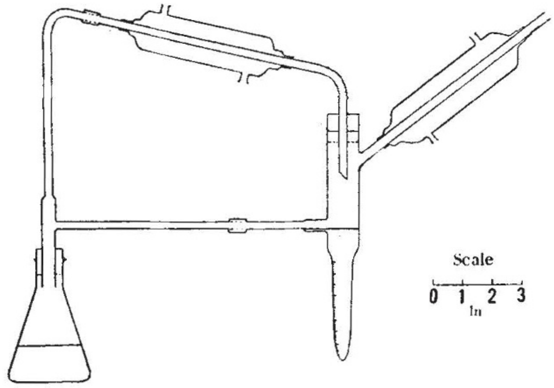
to the condenser column. This adhesion of water is recognized in the method of water determination covered by British Standards Specification, 756—1939, in which the recommendation is made that it should be removed to the receiving column by a soft camel hair brush. We have eliminated this disadvantage, however, by modifying the apparatus as shown.



The condensed water is washed into the receiver by succeeding portions of liquid, whilst the return flow takes place through a lower connecting tube. The second condenser is introduced to prevent any loss of solvent. Connexions are made by synthetic rubber ('Neoprene') tubing, which is resistant to organic solvents, across butt-end glass joints. We are indebted to Mr. L. G. Wilkinson for the construction of this apparatus.

In our determinations benzene (b.p. 80°) was used rather than xylene (b.p. 135°), as it was considered that use of the former would give results more comparable with those obtained by dehydration at 105°. A determination on a 5 gm. sample takes approximately one hour.

The accuracy of the method is limited by error in reading the volume of water (for example, an error of 0·05 c.c. on a 1 c.c. reading will produce a percentage error of five), and its use is therefore restricted to bulk samples from which 5–10 c.c. of water can be obtained. Experience showed that the use of a measuring tube narrower than that illustrated was unsatisfactory, as the globules of water imprisoned benzene in the lower part of the tube.

For small samples (up to 1 gm.) the method of dehydration at a 100° has been employed.

The tissue, weighed into a combustion boat, was introduced into the inner tube of a small horizontally placed Liebig condenser. Heating is effected by passing steam through the outer jacket. A current of air dried by bubbling through sulphuric acid is passed over the sample. The moisture taken up by the air is absorbed in two tared calcium chloride tubes. Since the weight of water in the tissue is much greater than the dry tissue weight, a very accurate determination of water can be effected on small specimens.

The modified Dean and Stark method has been particularly useful as a means of obtaining average values for the water content of mouse tumours (Twort carcinomata).

Surplus moisture is first removed by laying the tissue on filter paper. In one batch of mice the moisture content of six tumours, estimated by the second method described, gave values of 80·0, 81·5, 72·4, 76·9, 77·6, 84·8; the Dean and Stark method applied to the remaining twenty-three tumours, taken four or five at a time, gave the figures 79·1, 78·9, 79·0, 78·8, 78·9, 78·8.

P. F. HOLT.
H. J. CALLOW.
Hosa Research Laboratories,
Sunbury-on-Thames.
Nov. 20.

[1] Lowndes, A. G., NATURE, 148, 594 (1941).
[2] Dean and Stark, *J. Ind. Eng. Chem.*, 12, 486 (1920).

A RAPID method for the estimation of water in animals and plants consisting of distillation with an immiscible liquid has been suggested[1]. The liquid used was xylol, and some charring of sugar occurred. If toluene (b.p. 110·7° C.) is substituted for xylol, the amount of decomposition and charring is much reduced and is scarcely appreciable even with sugar-containing substances such as jam, honey, fruit extracts, and confectionery products. The boiling-point of toluene is sufficiently high to ensure rapid and complete vaporization of all water present, and the method gives results comparable with those obtained by drying *in vacuo* or by oven drying after the addition of alcohol, and higher than those obtained by 'straight' oven drying, at 105–110° C.

L. G. G. WARNE.
Botany Department,
University of Manchester.
Nov. 24.

[1] Lowndes, A. G., NATURE, 148, 594 (1941).

Employment of Physicists

IN view of the statements made in recent articles in NATURE regarding the employment of scientific workers in connexion with the national effort, the following statement of the situation as it concerns members of the Institute of Physics may be of interest.

With negligibly few exceptions all our members are at present engaged in a professional capacity, practically all of them on work either directly or indirectly connected with the war effort. Owing to the pressure for greater output from all works and factories, a certain number of our less senior members with substantial research experience are now engaged on more or less routine work (testing, servicing, and so on) which does not exercise their abilities to the full. It must be remembered, however, that the work they are doing is essential to the maintenance of quality and output, and that both would suffer if the men were taken for higher duties before suitable juniors had been trained to replace them. It may be pointed out, in this connexion, that the present intensive drive for the production of radio experts will inevitably mean that fewer fuller trained physicists will be turned out by the universities.

Only the Cabinet and its advisers can be in a position to know the relative importance at the moment of research, industrial production and operational control (either with or outside the armed forces). So far as physics is concerned, the available man-power is already fully engaged, but it would certainly be possible to increase the research potential, if that is desired, at the expense of other forms of war service.

J. A. CROWTHER
(Honorary Secretary).
Institute of Physics,
At the University,
Reading.