Comments and Communications

The Civil Liberties of Scientists Report

The resolution of the American Association of Petroleum Geologists (*Science*, 1950, **111**, 638) bearing upon the report of the AAAS Special Committee on Civil Liberties of Scientists makes certain inferences which should not be allowed to pass without correction. The AAPG resolution reads

> The AAPG believes that all loyal citizens of the nation, whatever their category, must be united without reservation in support of the measures deemed necessary by the Federal authorities for the security and defense of the nation. We believe that no loyal citizen, whether scientist or not, should object to investigation of his loyalty.

The Special Committee report (Science, 1949, **110**, 177) reads

> No one doubts the importance of faithful discharge of duty by public officials. No one questions the propriety of the government's demanding that its employees be loyal to their jobs and to the democratic institutions they serve.

The implication that the Special Committee deprecated the importance of "loyalty" is unfounded. The Committee did question the propriety or possibility of attempting to ascertain the reality of a government employee's loyalty by

> . . . inquiring into his supposed thoughts and attitudes, which are established in large part by imputing to him the beliefs of his associates.

The AAPG resolution furthermore confuses "loyalty" and "security" investigations and requirements. The Special Committee dealt at great length in its report on the proper distinctions to be made. In its conclusions, that committee said regarding security control

> No matter how the area of secrecy may be delimited, there will undoubtedly remain some matters of scientific cognizance which should be kept confidential. So long as national policy dictates that secrecy be observed, the reliability of persons to whom these matters are entrusted must be assured; hence inquiries into the character and attitudes of these persons are warranted.
>
> If national as well as individual interests are to be protected, however, improvements must be achieved in the policies and procedures of our present security clearance programs as they affect scientists who will be entrusted with classified information.

The report was perfectly clear in recognizing proper areas for secrecy, in which security requirements necessitated careful personnel screening. However, it urged strongly that the areas of secrecy, and thus the number of persons concerned with confidential data in science, be reduced to a minimum for a number of cogent reasons.

The AAPG resolution contains the sentence

> Therefore, although secrecy may for a time impede our scientific progress, we shall abide by such security requirements.

It may be of interest to point out that the Special Committee report said on this score

> We endorse the statement of the President's Scientific Research Board, which in its 1947 Report on Science and Public Policy said: "Strict military security in the narrow sense is not entirely consistent with the broader requirements of national security. To be secure as a Nation we must maintain a climate conducive to the full flowering of free inquiry. However important secrecy about military weapons may be, the fundamental discoveries of researchers must circulate freely to have full beneficial effect. . . . Security regulations, therefore, should be applied only when strictly necessary and then limited to specific instruments, machines or processes. They should not attempt to cover basic principles of fundamental knowledge."

In a final flourish the petroleum geologists say rather boastfully

> We take pride in our readiness, cheerfully and wholeheartedly, to prove our loyalty and patriotism in case of inquiry.

It should be noted that the important point is not personal preference but national welfare. The question at issue is not the pride of anyone or any group in their readiness to submit to investigation and to approve of secrecy in science. The question is really that of how the best interests of American democracy can be served. It was gratifying to the members of the Special Committee on Civil Liberties of Scientists of the AAAS that its report was endorsed by a 4 to 1 majority of the AAAS Council mail vote. Every dissenting council member had a chance to be heard. A large number of scientists voluntarily wrote to the committee endorsing its conclusions.

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On Political Oaths and Affidavits

There is a new and dangerous trend in our society toward extending the meaning of necessary and well-established safeguards in selecting public employees. The tendency is now toward laws requiring employees to sign oaths or affidavits of their political beliefs. To help maintain the sanity and integrity of our democratic form of government, and to preserve the independent spirit of inquiry necessary to science, all individual scientists should examine sharply the restrictive phraseology of such legislation, however innocuous it may seem. This has been demonstrated recently in a shocking way.

Radio operators for the Merchant Marine are licensed by the Coast Guard under a procedure established long ago by Congress. The 80th Congress renewed this law (Public Law 525), which states that the Coast Guard must be satisfied that the applicant's

> . . . character, habits of life, and physical condition are such as to authorize the belief that he is a suitable and safe person to be entrusted with the powers and duties of such a station. . . .

One would think that the intent of the law was obvious and reasonable. The Coast Guard, however, has interpreted these words as granting it power to deny licenses to applicants on political grounds. The Commandant of the Coast Guard has stated that

> The Attorney General of the United States publicly listed certain organizations, etc., which are believed to be subversive or disloyal to the interests of the United States, and in cases where I am possessed of information to justify the belief that an applicant is a member of, affiliated with or sympathetic to the principles of such organizations, I do not consider such applicants to be safe and suitable persons to be licensed under the provisions of Public Law 525.

The Coast Guard has recently denied licenses to scores of radio operators, most of whom served with distinction during the last war and most of whom have been active in the radio operators' trade unions. This assumed, broad power to deny licenses to persons who are alleged to be "sympathetic to the principles" of any organization on the Attorney General's "subversive list" has been applied without granting to the applicants any hearing or even any report as to the source of the Coast Guard's information.

It will be noted that in the past, the government has contended that the Attorney General's "subversive list" was intended merely to govern the qualifications of government employees; it was urged in defense of the promulgation of the list that the government had the right to apply any kind of test to its own employees. The position now taken by the Coast Guard is, of course, a vast extension of that doctrine. It would permit the application of political tests by any public authority granting licenses in many spheres of private employment. The governmental licensing system necessary for the public health and welfare could (on arbitrary grounds chosen by the authorities) now be misused to disqualify doctors, dentists, lawyers, engineers, barbers, veterinarians, nurses, midwives, insurance and real estate agents, or taxi drivers. The list is much wider and could cover any work that is regularly licensed, including many technical and scientific professions.

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The Toxicity of Ammonia

Recently F. C. Schmidt and D. Vallencourt (*Science*, 1948, **108**, 555) reported that when human subjects inhaled air containing ammonia gas their blood ammonia reached a level of 36.4 mg N/100 ml of blood. This appears impossible. H. Tauber and I. S. Kleiner (*J. biol. Chem.*, 1931, **92**, 177) reported that the ammonia nitrogen level of rabbit's blood shortly before death from ammonium carbonate poisoning was 2–3.5 mg/100 ml of blood. In their investigation of antiurease formation, J. S. Kirk and J. B. Sumner (*J. biol. Chem.*, 1931, **94**, 21) found that, in rabbits injected with urease, death is caused by the formation of ammonia. They believed that the poisoning was due to the ammonia itself rather than to an alteration in the pH of the blood.

I have carried out numerous experiments with white rats and find that when ammonium citrate is injected intraperitoneally the animals die at an ammonia nitrogen level of 8–11 mg N/100 ml of blood. When crystalline urease is injected, death occurs at the same level.

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Hydrostatic Pressure Reversal of Narcosis in Tadpoles[1]

Under physiological conditions the narcosis of bacterial luminescence by alcohol, urethane, and certain other drugs may be virtually abolished by an increase in hydrostatic pressure (Johnson, F. H., Brown, Dugald, and Marsland, Douglas. *Science*, 1942, **95**, 200). Experiments reported herein show that a similar relationship occurs in higher animals, viz., tadpoles of *Rana sylvatica*.

Young larvae, measuring 15–18 mm in total length, were placed in 3%–6% alcohol in tap water at room temperture, 22°–26° C. Both spontaneous activity and response to gentle mechanical stimuli ceased in a few minutes. The narcotized animals were transferred to a steel pressure chamber with Herculite plate glass windows which afforded an adequate view of the interior. The chamber was filled with the same narcotic solution, and pressure was applied from a connecting hydraulic pump. Pressures up to 1,000 psi had no apparent effect, but higher pressures, between 2,000 and 5,000 psi, varying somewhat in repeated experiments with different groups of individuals, caused reappearance of spontaneous activity almost immediately with rise in pressure, and the animals swam about in apparently normal manner. In luminous bacteria at optimum temperature, 3% alcohol causes about 50% inhibition of luminescence intensity, which is largely reversed under 5,000 psi.

Similar results were obtained with tadpoles narcotized in 0.08 M urethane; this inhibition of luminescence is likewise reversed by pressures of the same magnitude.

In contrast, pressure did not reverse the narcosis of tadpoles in 0.001 M *n*-amyl carbamate. This result again corresponds to those obtained in current studies with luminous bacteria which indicate that the inhibition of luminescence by *n*-amyl carbamate, in approximately the same concentration, is scarcely affected by pressure.

Unnarcotized tadpoles became more active under 2,000 psi, but less active with further rise in pressure, and motionless at 5,000 psi. Other aquatic animals have been observed to behave similarly, and pressure itself has been

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