fibres, may be clearly seen under the microscope at a linear magnification of 300 : 1 (see Fig. 1).

The specimen belongs to the British Museum (In. 18753, 92.74) and is in the same piece of amber with a spider, forming part of a collection loaned to me for study through the courtesy of the Department of Geology. Unfortunately, the wings of the fly are broken off at their base, making identification of the species and even of the genus impossible except by matching with specimens in some other, identified collection. Presumably it is a species of *Sciara*, this genus being extensively represented in the Baltic amber. The small insert in the photograph shows the fly at a magnification of 15. The femora with the muscles had to be photographed at a magnification of 300 : 1 with the aid of a low-power objective and a high-power ocular, the combination being necessitated by the thickness of the amber. [In reproducing the photograph, it was reduced to $\frac{3}{5}$.] The best results were obtained with infra-red rays.

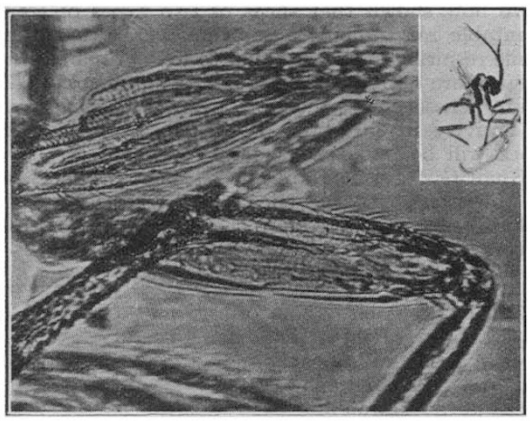

FIG. 1. Infra-red photograph of a Baltic amber fungus-gnat (*Sciara* sp. ?) showing transversely striated flexors and extensors in the legs (× 180). Inset (× 15). Photographed by Prof. Petrunkevitch.

The reason why the striations do not show nearly as well in the photograph as when the specimen is examined directly under the microscope, lies in the fact that one cannot change the focus during exposure, or increase its depth sufficiently to show all lines at the same level.

So far as I know, this is the first instance of striated muscles found in fossil insects. In 1902, Bashford Dean[1] described and figured transversely striated muscles in a Devonian shark. Vertebrate muscles, unprotected by anything but an easily perishable skin, are quick in deteriorating, yet for the same reason, under favourable conditions, may be penetrated by soluble salts serving as a preservative. Not so in arthropods. Only rupture of the outer skeleton admits fluids to the inner organs. This particular gnat must have been injured at the time that it was caught in the still fluid gum, which oozed through the wound, entering the legs and embalming the muscles before they had time to decompose.

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[1] Bashford Dean, "Presence of Muscle Fibres in Sharks of the Cleveland Shale", *Amer. Geol.*, **30**; 1902.

Nature of the Thermal Agitation in Liquids

THE accompanying photographs (Fig. 1) represent the analysis by a Fabry-Perot étalon of the structure of the 4046 A., 4078 A. and 4358 A. radiations of a low-density water-cooled mercury arc, after they are scattered through an angle of 180° by a column of carbon tetrachloride liquid. In each case, two different temperatures of the liquid column (30° C. and 70° C.) were employed, the exposures being as nearly as possible otherwise under identical conditions.

The choice of a Fabry-Perot étalon as the high resolving power instrument and of carbon tetrachloride as the scattering liquid were both determined by experience gained in this particular field of research[1]. It will be seen that a 40° rise of temperature produces a most remarkable change in the structure of the scattered radiation. The two Brillouin components having a Doppler shift determined by the velocity of sound in the liquid, which are well-defined at the lower temperature, broaden greatly when the liquid is heated, and move in towards the central component, practically closing in upon it. The central component at the same time increases in intensity. The conception that ordered wave-trains of sound constitute the thermal energy in a liquid therefore departs more and more from the actual facts as the temperature of liquid is raised.

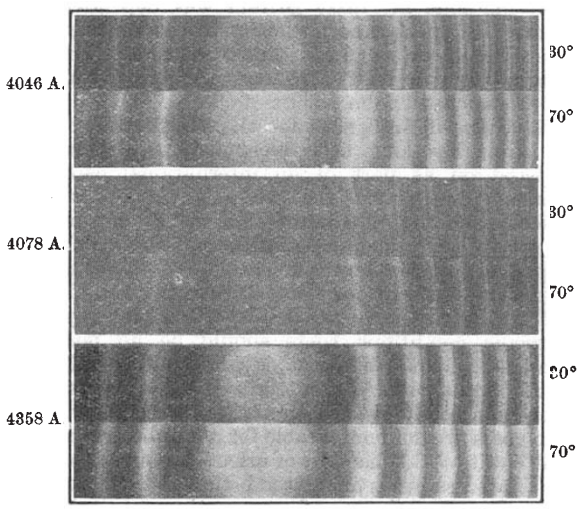

FIG. 1.

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[1] B. V. Raghavendra Rao, *Proc. Ind. Acad. Sci.*, 1, 261 and 473; 1934–35

Use of Hydrogen Cyanide in Fumigation

THE recent tragic death of two children from hydrogen cyanide fumes following the fumigation of their home in Aldershot has directed attention to the need for stricter control of the practice of fumigation and to the need for fuller knowledge of it. For some years past I have strongly urged the need for the licensing of fumigators, and the question has, I believe, received consideration by officials of the