critical velocity of 28 cm s^{-1} the film thickness was reduced by 56 Å.

By investigating transient effects which occurred as the flow started and stopped, they were able to measure the film thickness for velocities less than the critical velocity and they found that the thinning was proportional to the square of the velocity as had been predicted by Kontorovich.

These measurements provide a satisfying demonstration of the general validity of Kontorovich's analysis. They also, however, demonstrate the corrections of de Bruyn Ouboter's suggestion of the importance of vapour condensation for films at temperatures above 1 K, which has implications for a whole range of other experiments and proposed experiments. Williams and Packard point out, in particular, that by providing a dissipative mechanism, such condensation processes may be responsible for the experimental non-appearance of persistent currents in helium films above 1 K. So that this latter hypothesis may be put to the test, it is to be hoped that further experiments seeking persistent currents in helium films will soon be carried out at temperatures well below 1 K, where the influence of the vapour is negligible.

Complexities of the Afar triple junction

from Ian Gass

DURING the past five years the Afar has been the site of intensive investigations by French, German and Italian research teams, as well as by individual scientists from the United Kingdom and United States. A meeting on the Afar region, held at Bad Bergzabern, West Germany, from April 1-6, was anticipated with mixed feelings. Undoubtedly much new information would be available, but would it in any way make the processes at this unique terrestial triple junction any more explicable? These misgivings were unfounded: the symposium was an outstanding success. The lasting impression is of the excellence and abundance of the German geophysical data and of the French and Italian field, structural and petrochemical studies.

The following points were repeatedly emphasised; that (1) the continental crust beneath Afar has been markedly attenuated; (2) the underlying upper mantle is anomalous to depths of 300 km with maximum recorded P wave velocities in the range 7.3–7.4 km s^{-1}; (3) movement, both vertical and horizontal, volcanic activity and deformation are episodic with periods of activity interspersed with intervals of quiescence; (4) the major volcanic activity commenced some 34 Myr ago and that older dates on trap basalts are open to considerable doubt; (5) the disposition of volcanic rock types is far more complex than originally thought; (6) the precise demarcation line between the Nubian, Somali and Arabian plates can be identified more closely than before within the Afar depression but that its position on or around the Danakil Alps is still a matter of personal prejudice.

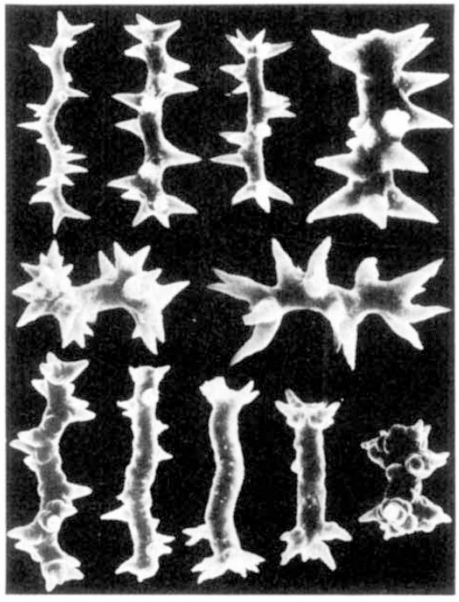
Both R. Black (University of Montpellier) and W. H. Morton (University of Addis Ababa) convincingly demonstrated that crustal attenuation had taken place by a process of rotating fault blocks. Morton proposed that the angle of faulting was a direct reflection of the degree of attenuation in the upper brittle crust while the lower crust deformed plastically. The German seismic data, reported by H. Berckhemer (University of Frankfurt), and the gravity information (J. Makris *et al.*, University of Hamburg) proposed anomalous mantle under Afar though that below the highland is normal. The gravity model presented showed a mantle of 3.15 g cm^{-3} within 20 km of the surface and thinnest beneath the rift zones; a space form similar to that proposed by Gass in 1969 on petrological criteria is indicated. Magnetotelluric measurements (A. Berktold, University of Munich), deep electrical conductivity (H. Porath *et al.*, University of Dallas) and surface wave dispersion (R. C. Searle, National Institute of Oceanographic Sciences, Wormley) all support the presence of low density mantle at high level beneath Afar. Farther to the south a similar space form was proposed for the Kenya rift by R. E. Long (University of Durham), J. D. Fairhead (University of Leeds) and N. Logatchev (Institute of the Earth's Crust, Irkutsk) on teleseismic, gravity and petrological data respectively, although the depth to anomalous mantle varies somewhat.

Time and time again speakers emphasised the periodicity of activity. H. Faure (Centre National de la Recherche Scientifique, Bellevue) demonstrated spasmodic vertical uplift in the order of 0.3 mm yr^{-1} around the Gulf of Tadjura. F. Berberi *et al.* (University of Pisa) and J. Varet (University of Paris) also emphasised the spasmodic nature of uplift which they dated as occurring mainly between 45-40, 25-20 and 5-2 Myr with volcanic maxima between. Although the generally spasmodic nature of events was acknowledged, the longest pause—that proposed by R. W. Girdler and P. Styles (University of Newcastle-upon-Tyne) for a cessation of spreading in the Red Sea between 34-5 Myr—was questioned. Many found it difficult to accept that all was quiet in the Red Sea while volcanism, uplift, crustal attenuation and deformation were going on all around.

Petrologically the picture has altered from the symplistic views of the late 1960s and this is mainly due to the recognition of tholeiitic basalts within the Ethiopian Trap series as well as within the depression. Although generations of basaltic liquids within an area of high heat flow (the use of the term mantle plume being deliberately avoided) is generally accepted, it is quite apparent that factors other than depth of equilibration are relevant and more correlated field, age, petrographic and geochemical data are required before a realistic petrogenetic model can be erected.

Lastly, and perhaps appropriately, the position of the dividing line between the three plates, although becoming more precisely defined, is still masked by the

Inside a sponge



To anybody whose familiarity with sponges goes no further than the bathroom, it may come as a surprise that the bath sponge *Euspongia* is just one of many examples of the sponge phylum Porifera. The strange-looking structures in the figure shown here make up the skeleton of another form of sponge, *Cliona dioryssa*, which burrows into calcareous rocks. This species is one of eight burrowing sponges which Dr Klaud Rützler has been studying in Bermuda (*Smithson. Contrib. Zool.*, No. 165; 1974). Although *Cliona* is sufficiently similar to *Euspongia* for both to be included in the same broad class, the Desmospongia, the skeletons are different; *Cliona*'s skeleton is made up of the siliceous spicules shown here whereas that of *Euspongia* is composed of a horny substance called spongin.

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