

GENERAL SCIENCE

# Manpower and Human Talents

Proper utilization of manpower includes use of many of the same techniques involved in picking Science Talent Search winners. Industry also uses similar methods.

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Secretary, Smithsonian Institution

*Address delivered at the Awards Banquet of the Science Talent Institute in Washington, March 2.*

► THIS IS not an ordinary banquet. We are not met here to celebrate something that is past. We have gathered together this evening in honor of the high promise for the future of the young scientists who are here this evening.

Science is a strange thing. It, too, is always concerned with the future. Cynics say that those who are professionally concerned with political history often try to back into the future while their eyes are fixed on things as they have been. This is never the way of science. It is in the very nature of real research and true investigation to extend what is known. Science is always pushing back darkness.

It is an especial pleasure to address you this evening because you are recruits for the special group of men and women in our society who will continue this forward surge of science. Some of you may have been called many things in the past. In Washington in 1953 you, the young and promising scientists of America, are termed a manpower resource.

## Present Manpower Problem

As your toastmaster has said, for a number of years I have had something to do with the listing and classification of our nation's scientists. It may not be wholly inappropriate, therefore, for me to ask you this evening to think with me a little about what is technically called the manpower problem of our Korean war period.

The field of proper manpower utilization is itself a scientific field. It is a subject, however, in which high policy and political theory as well as objective fact play a large part in the determination of national action. Because of the low birth rate during depression years about 25% fewer youths reach the age of 18 each month now than was true 10 years ago. This means that now a higher proportion of our population than was formerly the case is now in the older age groupings.

If we think of the nation's manpower needs we find the following five categories: (1) military manpower; (2) civilian manpower needed to support our necessary mili-

tary establishment; (3) civilian manpower needed to support the health, welfare and safety and the essential aspects of our civilian economy; (4) the manpower needed to provide the nation's population with the pleasures, satisfactions and recreations of life; and (5) the manpower needed to maintain our foreign commitments as the world's leading nation. The hard fact can be stated simply. There are not enough intellectually able, physically competent individuals of proper age to provide the men and women needed for the services and functions included in the five categories just given.

What I have just said indicates why America today has a sharp manpower problem. When I use the word manpower let me emphasize the fact that I always mean womanpower as well.

## Individuals Must Be Free

Anyone who first begins to think about the nation's population and its most effective utilization is tempted to deal with crude analogies. Such first thoughts about manpower solutions thus tend to be in terms of robots or guinea pigs instead of free American citizens. At the outset, therefore, let us agree that when we think about manpower utilization in this liberty-loving country of ours we will always think about free individuals.

A slave population can be ordered here and there by a dictator. But the very reason that we now have a manpower shortage is that we are determined that American citizens shall be treated as free and essentially sacred human individuals and not as pawns in a totalitarian game.

Never in peacetime, and only to the least possible degree in wartime, must America consider the ordering about our fellow citizens in an effort to bring about optimal labor utilization. This does not mean, however, that we need avoid the assembling of facts and the using of facts. Proper, detailed knowledge of manpower supplies and shortages will help free American men and women decide upon wise careers for themselves and for the nation's good.

It may well be that the enlightened self interest of our fellow citizens will assist them in bringing about the kind of distribution of manpower that will make our nation strong and our population happy if necessary facts are available when individuals must select careers.

Much progress has been made in recent

years in techniques for the selection and classification of human individuals in military, vocational and professional life. The very techniques that have been used in selecting you, the winners of this Talent Search, are in part the same techniques which can be and indeed are applied on a wider and wider scale in assisting individuals to find proper employment. Many wise American employers are now helped by the use of these same procedures to secure individuals who are best able to be trained to perform the tasks which are required in their organizations.

## Military Manpower Selection

Because military manpower must often be suddenly recruited, rapidly assigned to new duties and then quickly trained, many of the new techniques for the selection and classification of individuals have developed in connection with the specific problem that our nation has faced in organizing its fighting forces for war.

Actually, as one of America's greatest physiologists, Dr. Wallace Fenn, has recently pointed out, the selection of military manpower is a very old problem. In the Bible, chapters 6 to 8 of the Book of Judges records a military selection procedure. Gideon was called upon to raise an army to smite the Midianites. He raised an army of 32,000 Israelites.

The Lord told him that this army was too large and that its success would be impaired by the cowards, we would now say the psychopaths, in its ranks. Gideon used a simple screening device. He told all those who were afraid to fight to go home. He was left with 10,000 men.

## Gideon's Performance Test

The Lord again told Gideon that his army was still too large. He devised what we would now call a performance test. He selected those recruits who were most effective in the military operations of his day. He led his army to a river for a drink. He eliminated all those who carelessly threw down their shields and spears and lapped up the water like dogs. He retained only the 300 men who kept a wary eye on a possible enemy as with one hand they scooped up hasty gulps of water. These 300 men were the winners in the military talent search of their day.

Then Gideon proceeded to use a secret weapon. He must have had his military scientific research and development board. The 300 men were divided into three companies. A trumpet was placed in every man's hand and also an empty pitcher. A lamp was lighted in the pitcher. When at night the 300 surrounded the enemy at a given signal they broke their pitchers, ex-

posed their lamps and blew their trumpets. The terrified enemy ran and a complete victory was achieved.

This ancient story has many morals. It suggests that after proper selection and classification a small group of individuals can do more than a less well selected mob. You will notice that in this story self-selection played an important part. Aptitude and individually recognized interest are as true today as they were when Gideon lived in providing one basis for good selection of people for any job.

### Modern Selection Procedures

An almost equally miraculous account of success of a modern selection of a fighting force has recently been given by Capt. P. E. McDowell of the United States Navy. He has described the procedures by means of which the battleship New Jersey was provided with its full complement of officers and men after its commissioning. This new vessel had to be outfitted when it was turned over to the Navy, with 2,700 enlisted men and officers. Ninety days was allowed to teach these men their new duties and to give them the necessary skills as a working team to man the great fighting vessel.

This staffing operation was conducted during the second World War. It required great speed and efficiency. The vessel was desperately needed for service with the fleet. Before the new vessel was finished a preliminary crew was assembled.

In performing this task the following steps were used: (1) a job analysis of the duties required of each individual on the vessel was completed; (2) specifications were written for these jobs; (3) individuals to be assigned to duty were tested; (4) all were interviewed; (5) in special cases re-interviews were given; (6) on the basis of the evidence secured the individuals were classified as suitable for certain jobs; (7) placement of the men was ordered on the basis of the evidence collected; and (8) adequate personnel files were organized.

After these processes had been carried out, and the New Jersey had been commissioned, the personnel procedures were shifted to education and training, counseling, discipline, promotion, the testing of the success of initial classification procedures, and the continuation of the utilization of the job

analysis and selection procedures for necessary replacements.

The tests used included some examinations very similar to those used in selecting you as successful candidates in this Talent Search. This involved the giving of a general classification, that is, a general intelligence test.

Examinations in reading and arithmetic were administered. Speaking tests to determine telephone communications ability on shipboard were taken by all. Vision tests including capacity for the stereo-vision necessary in the use of certain optical instruments used on shipboard, and night vision tests were given. A so-called "psychiatric inventory" was organized and administered to attempt to screen out those individuals whose personalities were most apt to bring them into later difficulty.

By using modern sorting techniques after these testing and interviewing procedures had been carried out, the entire ship's company was organized about two weeks before the New Jersey was placed in commission. Officers and men in this way became familiar with each other before shipboard duties began.

### Operations Test Effectiveness

Thus, in Captain McDowell's words, "At the stroke of a bell, at 1230 on 23 May, 1943, a unit of the fleet, sixty thousand tons, two thousand eight hundred men, two hundred and twenty-five thousand horsepower, radio, radar, galley, stores, laundry, post office, sick bay, went into action, and from that second on functioned in accordance with law, regulation and U. S. Fleet directive."

The success of this program was attested by the effectiveness of the new vessel at sea. It is a matter of record that after a long successful period at sea the New Jersey again entered an American port for five days of recreation and liberty. Every man was off ship at some time. At the end, no single man was absent over leave, and no illness was contracted during the leave period.

I have taken these examples to show that personnel procedures when applied in a concrete situation, old and new, can be successful. In the beginning of this address I

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suggested that science was concerned with the future and not the past. Today new techniques are available and are still being developed by means of which young men and women with all sorts of aptitudes can be advised more wisely than was ever true before.

Thus young men and women with the many skills and abilities required by our nation can receive proper education and training. This means that in the future young men and women with the help of their parents and teachers can make wiser selection of a life's work than was formerly the case. Thus new and satisfied workers can be fitted into the ever changing pattern of the economic and free social life of our republic.

**Widespread Use Urged**

Yes, this Annual Talent Science Search is typical of the future and not of the past. It foreshadows the part that science is bound to play in the years ahead in helping free American boys and girls to select and be educated for proper vocations and professions.

Let me express the hope that those of you here tonight, as you become great and outstanding physicists, engineers, chemists, or other experts, will continue to remember the importance of supporting the use of scientific methods in guiding and advising free American citizens.

Proper manpower utilization alone will allow our nation to maintain its strength. By such utilization we can become more individually productive and also have to the greatest degree possible the personal satisfactions that come from performing well the tasks in society which we have selected and for which we are well fitted.

Thus the proper solution of manpower problems by our country will in the future allow more and more people to experience the deep satisfactions that come from effective teamwork and the real accomplishment of specialized tasks in our free society.

Therefore, again, to you who have participated in a most personal way in a successful manpower selection program, I give you my warmest congratulations and best wishes for effective and productive lives as

professional scientists. May your future educational success and your continued scientific research activities be more than worthy of the outstanding promise that you have already shown.

Science News Letter, March 7, 1953

**BIOPHYSICS**

**First A-Bomb Survivors Live "Life of Reilly"**

➤ SOME OF the injured survivors of the first atomic bomb explosion in history, at Alamogordo, N. Mex., July 16, 1945, are now living the "life of Reilly" entirely at government expense.

They are six or seven cattle that suffered radiation burns on their skins because they happened to be 15 or 20 miles away when the big bomb went off. About 40 of them, two bulls and the rest cows, were rounded up by the Atomic Energy Commission after the explosion for observation and experiment as to any possible lasting effects, to them or to their young.

There were no lasting effects, Dr. Cyril T. Comar, laboratory director and research coordinator of the University of Tennessee-Atomic Energy Commission farm, Oak Ridge, Tenn., told SCIENCE SERVICE.

In the first years after the Alamogordo bomb, the cattle were given quite a going-over, Dr. Comar says. The radiation burns were the result of the "fall-out" of radioactive particles from the vast cloud produced by the A-bomb. They did some damage to the hair follicles and to the pigmentation of the skin, but the effects did not penetrate below the skin, Dr. Comar says. The only result is that they have patches of gray hair where the burns were.

Young were bred from the cattle exposed to the bomb, Dr. Comar reports. The young were no different, either in quantity or quality, from the young of normal cattle from the same general area.

Now many of the calves are being used for other research on the farm. All except six or seven of the original cattle have either been sold or have died.

"We look at the original survivors once in a while," Dr. Comar says, "but otherwise we don't pay much attention to them any longer."

Science News Letter, March 7, 1953

**PALEONTOLOGY**

**Dawn Age Fossils Clue to Primate Past**

➤ THE BONES of a 60,000,000-year-old "dawn age" primate, possibly a link between monkeys and the lesser animals, have been moved to the Smithsonian Institution from southwestern Wyoming, where they were discovered.

The lemur-like animal, an undescribed species of the extinct genus *Notharctus*, was about the size of a Rhesus monkey and probably lived in trees, the Smithsonian Institution said.

Fossil primates are rare but valuable finds to students of prehistoric life, the paleontologists. The animal group of primates includes lemurs, monkeys, apes and man himself, and so primate fossils throw light onto the evolutionary history of man.

Bones rarely become fossilized in forested areas; and as primates are mostly tree-dwellers, prehistoric remains of them are not often found. Primate fossils in temperate North America are only found in any numbers from Eocene deposits of 60,000,000 years ago, representing a time when tropical conditions existed here.

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