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PERSONNEL CLASSIFICATION TESTING IN THE ARMY

By Dr. WALTER V. BINGHAM

CHAIRMAN OF COMMITTEE ON CLASSIFICATION OF MILITARY PERSONNEL
ADVISORY TO THE ADJUTANT GENERAL¹

INTRODUCTION

THE Committee on Classification of Military Personnel, appointed by the National Research Council at the request of The Adjutant General in May, 1940, has completed four years of advisory service. These years have seen striking changes in the nature and scope of the technical problems involved in classifying and assigning officers and men as the Army has entered on successive phases of planning for the national defense, mobilization, swift expansion, participation in a world-wide war and return of service personnel to civilian employment. A short sketch of what has been done during this period will introduce a summary of activities within the past year.

¹ The membership of this committee at the time of its appointment by the National Research Council included also C. C. Brigham, H. E. Garrett, L. J. O'Rourke, M. W. Richardson, C. L. Shartle and L. L. Thurstone. Following the untimely death of Dr. Brigham on January 23, 1943, C. F. Hansen was designated as his successor.

RETROSPECT

Four months before the Selective Service and Training Act was passed in September, 1940, The Adjutant General had asked the committee what steps should be taken to provide aids to general personnel classification and appraisal of soldierly potentialities of recruits and inductees. The question took this form: Should reliance be placed on the standardized vocabulary tests then in use at recruiting stations as aids in sizing up the military suitability of volunteers? Or should use be made of available revisions of Army Alpha, Army Beta and the Binet-Simon Scale? Or had the time arrived to prepare new tests for purposes of screening and initial classification?

It seemed clear that a new general classification test was required, and also an examination which could be given to non-English-speaking men and to illiterates. Tests of aptitudes for training in clerical duties and in mechanical occupations also seemed to be indicated.

ple, and the chromophobes are colorless to very light blue and have purple nuclei.

In using the technique it is best to follow the sections rather closely with the microscope for a while to become accustomed to their appearance at various stages. One advantage of the technique is that if at any time too much stain has been removed the sections can be restained immediately without any further treatment. When using the stains on other tissues less time is necessary in the anilin blue solution.

This method may be used successfully after fixation in a modified Bouin's fluid (using only 1 cc of acetic acid instead of 5 cc) if the sections are mordanted before staining in a 3 per cent. potassium dichromate solution for at least 15 minutes.

MARGARET M. DICKIE

ROSCOE B. JACKSON MEMORIAL LABORATORY,
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ACTION OF RADIOACTIVE SUBSTANCES ON THE SPEED OF GROWTH OF *PENICILLIUM NOTATUM* AND THE PRODUCTION OF A POTENT PENICILLIN¹

WE have based our experiments on the principle that the radiations of minute amounts of radon, or other radioactive substances, have an exciting action on the growth of living substances in contrast with the radiation of larger doses of these radioactive substances which have a destroying power.

Furthermore, a fluorescent substance, for instance, fluorescein, excited by the presence of radioactive substances, emits a light vibration. This light is produced internally in the suspension. The action of small amounts of this light probably has an additional exciting power on living substances.

The radioactive sources used were porcelain tubes filled with emanating radioactive substances (radium). Through the porcelain wall of the tube the radon diffuses. Our cells were prepared for a daily production of about 7 micro curies.

The medium utilized for the culture of *Penicillium notatum* was the usual medium (slightly modified Czapek-Dox medium at PH 6).

For each series of experiments we have studied and compared the growth of the same strain of *Penicillium notatum*,² and also the inhibitory power of the penicillin secreted under the following different conditions:

I. Normal growth of *Penicillium notatum* at 24° C.

II. Growth in presence of radon. During the period of

¹ We are very much indebted to Dr. Boris Veebrink, of the Physical Research Laboratories of Canadian Radium and Uranium Corporation, and to Mr. Julien Garbat, for their technical help.

² Received from the Northern Regional Research Laboratory of the U. S. Department of Agriculture.

irradiation, radon and its short-lived daughter products (Ra A, B, C, C₁, C₂) are present.

III. Growth in presence of radon and a fluorescent substance (fluorescein).

For the control of potency of the penicillin secreted, we have used Heatley's assay method, as described in *Endeavor* of January, 1944. However, we have seeded our plates according to the method described by Thomas, Levine and Vitagliano.³

The microorganism tested was a 21-hour culture of *Staphylococcus aureus*.

Under these conditions the Petri dishes examined 24 hours later have shown that the peak of secretion of penicillin, for the irradiated culture, was obtained at least 2 or 3 days before that of the controls.

CONCLUSION

These experiments demonstrate the possibility of substantially decreasing the time required for the growth of *Penicillium notatum* and of obtaining an active penicillin, tested *in vitro*, in the presence of radon and its deposits.

We do not believe that these radioactive substances act through their chemical properties since they are present in negligible quantities. However, it seems reasonable to assert that this action is due to the radiations emitted by these substances. These radiations are Alpha, Beta, Gamma and Delta. As a major part of the radiated energy absorbed by the medium is due to Alpha particles, it seems probable that the observed effect is mainly due to this type of radiation. Experiments are being conducted in order to determine the relative importance in the effect produced by the different types of radiations.

The addition of a fluorescent substance to the medium in which radioactive substances are present improves noticeably the effects of these radioactive elements.

RICHARD JAHIEL
ETHEL GUBERMAN
RAFAEL KAZDAN

BIOCHEMICAL RESEARCH LABORATORIES
OF CANADIAN RADIIUM AND URANIUM
CORPORATION

³ A. R. Thomas, M. Levine and G. R. Vitagliano, *Proc. of the Soc. for Exp. Biol. and Med.*, 55: 4, 264, April, 1944.

BOOKS RECEIVED

- CORNER, GEORGE W. *Ourselves Unborn. An Embryologist's Essay on Man.* Illustrated. Pp. xiv + 188. Yale University Press. \$3.00. 1944.
- GREGORY, THOMAS C. *Uses and Applications of Chemicals and Related Materials.* Volume II. Pp. lxxviii + 459. Reinhold Publishing Corporation. \$9.00. 1944.
- VON NEUMANN, JOHN, and ÖSKAR MORGENSTERN. *Theory of Games and Economic Behavior.* Pp. xviii + 625. Princeton University Press. \$10.00. 1944.



Important New WILEY BOOKS in the *Biological Sciences*

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627 pages 6 by 9 \$5.50	PATHOLOGY IN FOREST PRACTICE By DOW V. BAXTER, <i>Associate Professor of Silvics and Forest Pathology, University of Michigan.</i> Provides a working knowledge of the conditions which cause disease and of the practical measures which can be taken to reduce its incidence or its severity. 1943.

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