again, threads were seen to pass from the tips of the parapodia to the wall of the tube. The animal then retreated slowly down the tube; the anterior end moved repeatedly from side to side through a semicircle; and the first four to fourteen pairs of parapodia moved in circles, each slightly out of phase with its immediate neighbours, while the setæ were alternately protruded and withdrawn. These movements sufficed to make a feeding funnel from the threads secreted by the parapodial glands. The funnel when completed was attached in front to the wall of the tube and behind was almost completely blocked by the animal's peristomium. Meanwhile, most of the more distal segments of the animal undulated violently, drawing water laden with suspended particles past the animal antero-posteriorly. These undulating movements continued when the funnel was complete, and particles were thus automatically sieved out of the water current. The worm then moved forward and swallowed the feeding funnel with its entrapped particles in several gulps.

The numbers of parapodia involved in the various stages of the filter-feeding process and the time taken for each step vary considerably in one worm and from worm to worm. The following figures are summaries of observations from five worms: in a tube of 3 mm. internal diameter, worms 5–7 cm. in length made feeding funnels 0·5–2·5 cm. long; at 16·5–20° C. a funnel was made in 30–140 sec., water was pumped through the tube for 30–257 sec. after the funnel was completed, and a feeding funnel with its entrapped particles was swallowed in 6–16 sec.

The cycles of feeding may follow rapidly one after the other with a few short breaks, or they may occur with intervals of several minutes, or irregularly, for a total period of about two hours.

Feeding mechanisms similar in principle to this in *Nereis diversicolor* have been described for *Chætopterus variopedatus*[5], *Urechis caupo*[6] and some *Chironomus* larvæ[7].

These investigations form part of a study of the feeding habits of *Nereis*.

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Use of Glass Springs for Adsorption Measurements

THE use of spiral quartz springs in the McBain and Bakr[1] balance for adsorption measurements is well known. In stability and chemical inertness they are satisfactory; but they have disadvantages in high initial cost and fragility. Spirals of 'Pyrex' glass are cheaper, easier to fabricate, and more robust, but do not seem to have been much used, probably on account of lack of dimensional stability.

We have found that the stability of 'Pyrex' springs is considerably improved if they are annealed under load at a high temperature before use. Annealing at 200° C. for 8 hr. has been found to give a dimensionally stable spring suitable for use up to at least 100° C., and giving a linear load-extension relationship. The following results show the effect of the annealing treatment:

	Length of spring (cm.)
Originally, at 25° C.	16·209
After heating at 200° C. for 8 hr., then cooling to 25° C.	16·239
After further heating at 100° C. for 3 hr., and cooling to 25° C.	16·236

The dimensions of the spring were: fibre diameter, 0·008 in.; coil diameter, 0·75 in.; turns per inch, 12; sensitivity, 17·45 cm. per gm. The load in each case was 0·4 gm.

Springs annealed in this way have been in constant use at temperatures up to 100° C. and occasionally even up to 150° C. for periods of six months, and have shown no change in sensitivity over this period. They have been exposed to vapours of organic solvents, water and dry hydrochloric acid gas.

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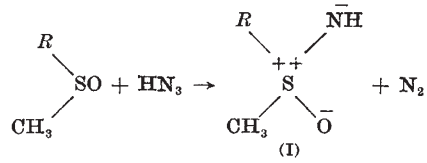
Action of Nitrogen Trichloride on Proteins: a Synthesis of the Toxic Factor from Methionine

DIMETHYLSULPHOXIDE is converted by means of the Schmidt reaction[1] to a product identified as (I, $R = -CH_3$) by comparison with a specimen prepared by an alternative method[2].



(I)

Under comparable conditions DL-methionine sulphoxide gives, in moderate yield, a crystalline product toxic to rabbits at the same order of dosage as the toxic factor isolated from 'agenized' zein or wheat gluten, and shown by means of two-dimensional paper chromatography to be identical with this factor. The latter has previously been shown[3] to be an amino-acid, $C_5H_{12}N_2O_3S$, derived from methionine, and on the basis of the present synthesis has therefore the structure (I, $R = -CH_2CH_2CH(NH_2)COOH$).

In further work we shall endeavour to compare the toxicities of the several stereo-isomers of this compound. Some preliminary observations on this point have already been described[3].

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