5. Designate as the type of *Laverania* Feletti and Grassi (1889)—*Haematozoon falciparum* Welch (1897).

In summary, the actions recommended above would legalize existing practice as follows:

*Plasmodium vivax* (Grassi and Feletti, 1890), parasite of tertian malaria.

*Plasmodium malariae* (Feletti and Grassi, 1889, 1890), parasite of quartan malaria.

*Plasmodium falciparum* Welch (1897), parasite of malignant tertian malaria.

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## A NEW PHILOSOPHY OF PREVENTIVE MEDICINE

To the significant accomplishments reported in a recent article concerning "Recent Contributions of the Preventive Medicine Service of the U. S. Army," which appeared in the issue of SCIENCE for July 21, 1944, there may be added accomplishments of a different nature which have resulted from the unique problems which occur in the Army Air Forces. I refer to the service which the Medical Department of the Army Air Forces has rendered to flying personnel.

The medical officer in the Army Air Forces has enjoyed always an intimate association with line personnel. From this association there has evolved a unique type of preventive medicine. It results from the interest of medical officers in equipment—equipment designed to protect flying personnel, thereby increasing their efficiency to that of their aircraft. Because the medical officer is concerned with the human organism, he scrutinizes equipment from the standpoint of its usability. In addition, he is in a position to supply the engineer with certain physiological data and criteria to be used as a basis for the construction of equipment.

That this point of view has actually been placed in practice is evidenced by the fact that the Air Surgeon has not only interested himself in oxygen equipment but also has been made responsible for its development. Without this equipment, personnel could not fly efficiently above ten thousand feet. It is obvious, therefore, that through the use of oxygen equipment the air man may operate efficiently at the altitudes to which his airplane is capable of flying. At the same time, he is protected from the adverse effects of anoxia.

A few of the other developments in which the Air Surgeon has interested himself, or for which he has been responsible, aimed at the maintenance of a normal physiology, the production of maximal efficiency or the prevention of injury in flying personnel are:

(1) *Shoulder harness:* This equipment is utilized to prevent injury on rapid deceleration, such as in a crash.

(2) *Parachutes and improved parachuting techniques:* At the instigation of the Air Surgeon, an extensive program in parachuting has been adopted by the Army Air Forces.

(3) *Anti-G equipment:* The Air Surgeon has been responsible for the development of equipment in the Army Air Forces for combating accelerative forces encountered in flight.

(4) *Gun turrets:* Anthropometric measurements and their applications have resulted in redesign of gun turrets and the arrangement of equipment in the turrets.

(5) *Aircraft instruments:* In order to promote the efficiency of pilots, the Air Surgeon has interested himself in standardization of aircraft instruments and cockpit arrangements, not only to prevent injuries, but also to increase the speed of learning and operation.

(6) *Flying clothing:* Investigations in the use of clothing, including electrically heated clothing, and other measures to combat cold and frostbite have been accomplished.

(7) *Flak suits:* The flak suit was originated by a senior flight surgeon, Brigadier General Malcolm C. Grow, U.S.A., as a measure to prevent injury to flying personnel from flak. It has proved to be successful and has prevented not only many serious injuries but also many deaths.

(8) *Ditching procedures:* Original impetus to the study of ditching procedures came from medical officers in the Army Air Forces in theaters of operation and has resulted in the prevention of injury to many individuals.

One of the most outstanding achievements in modern physiology has been the Altitude Training Program which was originated and is conducted by the Air Surgeon. This program has provided instruction in the physiology of flight to all flying personnel, in an attempt to prevent deleterious effects from flight through knowledge of the physiological problems encountered.

The opportunities for extension of this philosophy of preventive medicine to other fields in the postwar world are manifold.

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## SEX DIFFERENCES IN THE SCIENCE TALENT TEST[1]

IN each of the three years of the Science Talent

[1] The opinions or assertions contained herein are the private ones of the writers and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

Search—conducted jointly by Science Clubs of America, Science Service, and the Westinghouse Electric and Manufacturing Company—differences between the scores of the boy entrants and the girl entrants on the Science Aptitude Examination have been noted.[2] The first year, for example, 22 of the 2,460 boys with complete entry materials made fewer than 5 errors, whereas this was not true of any of the 715 girls.

Yet the Science Aptitude Examination has been given under uniform conditions to boys and girls. It is open to all high-school seniors in the continental United States, and is equally publicized among them, since announcements and contest rules have been sent each year to every high school and secondary school in the country, public, parochial and private. The examination is essentially a self-administering paper-and-pencil academic aptitude test using materials drawn from science. The first two forms consisted of paragraphs from various fields of science, and questions based on these paragraphs; the third year the examination was divided equally into a paragraph reading test and scientific problems with multiple-choice answers. Copies of the examination questions and answers for all three years may be obtained from Science Service, 1719 N St., N.W., Washington 6, D. C.[3]

Table 1 shows the differences in the mean scores of the boys and the girls on the examination for each of the three years. The critical ratios (differences divided by their standard error) are of an order to indicate that these differences are not due to chance variations.

TABLE 1

SCORES OF BOYS AND GIRLS ON SCIENCE APTITUDE EXAMINATION

| | *Boys* | | | *Girls* | | | *Critical ratios* |
|---|---|---|---|---|---|---|---|
| | Mean | $\sigma$ | N | Mean | $\sigma$ | N | |
| First year .. | 75.3 | 12.2 | 2,460 | 67.5 | 12.9 | 715 | 14.4 |
| Second " .. | 44.9 | 10.8 | 2,507 | 39.0 | 8.8 | 974 | 16.6 |
| Third " .. | 46.7 | 10.5 | 2,021 | 39.7 | 9.2 | 910 | 18.2 |

The same sort of comparison will be made in the forthcoming Fourth Annual Science Talent Search and in succeeding years. In the meantime, it would appear that the decision was correct that the ratio of boys to girls among the 260 honorable mentions, and among the 40 trip winners to Washington, D. C., in each annual contest should not be equal. The proportion of boys and girls in these groups was actually based on the ratio of boys to girls who entered the contest. The fact that the 40 trip winners in the Third Annual Science Talent Search consisted of 28 boys and 12 girls, rather than half boys and half girls, probably means that a larger number of future outstanding scientists have been chosen. If 300 in the "honors group" were to be selected without reference to the proportion of girls originally completing entrance materials, it seems likely that the number of girls in this top group would be even smaller than under the present controlled system.

Thus far the sex differences in scores on the examination have been consistent each year, and they are statistically significant. They are probably due, however, to environmental and cultural factors rather than to inherent biological differences. This suggests, then, the desirability for greater attention in the primary and secondary schools to scientific training for American girls.

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[2] The selection techniques were briefly described by us in SCIENCE, 99: 319–320, April 21, 1944.

[3] The complete Science Aptitude Examination for the first year is reproduced in "Youth Looks at Science and War," Washington, D. C., Science Service, and New York, Penguin Books, 1942, pp. 110–131; and typical questions for the second year in "Science and the Future," Washington, D. C., Science Service, 1943, pp. 117–121.

## REMARKS ON THE HISTORY OF SCIENCE IN RUSSIA

IN the volumes of SCIENCE a notable contribution to the appreciation of scientific progress has been the generosity of the editors in giving space for discussion of articles and correction of errors appearing in the magazine. We, the undersigned, feel obliged in the interest of truth to call upon that generosity now. We refer to the leading article in the issue of June 2, on the history and activities of the U.S.S.R. Academy of Sciences.

The story of the growth of Russian science is impressive enough without the embellishment of inaccurate and misleading assertions. The most shocking such assertion is: "However, the influence of Newtonian philosophy made no great progress in Russia at this time. In contemporary France and Germany, Newton was rapidly accepted. The cause of this neglect of Newton in the vigorous new life of Russian interest in mathematical science is not apparent. It was not until two centuries later that formal recognition of Newton become evident" (p. 440).

Mr. Frederick E. Brasch as consultant in the history of science of the Library of Congress ought to know that acceptance of Newtonian physics on the continent of Europe was not rapid but surprisingly slow. For almost fifty years after the publication of the "Principia" the leading scientific body in Europe, the Paris Academy of Sciences, still adhered to Cartesian physics and only very gradually, chiefly under