Miscellany

Selective Service

A strong attack on present Selective Service policies regarding the deferment of scientists and engineers has been made by the American Chemical Society in a recent letter to Major General Lewis B. Hershey, Selective Service director. The letter, written by Alden H. Emery, executive secretary of the ACS, stated that "we feel strongly that certain individuals practicing these and other professions can make greater contributions to national safety and well-being in civilian assignments than in the military forces. It always has been our contention that the relative importance of these two assignments should be weighed in each individual case. It is the belief of our Board of Directors that this is not being done. . . ." Emery went on to quote from Defense Manpower Policy No. 8, issued in September 1952 by the Office of Defense Mobilization and never rescinded or replaced: "The Selective Service System shall: 1. Continue to apply to scientists and engineers the policy formulated by Congress providing for classifying in a deferred class registrants whose activities are necessary to the maintenance of the national health, safety, or interest for as long a period as they continue to meet the criteria of such deferment."

In contrast to the official policy quoted above was the directive issued by the director of Selective Service for a large state in which it was remarked that "the only group of scientific personnel who should be considered for any extended deferred period are those engaged in the production of atomic weapons by the Atomic Energy Commission, or their subcontractors, and those engaged in the design and manufacture of aircraft for the purpose of transporting atomic weapons. . . . There may be a few isolated cases other than these which might warrant longer periods of deferment." Such views, said Emery, "are accepted because they are popular with those segments of the public which do not realize that there is more to military defense than discharging weapons. It is time that we returned to the principles and policies laid down by our elected representatives."

Research Notes

The mechanism by which birds navigate has been a puzzle ever since the remarkable accuracy with which they migrate yearly between the same locations became known. A few years ago G. Ising proposed that birds detect the Coriolis force of the earth's rotation by means of the semicircular canals of the inner ear in such a way as to act as a compass: not, however, the horizontal component of the Coriolis force, which is always clockwise in the northern hemisphere and counterclockwise in the southern and which is a function of velocity, but rather the vertical component. The action of the latter on the ear canals of birds is the subject of a paper by W. J. Beecher of the Chicago Natural History Museum in the July *Scientific Monthly*, in which the proposed mechanism is described in detail. Beecher concludes that the vertical Coriolis force does induce currents in the semicircular canals that can indicate latitude as well as direction, but it is questionable whether or not the ear apparatus is sensitive enough to detect these currents. It is pointed out that "the canals were designed to measure the flow and pressure of their contained endolymph" and so conceivably could be used for navigation.

Coating thin films of metal on glass and other surfaces is usually accomplished by evaporation; a metal filament is heated in an evacuated chamber with the surface to be coated, and the emitted metal atoms that reach that surface stick there. Both the percentage light transmission and the electrical resistance of the resulting coating depend upon the thickness of the film used, but obtaining the desired thickness of a given metal under various circumstances is frequently a problem. In order to provide a means for preparing coatings of various kinds without the necessity of a trial and error approach, W. L. Bond of Bell Labs, writing in the June *Journal of the Optical Society of America*, has given a series of charts and nomographs that facilitate the direct production of specific coatings. The various considerations that must be taken into account—temperature, vapor pressure, wire diameter, coil diameter, etc.—are described, together with a series of graphs showing the relationships among light transmission, electrical resistance, and coat thickness for a number of metals.

Accelerating heavy ions like nitrogen and carbon and investigating their nuclear reactions is a promising field, but construction of a relatively low cost accelerator for the purpose requires the development of an adequate ion source. Previous work at the Berkeley and Chicago machines made use of doubly-ionized carbon "accelerated by the third harmonic of the cyclotron's deuteron frequency; and after the ions acquire sufficient energy, collisions with residual gas atoms strip them completely. This method results in small beam intensity and great difficulties in deflection since the ions do not have a common center of rotation." Two Oak Ridge physicists, Royce J. Jones and Alexander Zucker, set out to devise high-output ion sources for use in a proposed heavy-ion cyclotron, and they succeeded recently in making two sources that deliver as much as 28 ma of N^{3+} and 10 ma of N^{4+}. One, of the hot-cathode type, was convenient to use in an accelerator but very short-lived (10 hrs); the other, with a hollow anode, had a longer life but required two sup-