

## GENERAL SCIENCE

# U.S. Short 130,000 Experts

Three years from now a serious shortage of scientists, engineers, technologists and physicians will face nation, preliminary survey shows.

► THREE YEARS from now, in 1954, the nation will be faced with a serious shortage of approximately 130,000 scientists, engineers, technologists and physicians.

This will mean that the U. S. Army will have to do without as many combat engineers as it needs, that some vital research into new weapons and new medicines will not be performed and that the creation of new fundamental information will slow down. The Russians will have a better chance to overtake the technological lead upon which we depend for victory if a shooting war comes.

The figure of 130,000 is based on a preliminary evaluation of the Committee on Specialized Personnel of the Office of Defense Mobilization, covering about 22 fields of work. In some of the fields there is no definite information as to either the number now occupied or the need for newcomers. But in almost all the fields covered, it is definitely known that we do not have enough for the defense and progress of the nation. Three years from now, it will be much worse.

The committee is at present asking scientific societies and other interested groups to give it more information so that the needs can be more definitely evaluated.

The preliminary report covers fields of direct interest to national defense in which there are at present 1,314,750 employed. These include the top scientific, technical and engineering brains of the country, the physicians and nurses who will bind up the nation's wounds, the agronomists and the sanitary engineers who will help protect us from biological warfare, the experts in psychological warfare and, of course, the physicists who work on fundamental research from which new benefits for mankind and new weapons for freedom's defense will come.

Most of them are on the critical list of essential occupations drawn up by the Labor Department's Bureau of Labor Statistics.

The report states that the "absolutely and relatively the greatest shortage" is in the field of nursing. By 1954, we will need 404,500 active nurses and we will be 49,200 short of that goal. However, there is a solution. It is in this field that there is the greatest number of inactives. Today there are 322,300 nurses who are active and another 470,000 who are not working as nurses.

The most publicized shortage, and one of the most pressing, is in engineering.

There are 400,000 engineers today. The 26,000 who will graduate in 1952 are already being offered relatively fabulous salaries for their services. The Armed Forces will need a great many. In the next three years, 63,000 will graduate. This will be 27,000 less than is necessary to supply the expected demand in 1954.

An added factor in all fields is that the number of graduates each year will be decreasing. On the basis of the present freshman and sophomore classes, graduating classes in 1954 will be about two-fifths the size of 1950's. The end of the G. I. bill benefits and the drafting of youngsters is blamed for this decrease.

Physics is a field in which more information is desperately needed. Figuring on what the committee admits is an inadequate basis, there are said to be about 20,000 physicists. If the ratios from other fields where there is more information hold good, that means we shall be short about 2,000 or 3,000 physicists in 1954.

"There are indications," said the committee, "that the demand for physicists, especially at higher levels of training, is far in excess of the present resources of trained personnel."

Only 358 persons received a Ph.D. in physics in 1950. For advanced research a person is not considered a physicist until he has received his Ph.D. There are, at present, only about 3,000 physicists with the Ph.D. degree in the country. Fundamental work of some of the world's great physicists helped make the A-bomb possible.

A similar situation exists in chemistry, where, it is figured, about 85,000 are now employed and we shall be short about 10,000 in 1954.

Congress recently refused to provide federal funds for training more physicians. At the current rate of output of doctors, we shall be 22,000 short. We will need 210,000 physicians and there will be only 188,400 who are active. Similarly we will be 9,200 short of an adequate number of dentists.

The survey does not cover some specialized fields in which specialists will be vitally needed in either a partial or total mobilization. Persons who can speak and translate the languages used in the troubled areas of the world, anthropologists who can provide valuable information on the kinds of people we shall deal with and others in what are called the "humanist" fields are not included. Another survey, conducted by the American Council of Learned Societies, is now attempting to find out how we stand in these fields.

The Defense Department is as interested in these figures as industries and the colleges and universities. Warfare more and more needs highly educated specialists. In addition, the Armed Forces are spending millions for research and development.

Dr. M. H. Trytten, director of the Office of Scientific Manpower of the National Research Council, says that if we do not husband our current supply of scientists, technologists and engineers, we may find some day that we lack just that little bit extra advantage in technological warfare which will mean the difference between victory and defeat.

In addition, he points out, we need to train new scientists, technologists and engineers. We must increase our supply, if we are to maintain our lead over our probable enemy. It is for this reason that he headed a committee of the Selective Service System which designed the present plan for deferment of young men who could do well in college.

The figures in the preliminary survey show that, once they are out of college, they will be in great demand.

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## GEOLOGY

## Volcanoes and Ocean Make Iron in Michigan

► IRON IN upper Michigan was deposited in a setting of an isolated ocean basin surrounded by volcanoes, Dr. H. L. James of the U. S. Geological Survey said in Detroit.

The iron-rich rocks, volcanoes and the great ocean trough of upper Michigan are believed related, he told members of the Geological Society of America meeting.

The lowest rocks found in this trough, he said, are iron-poor and represent material laid down on a shallow ocean shelf. The next group of rocks, resting on this shelf, are iron-rich, while the most recent layer of rocks represent debris from volcanic explosions deposited on top of the iron-rich layer. By comparing the three types of rocks, it is possible to reconstruct the conditions of upper Michigan's scenery over a billion years ago.

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## MEDICINE

## Volemic New Name For Plasma Substitutes

► A NEW name for blood plasma substitutes such as gelatin, dextran and periton or PVP has been coined by Dr. Jesse L. Bollman of the Mayo Clinic, Rochester, Minn.

"Volemic substances" is Dr. Bollman's new word for these chemicals. They are also sometimes called blood or plasma volume expanders because their effect is to expand the volume of fluid in the blood circulation.

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