this list the 11th reference should be to the *Psychological Review* instead of to the *Psychological Bulletin*.)

during which the various types of creative thinkers were born. In partitioning the data thus it was assumed that, if any change has already occurred in the chronological ages at which eminent thinkers have accomplished the various things which enabled them to attain recognition, this change would perhaps be revealed by study of the partitioned data.

For example, W. F. Magie's "A Source Book in Physics"² sets forth the chronological ages at which 140 notable contributions to the science of physics were either made or first published by 89 deceased individuals. In Fig. 1 the broken line sets forth the average number of contributions per ten-year interval for approximately the 50 per cent. that were earliest born, and the solid line sets forth similar information for the 50 per cent. that were most recently born. In both of these age-curves the average number of con-

² W. F. Magie, "A Source Book in Physics." New York: McGraw-Hill Book Co., Inc., 1935. Pp. xiv-620.

thella typhi, *Escherichia coli* and *Staphylococcus aureus*. To the dry contaminated powders was added 2 cc of the prepared Clarase solution. The enzyme penicillin solutions or suspensions were transferred immediately to several tubes of Brewers' fluid thioglycollate medium (approved medium of the National Institute of Health). The contents of the tubes were mixed thoroughly by swirling and placed at 37° C to incubate. A luxuriant growth of the inoculated test organisms was had in all tubes at the end of 48 hours. Control tubes containing gram-positive organisms and penicillin, but without enzyme, failed to show evidence of visible growth at the end of 7 days incubation. However, many of the tubes containing gram-negative organisms and penicillin without enzyme showed some growth after several days. These results could be expected on the basis of known resistance of most gram negative bacteria to the antibacterial agent.

Method: With the information obtained in this and additional studies, the following method for routine sterility tests on penicillin powder is proposed. A stock of 1 per cent. sterile solution of Clarase in phosphate buffer, pH 7.0, is distributed in 2 cc amounts in sterile cotton plugged test-tubes or in ampules which may be sealed. The sterile enzyme solution, stored in a refrigerator, will retain its anti-penicillin activity for a period of at least two months. The contents of an ampule of penicillin are dissolved or suspended in 2 cc¹⁰ of prepared Clarase solution and transferred immediately to tubes of Brewers' fluid thioglycollate medium. The inoculated tubes are placed at 37° C. and examined for possible bacterial contamination throughout a period of 7 days. An additional 7 days incubation should be allowed for detection of possible mold contamination.

C. A. LAWRENCE

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¹⁰ This quantity of Clarase solution will inactivate as much as 50 mg of penicillin containing a total of potency of 10,000 or more Oxford units.

¹ John B. Buck, SCIENCE, 97: 2526, 494, May 28, 1943.

cellulose solution; and upon the fact that this solution displays very little change of viscosity as it is warmed (as by the lamp of the microscope). Best results are obtained by using a ten per cent. solution of methyl cellulose (Dow Chemical Company; viscosity type, xx low). Place one large drop of this solution on a slide in contact with an equal-sized drop of the Paramecium culture, stir the two drops together with a toothpick, put on a cover slip (no bristle or other support is necessary), and the preparation is ready for immediate study.

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DOUGLAS A. MARSLAND

WASHINGTON SQUARE COLLEGE,
NEW YORK UNIVERSITY

BOOKS RECEIVED

- BERT, PAUL. *Barometric Pressure. Researches in Experimental Physiology.* Illustrated. Pp. xxxii + 1055. College Book Company, Columbus, Ohio.
- BULL, HENRY B. *Physical Biochemistry.* Illustrated. Pp. iv + 347. John Wiley and Sons. \$3.75.
- DIXON, MALCOLM. *Manometric Methods as Applied to the Measurement of Cell Respiration and Other Processes.* 2nd edition. Illustrated. Pp. xiv + 155. Cambridge University Press. \$1.75.
- PORTER, C. W. and T. D. STEWART. *Organic Chemistry.* Illustrated. Pp. v + 577. Ginn and Company.
- STEWART, ISABEL MAITLAND. *The Education of Nurses.* Pp. xi + 399. Macmillan Company. \$3.50.
- WHITEWAY, HELEN LOUISE. *Scientific Method and Conditions of Social Intelligence.* Pp. x + 188. Teachers College, Columbia University. \$2.00.

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