the cavity, and rotation of the cavity produces a further periodic phase change $\Delta\varphi$, then the detector output power is proportional to $[\sin(\varphi+\Delta\varphi)-\sin\varphi]^2 = [\cos\varphi \sin\Delta\varphi]^2$. Hence, when $\varphi < \pi/4$, the reduction in sensitivity is small. Because $\Delta\varphi$ is periodic, it will be amplified, whereas accidental changes in phase-angle uncorrelated with $\Delta\varphi$ will be suppressed.

While not strictly relevant to Furth's suggestion, it is worth noting that the method suggested here is applicable to experiments such as those of Wood, Tomlinson and Essen[3], if the cavity is replaced by a quartz resonator. This should result in a considerable increase in sensitivity because of (*a*) the higher Q obtainable, (*b*) the ability to apply larger powers to the detector, and (*c*) the lower noise figures realizable at lower frequencies. As an example, consider a quartz resonator with frequency 100 kc./s. having $Q = 2 \times 10^5$, $P_r = 10$ mW., and $N = 2$, other parameters being as before. The minimum detectable $\Delta f/f$ is approximately $2{\cdot}5 \times 10^{-15}$.

D. D. Crombie

Dominion Physical Laboratory
(Dept. of Scientific and Industrial Research),
Lower Hutt,
New Zealand.
Oct. 14.

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[2] Essen, L., *Nature*, **173**, 734 (1954).
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Use of Soluble Filter Gauzes

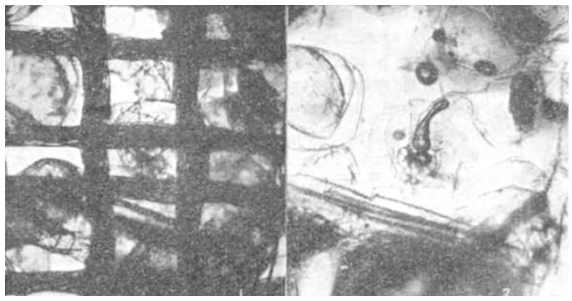
In connexion with filtration problems in agricultural spraying machinery, we have been making a study of the nature and quantity of matter in natural waters capable of being retained on filter gauzes. We found it necessary to develop a technique for this purpose which we think may be of interest in biological investigations.

Removal of the material from the gauze for microscopic examination is not satisfactory, as it cannot be assumed that a fair sample is removed or that delicate structures are not damaged. We therefore replaced the metal gauze by one of cellulose acetate, with the intention of dissolving away the filter base after transfer to a microscope slide. The filtered matter, mainly mineral and cellulose structures, could be left *in situ* undissolved and clearly visible.

To simulate 100-mesh wire gauze, an acetate fabric was kindly supplied by Messrs. Courtaulds consisting of 45-denier 10-filament (continuous) yarn with 30 turns to the inch woven with 92 warps and 84 wefts per inch.

400 ml. of water was found to give a convenient amount of deposit on a *B*14 cone (area = 0·44 sq. cm.). The part of the mesh containing the deposit was carefully cut out and mounted on a microscope slide. The presence of water on the yarn as well as in the organic matter gave rise to a cloudiness on dissolving the acetate mesh directly in acetone. It was therefore found necessary to dehydrate the specimen by successive washes in 30, 70 and 100 per cent ethanol before applying the acetone. The alcohol and acetone were introduced at the edge of the specimen and allowed to flow across by holding the slide obliquely. A cover slip was placed over the residue before the acetone had evaporated.

Figs. 1 and 2 are photographs of the same deposit taken before and after dissolving the filter. These



illustrate the greater detail visible when the filter is removed, both as regards absence of the fibres of fabric and also because of the greater ease with which the image can be focused. There is little disturbance of the disposition of the residue in the process except for some shrinkage in the diameter of filamentous matter and slight movement due to surface tension effects.

The colour of algae is sufficiently well retained during the solvent treatment to enable them to be clearly distinguished from colourless structures.

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M. A. Naughton
J. M. Swinstead

Chesterford Park Research Station,
Nr. Saffron Walden, Essex.
Nov. 1.

Method for Recovery of Metallic Grids for Electron Microscopy

The metallic grids used as supports for the parlodion films containing material for electron microscopy are usually rejected after use. Good results in recovering these grids were obtained by the use of the following technique, which is a modification of one previously described[1].

Initially, the grids are washed with hot distilled water to dissolve soluble salts. The film of oil from the diffusion pump is removed by boiling the grids in a 0·1 per cent soap or any detergent solution for half to one hour and leaving them to stand in contact with the soap solution for a day at room temperature. The soap is then removed by washing with hot distilled water, followed by another washing with acetone to ensure complete removal of any residual oil. After treatment with acetone, the grids are placed in contact with approximately 1 *N* hydrochloric acid solution at 30–40° C. to remove the products of corrosion of the grids. The time of contact with the acid solution depends on the metal (less for copper and more for nickel grids) and also on the degree of corrosion. Generally, after no more than ten or twenty minutes, all grids present a clear bright surface and the acid solution can be poured off. The clean grids are then carefully washed with boiling distilled water to remove all traces of acid and dried at 100–120° C. protected from dust. The cleanliness of the grids can be checked by optical or electron microscopical examination, but it is not necessary. It was found that a small can, open on the top and having about twenty holes drilled in the bottom, is very convenient for washing the grids with water and acetone. Gener-