

IMMUNOLOGY

# Antibodies Induced To Form In Laboratory Glass Vessels

## Results of Experiments Confirm Theory on Production Of Antibodies in Blood of Living Persons and Animals

**F**OR THE FIRST time in medical history, disease-fighting blood substances known as antibodies have been formed artificially in laboratory flasks. Hitherto these protectors against germs and viruses have been formed only within the bodies of living persons and animals.

The new feat of inducing their production in glass vessels was performed in the laboratories of the California Institute of Technology by a three-man research team, Prof. Linus Pauling, Prof. Dan Campbell and Dr. David Pressman.

Up to the present time, the experiments have not been carried far enough to discover whether or not it will be possible to prepare these protective solutions in the laboratory for general clinical use, although exploratory work along these lines is already under way. The immediate value of the research lies in its contribution to a better understanding of the biochemistry of the reactions of blood proteins to the presence of disease-causers that result in the formation of protective antibodies.

According to the theoretical picture conceived by Profs. Pauling and Campbell and Dr. Pressman, antibodies are formed by the modification in shape and structure of the large molecules of certain blood proteins, known as serum globulins, which takes place in the presence of disease germs or virus particles. They envision the complex structure of the molecules forming in the presence of the disturbers with certain changes that enable them to seize hold of the offenders and render them harmless—like policemen with a grip on a criminal's collar. The modifications in molecular form of the globulins enable them to perform such arrests whenever the blood is invaded by germs or virus particles like those that modified them originally.

In the experiments, serum globulins were induced to "unfold" their molecules by heating or treatment with alkali, in the presence of an antigen, or disease-provoking agent. Then the unfolding force was slowly withdrawn, permitting the molecules to re-fold themselves, but with modifications in their structure due

to the provocative presence of the antigen.

It was found that a protein solution subjected to this treatment acquired the various characteristics of a natural blood serum which would be obtained from an animal which had been immunized with the same antigen. The investigators have prepared in this way antibodies against various simple chemical antigens, and also against a complex sugar-like compound from pneumonia germ cultures.

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PUBLIC HEALTH

## Americans "Misled" by Early Rejection Figures

**T**HE AMERICAN people have been unnecessarily disturbed over the health of their youth by early statements regarding rejection of young men by the armed services and Selective Service for physical defects, according to statisticians of the Metropolitan Life Insurance Company.

The company states that "the American people can definitely be assured that

the charge sometimes made, that 45% of our young men are physically unfit, is entirely unfounded. This figure, which is based on the very rigid standards of selection used while we were still at peace, is wholly misleading as an indication of the health of our youth."

The statisticians add that American youth, by more reasonable standards, will measure up to the hard tasks they face, and when properly trained will prove superior in stamina and endurance to their enemies.

Meanwhile, the new lower standards under which men are now admitted to the Army and Navy will be compensated for by correction of minor physical defects by service physicians.

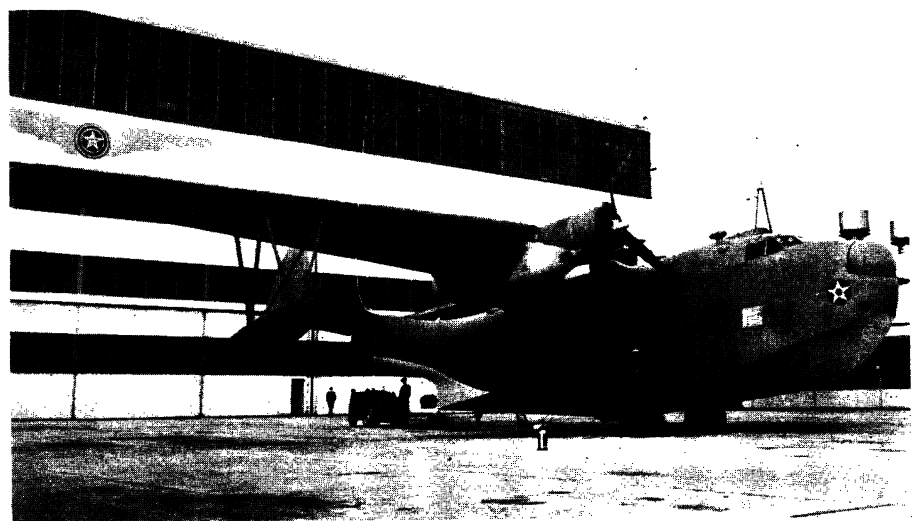
Col. Leon Gardner of the Office of the Surgeon General of the War Department said he agreed "that American youth will prove superior in stamina and endurance to their enemies after proper training."

Col. Gardner likewise pointed out that early physical standards of the armed services and the Selective Service were peacetime standards and so "extremely rigid."

"At that time," he said, "we wanted maximum health, and set the standards for physical fitness deliberately high.

"We are the best-fed nation in the world, and our standards of living are the highest. It is ridiculous to suppose we are a nation of weaklings."

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**THE "MARINER"**

*This new long range patrol bomber built by Glenn L. Martin Company for the U. S. Navy is one of three types on which the Martin Company will concentrate production. It is bigger and more powerful than the PBM-1 but has the same gull-shaped wings and toed-in rudders. Performance details and specifications are not released.*