liged to take the oath, and not all the university professors.

The Fascist régime, so far as the theory is concerned, undoubtedly is to be considered "a particular system of political ideas," as every other régime in the world. Actually, however, it represents the Italian state as recognized by far the greatest majority of citizens. The state requests its officials, who are supposed to apply its laws and to make the citizens respect them, to take an oath of allegiance, as a means of prevention against the danger of maintaining in dependence on it men whose activity is contrary to the safety of the state itself. This is, I believe, the general procedure in every country. In the United States, for instance, an oath of "true faith and allegiance" to the Constitution, implying the condition to "support and defend the same against all enemies, foreign and domestic," and to be taken "without any mental reservation or purpose of evasion" is required from "any person elected or appointed to any office of honor or profit in either the civil, military or naval service," and, apparently, whatever his personal political ideas may be. Furthermore, examples of states directly defending themselves against professors who are supposed to exercise dangerous political propaganda are very common everywhere, and are well known.

There is not in Italy any limitation whatsoever to discussion and research work in any particular or general biological theory or field; also no restriction from either the civil or ecclesiastical authorities, and this is not the case in every country. Therefore, there is no reason whatever for supposing that a scientific discussion in the field of biology could not enjoy the utmost freedom. A refusal to attend the physiological meeting would only result in a boycott, on the part of American biologists, of the hospitality that the Italian scientists (whose own consciences have allowed them to take the oath) are preparing for their colleagues of the world.

Giuseppe Montalenti
Assistant Professor,
University of Rome
Research Fellow for 1931–32,
University of Chicago

ACADEMIC FREEDOM IN SPAIN

Dr. Carlson's proposal to boycott the International Physiological Congress at Rome as well as Dean Pound's protest to the League of Nations because of the attack on academic freedom in Italy suggests that some similar action be taken by American educators in protesting the much more brutal attack on this same right by the Spanish government in regard to the Jesuit Order. For, whether one agrees with the aims of this teaching body or not, the principle at stake is the same, namely, academic freedom, which has suffered a serious blow not only by the law forbidding members of the Society of Jesus to teach in Spain but by the outright confiscation of their twenty-six colleges serving 14,599 students. Among these institutions were many which were doing notable work in science, especially the Chemical and Biological Institutes of Sarriá (Barcelona) and the Engineering Institute in Madrid.

Particularly obnoxious was the proposal of the government to Father Rodés, director of the Observatory of the Ebro, one of the world's few stations for the study of terrestrial magnetism, to continue his work until they could prepare a staff to replace him and his assistants.

Those who have found fault with Spain because of its backwardness in things scientific will resent this further handicap to progress in science and will add a protest against it to the one against the attack of the Fascist régime on academic freedom in Italy.

Spring Hill College P. H. Yancey, S.J.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

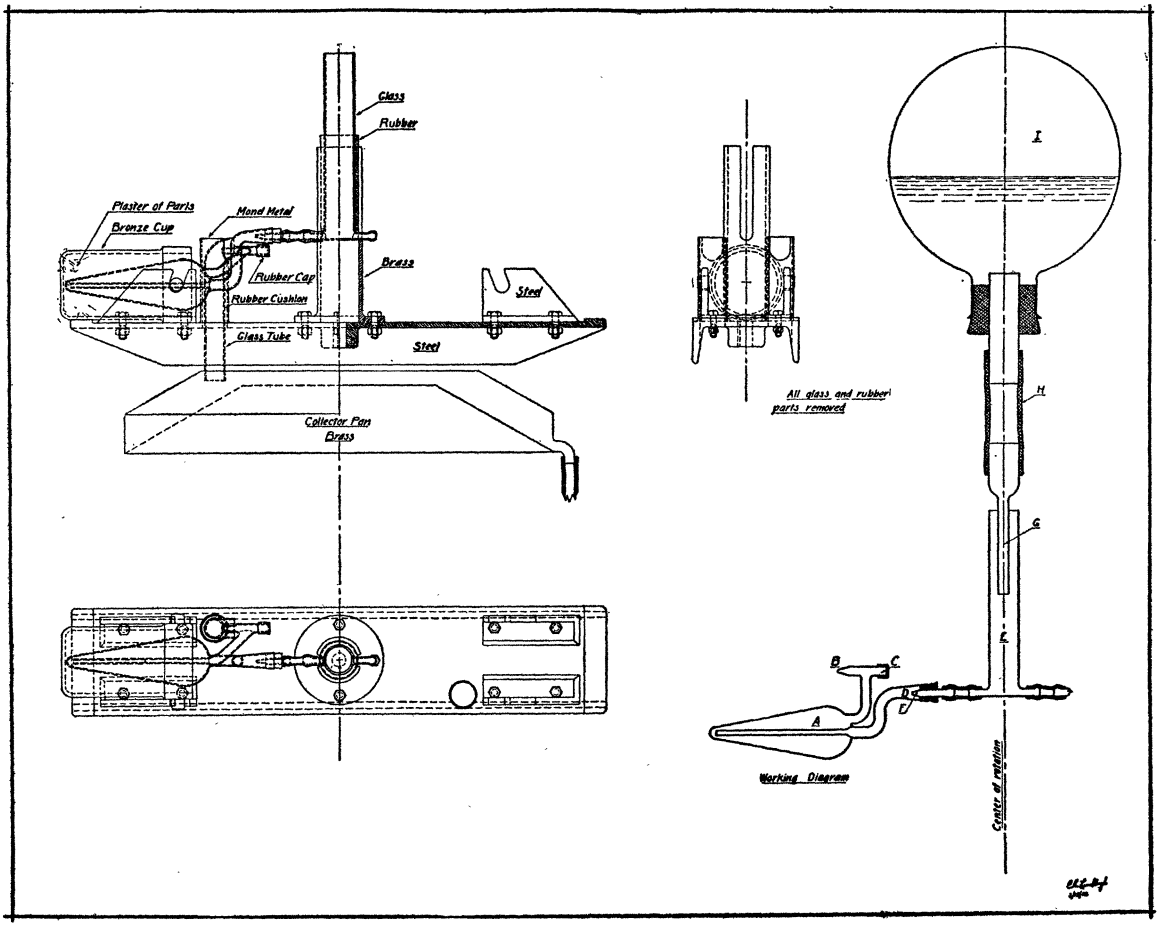
A METHOD FOR WASHING CORPUSCLES IN SUSPENSION

The original fluid may be replaced and corpuscles washed while still in suspension during centrifugation. This is accomplished by placing the suspension in a conical chamber (A). During centrifugation, the replacement fluid is introduced at the outer and narrow end of the chamber while the replaced fluid is forced out at the inner and wider end. The chamber is so designed that, when properly operated, the rate of flow at the narrow end is too rapid to permit the settling and packing of the corpuscles, while at the wide end it is too slow to carry them out with the replaced fluid. The corpuscles, therefore, remain suspended in the middle of the chamber.

Technique

The conical chambers (A) are filled and inserted in the centrifuge head. These are so designed that all connections are made automatically as they are placed in their guides. An injector tube (G) from an inverted flask (I) containing the replacement solution is clamped in position in the center of the intake chamber (E). The position of the mouth of this tube regulates the height of fluid in the intake chamber.[1] A clamp on the rubber connection (H)

[1] When only one conical chamber is used or when accurate distribution is not essential, the jets (F) may be replaced by full sized glass tubes and the rates of flow of replacement fluid regulated by a jet or valve before it is introduced into the intake chamber. In this case



to the flask (I) prevents the fluid from flowing out. The centrifuge is started and run at full operating speed long enough to permit the corpuscles to settle away from the outlet of the chamber (A). The clamp on the flask connection is then removed and the replacement fluid permitted to flow into the intake chamber. The rate of flow to each conical chamber is regulated by the size of the jets (F) leading to them. The overflow is carried to a collector pan below the centrifuge head. When the desired washing or dilution has been obtained, the flow of replacement fluid is cut off and the centrifuge stopped by applying the brake. The conical chambers are removed from their guides and the suspension of corpuscles may be poured out through the vent tube (C). The corpuscles come in contact with glass only. All vessels and tubes which come in contact with the replacement fluid are glass and their connections rubber.

The rate of replacement and washing depends upon the suspension to be washed and the centrifugal force used. In a first test, a 90 cc solution containing corpuscles in suspension and .02 per cent. phenol red was centrifuged at approximately 650 times gravity at the maximum cross section of the conical chamber. After one minute, the replacement fluid was permitted to flow through the chamber at the rate of 60 cc per minute. At the end of fifteen minutes, the dilution of the indicator showed that only a fraction of 1 per cent. of the original fluid still remained.

C. A. LINDBERGH
DIVISION OF EXPERIMENTAL SURGERY,
ROCKEFELLER INSTITUTE FOR
MEDICAL RESEARCH

it is convenient to keep the mouth of the injector tube close to the top of the intake chamber. When one of the conical chambers is not in use the jet is replaced with a closed tube and the chamber filled with fluid of proper density to maintain balance.

A MODIFICATION OF THE BUCHNER METHOD OF CULTIVATING ANAEROBIC BACTERIA

THE apparatus illustrated in the accompanying diagram has been tested thoroughly in connection with our work and has been found very effective for the cultivation of microaerophilic bacteria, at the same time eliminating several of the difficulties involved in using the usual Buchner tube.