Fused silica, in the course of manufacture, comes in contact with hot carbon and reacts with this with the evolution of gas. This makes contamination with CO_2 seem likely, and the band in question does fall in the centre of the region of CO_2 absorption at about this wave-length[6]. This suggestion is open to the criticism that the next strong CO_2 band, that at $4{\cdot}28\,\mu$, is definitely absent from the fused silica spectrum and that the $2{\cdot}73\,\mu$ band is single and broad while the corresponding structure for gaseous CO_2 appears as two doublets under similar resolving power. Nevertheless, solution of CO_2 in a solid may radically modify its absorption spectrum.

Another possibility is that the band may be due to another crystalline modification of silica, that is, a cristobalite or tridymite. This seems unlikely as in readings taken on the same set of specimens during one or two years no ageing effect was detected, and further, of specimens cut from one initial melt, some were used immediately without additional heat treatment while one was re-melted to improve its optical homogeneity without any significant difference being introduced in the intensity of this band in the material. A very slight difference was observed between different initial melts in this respect. It would be of interest to know whether the specimens examined by Lyon and Ellis were prepared without contact with carbon, as if this was the case the theory of the CO_2 impurity is decidedly strengthened by their result.

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[1] Lyon and Ellis, NATURE, **137**, 1031 (1936).
[2] Drummond, NATURE, **134**, 739 (1934).
[3] Parlin, *Phys. Rev.*, **34**, 81 (1929).
[4] Dreisch, *Z. Phys.*, **42**, 426 (1927).
[5] Drummond, *Proc. Roy. Soc.*, A, **153**, 328 (1936).
[6] Barker, *Astrophys. J.*, **55**, 391 (1922).

African Honey Bees

SKORIKOW[1] has published a map showing the distribution of the three main types of ordinary honey bees, *Apis mellifera* L., occupying the Palæarctic region, *A. indica* Fabricius, the Oriental, and *A. adansoni*, Latreille, the Ethiopian. Madagascar is inhabited by still another form, *A. unicolor* Latreille. Alpatov, of the University of Moscow, has published statistical studies of South African honey bees, separating two races, called *A. adansoni* and *A. unicolor*, the latter being the form with black abdomen and scutellum. But his *A. unicolor* came from near Cape Town, and were surely not the true *unicolor*, but the race which Buttel-Reepen (1906) named *intermissa*. This insect differs from *A. unicolor* in having bands of tomentum on the abdomen, these being usually conspicuous, but sometimes not evident, when the specimens are worn, or the abdomen is much contracted.

I have just examined the honey bees of the 1933–34 expedition by Mr. and Mrs. J. Ogilvie to South Africa, and I find eight *A. adansoni* (from Bot River, Belmont, Kirstenbosch, Upington and Seeheim) and fifteen *A. adansoni intermissa*, from Lions Head, Cape Town and from Bot River, but the majority from an uncertain locality, owing to a mistake in labelling at the British Museum. From the expedition of 1931, I find four specimens from Victoria Falls, which I had overlooked. Three are ordinary *A. adansoni*, but of two collected by my wife on Livingstone Island, one is *A. adansoni*, and the other, abruptly different, is to all appearances *A. unicolor*, though the surface of the abdomen is duller than in a specimen from the Seychelles Islands.

No doubt the African bees are being crossed with different forms of the European species, introduced by man; hence it is desirable that material should be collected as soon as possible in all parts of Africa and deposited in the British Museum or elsewhere, where it will be available for minute statistical studies, such as those of Alpatov. Enderlein, in his revision of *Apis* (1906) distinguishes the African forms by the smaller size (body 10–12 mm. long, $3\frac{1}{2}$ mm. broad, front wings 8–9 mm. long) and then divides them into those with black abdomen (*unicolor* and *intermissa*, as just given, and also a form *friesei*, Buttel-Reepen, differing from *intermissa* by the average smaller size and the yellowish-brown scutellum), and those with a largely fulvous or yellow abdomen, the true *adansoni*, closely resembling the familiar Italian race. The variety *friesei* comes from Mombasa, East Africa.

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[1] "A New Basis for a Revision of *Apis*", 1929.

Vernalization

THE phenomenon of 'vernalization', namely, the acceleration of ear formation in winter varieties of cereals by exposing the germinating seed to low temperature, is now well known[1]. The underlying cause of this effect of low temperatures is by no means clear. Enzymatic changes in the fruit external to the embryo have been postulated by Richter and others. Experiments to test such possible changes or hormone effects have been performed by Krasnoseljskaja-Maxomova in which endosperm of winter and spring varieties has been interchanged. Similar experiments have been repeated by Sereiskii and Sluckaja, and interchange of embryos has also been tried. The former investigator claims positive results which, however, the latter investigators failed to substantiate.

Experiments recently carried out by us have shown conclusively that excised embryos separated completely from the endosperm and grown on agar containing 2 per cent glucose and mineral nutrients alone can nevertheless be vernalized in the same way as complete 'seeds'. Such separated embryos kept at 1° C. for six weeks and then planted out produced normal plants earing ten weeks later, whereas similar embryos kept at 18° C. until they had reached the same stage in development (coleoptile developed, but first leaf not emerged) showed no signs of 'shooting' after a further ten weeks of growth.

It would appear therefore that the 'cause' of vernalization by low temperature is entirely inherent in the embryo, and is not dependent in any way on the metabolism of the endosperm or aleurone layer.

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[1] Vernalisation and Phasic Development of Plants. Bull. 17 Imperial Bureau of Plant Genetics.