seems advisable to ascertain whether the change in the reducible materials is a general phenomenon.

The evidence presented shows that polarographically reducible materials that are characteristic for epidermis, muscle, and liver are cleaved when these tissues become malignant. A graphic presentation of these changes is shown in Fig. 3. Since the materials are reducible polarographically (P), and since they absorb in the ultraviolet (UV), let PUV stand for the materials as present in the three normal tissues, for both properties are common to each material. Differences in the polarographic and absorption characteristics (or PUV) in the materials from epidermis, muscle, and liver are given in the half-wave potentials and in the absorption maxima. In spite of the fact that these differences exist in the normal tissues, in tumors derived from the latter, cleavage of the parent material, PUV by the tumors into $P + UV$, or two distinct components, has occurred. The half-wave potentials and the absorption maximum of the cleaved products in the tumors examined are the same. In other words, cleavage has resulted in a common biochemical property of these tumors. The nature of the alteration of the reducible materials, particularly in epidermis and also in muscle, suggests that they are altered antecedent to, or concomitant with, cleavage in malignancy. If the alteration of these materials is directly associated with the process of malignancy, a rational approach to the chemotherapy of cancer might follow.

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Comments and Communications

Scientific Manpower

AN ABSTRACT of a report entitled "Why Not a Department of Science and Technology within the Department of Defense?" appeared in the January 1951 issue of the *Chemical Bulletin*. This report outlined a plan for the efficient integration of our military research efforts into a single department concomitant with effective utilization of scientific manpower, facilities, and funds. It is of interest that the Canadian Ministry of Defence has been so organized since 1946.

We believe that the plan is consistent with the resolution on scientific manpower passed by the Council of the American Association for the Advancement of Science December 29, 1950.

As individuals at present actively engaged in research and development in the fields of chemistry, engineering, mathematics, and microbiology who also saw active military service in World War II, we urge that this proposal be given serious consideration.

The following excerpts have been taken from the above-mentioned report:

National safety is dependent on the successful operation of the Department of Defense, which, in turn, is determined by the efficiency with which our natural advantages are employed and detrimental factors eliminated. In terms of manpower, this means that our resources of talent and training must be recognized and made use of under conditions most conducive to the productiveness of the men concerned. Timely utilization of the work potential of men expert in their chosen professions (a factor of considerable importance to morale) may do much to offset any numerical advantage in manpower possessed by potential enemies.

Such reasoning is particularly applicable in the accomplishment of scientific and technical work, which is increasingly important to military operations. Conservation of critical natural resources can be augmented by early research, leading to the more efficient employment of present supplies, and to the development of adequate substitutes. Weapon superiority can only be achieved by constant research and development both in design and in tactical employment. With few exceptions, improvements in the design of weapons and equipment have come in the period preceding war.

It follows that activities and direction in the fields of science and technology are of direct concern to the national defense in times of peace as well as in wartime.

. . . a Department of Science and Technology should be established within the Department of Defense. Let this Department of Science and Technology be headed by a Secretary equal in status to the Secretaries of the Army, the Navy and the Air Force.

All of the research activities and installations now under the jurisdiction of the military services should be assigned to the Department of Science and Technology, making provision for the closest liaison between the Department of Science and Technology and the other three branches of the Department of Defense. The latter would then be free to concentrate on their primary objectives of combat, procurement and supply, assuming only the responsibility for the final development and field testing. . . .

. . . The establishment of such a department would offer the following advantages:

1. Integration of military research on a national level, avoiding duplication of effort and expenditure.
2. Assurance of technically competent superiors to direct scientists, resulting in greater efficiency and greater attraction for competent scientists to peacetime association with the Department of Defense.
3. Operation of a Scientific Personnel Selection Board which would, in an emergency function in the—
   a. Selection of personnel for military research and development.

b. Assignment of technical personnel to the Army, Navy and Air Force.

c. Selection of promising youths for educational deferment and training as scientists.

d. Adjudication of the relative requirements for scientists by the Armed Forces, industry, educational institutions and government bureaus.

4. Personnel promotional policies and physical standards can be designed to fit the requirements of scientific rather than military pursuits. . . .

. . .

6. Scientists in the higher echelons of the department would gain the experience in large-scale administrative procedure which would eliminate the need for hasty expedients such as were resorted to in World War II.

7. A scientific intelligence and analysis group as advocated by Bush would function in time of peace as well as war.

8. Administration of the Department by scientists would assure greater continuity of program, and minimization of financial fluctuations. Thus private contractors would be less reluctant to engage in such programs.

9. The plan offers maximum economy of money, manpower and facilities for scientific military requirements.

The plan is consistent with the policy of unification of the Armed Forces. It also is consistent with the recommendations of the Hoover Committee, in that certain independent executive bureaus, such as the Munitions Board, National Security Resources Board, National Advisory Committee on Aeronautics, etc., could and should be integrated into the new Department.

The Department of Science and Technology, as envisioned in this report, would provide the necessary position of the scientist in the over-all planning for the defense of the United States in the capacity stressed so emphatically by Vannevar Bush as an absolute requisite for national safety.

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The Reservist Problem

I WISH to report another facet of the government's mobilization policy which damages the defense effort. This is the indiscriminate recall of reservists from civilian life. With no excuse but the overriding needs of the military, the Services have grabbed men with no consideration of their civilian experience and education. If they had no choice at the time, they have made no attempt to remedy the situation where malassignments were made.

The flaw in the reserve program, if it could be called one, lay in the premise that a reservist was a man who should come on duty at a moment's notice and carry on the same duties he had performed in a previous war. Screening and reclassification of reservists were talked about, but they never occurred, and one doubts whether they would be done properly. So, when the Korean war broke out, the reservist found himself to be just another available body. As reservists have not been hermetically sealed in cans since 1945, one finds examples such as these:

1) A Ph.D. in dairy chemistry is serving again as a junior officer, doing administrative work.

2) A geologist who applied for release documented the oil pools he had discovered and the wells he had brought in to prove he was more valuable as a civilian. He was told there was "no critical shortage in his field."

3) A civil engineer with prestressed design experience was put to work computing cubages of buildings, that being the most use the Corps of Engineers could make of his technical abilities.

4) A candidate for a Ph.D. in mathematics, lacking a few hours of his degree, now counsels men about night school courses.

5) A chemical engineer with experience in materials testing now works at supply matters, while the Air Force combs the country for materials engineers. They are probably being hired away from industries which need them more than the Air Force.

The Congress does not seem to realize the damage that has already been done by giving the military a free hand in grabbing reservist manpower. It is the equivalent of giving a Swiss music box to a gorilla.

A recent example of the danger we are in occurred at an electronics plant being toured by Air Force officers. They found a standard piece of equipment that met requirements, but it had to be modified to another range of frequencies. The company would have been glad to do this, *if* the engineers had had time. They did not because they were understaffed and very busy with other defense contracts. It is ironic that the Air Force is taking all the electronics people it can get, and is assigning them to semi-technical administrative or operational work.

The Services' attitude toward scientific manpower seems to be based on this outlook: (1) Their manpower needs come before all others, even if their policy will eventually damage them from a materiel standpoint. (2) They prefer people with technical or scientific backgrounds, even if they have no appropriate duties for them to perform. (3) They look upon the reservists and draftable students with a proprietary interest, as if the economy or the general welfare of the nation had no claims on their services.

Such a policy will be disastrous if they mean to keep us in a continuous state of partial mobilization. Their present misuse of scientific manpower can be justified only if we are on the eve of a short all-out war. How do they expect to multiply the effectiveness of each soldier by superior equipment, when many of the people who can bring this about are recalled and kept in uniform? The military should be required to answer these questions, and their manpower needs should be carefully screened by civilians who have a better over-all outlook.