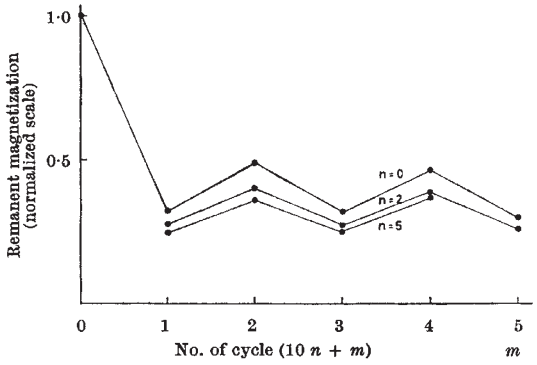

Fig. 2. Systematic change in the isothermal remanent magnetization of synthetic hæmatite powders at room temperature with large numbers of cooling–heating cycles (H = 2,000 oersteds)

able to any special characteristic of the hæmatite specimen. It has been confirmed, too, that the spatial orientation of the hæmatite specimen, relative to the geomagnetic field during the cooling–heating cycles, has no appreciable effect on the 'zig-zag' phenomenon. In view of these results, it may be concluded that this 'zig-zag' phenomenon is essentially related to a parasitic ferromagnetism of hæmatite.

A unified mechanism, through which the combined phenomena, namely, the memory and the 'zig-zag' of the remanent magnetization of hæmatite at low transition temperature can be interpreted simultaneously, may be required in future work.

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The Use of the Term 'Flux'

Recent suggestions[1] for the adoption of a unit of neutron intensity in reactor physics and technology provide an opportunity to raise the issue of non-ambiguity. In the physical sciences, the term 'flux density' has been used since the earliest days to denote units of the relevant quantity per unit area traversed normally per unit time. The term 'flux', then, describes the product 'flux density × area'. Apparently owing to the isolation of nuclear physics during the period 1939–45, the practice seems to have become established in certain branches of this subject and its associated technologies of using the term 'flux' as a short hand for 'flux density'. This ambiguous use tends to deprive both terms of their original significance, and has led to considerable confusion.

The ambiguity is quite unnecessary and its continuance is surely most undesirable. We should like to propose, therefore, that any unit such as the chad, whatever its magnitude, should be defined as a unit of flux density, its dimensions being $NL^{-2}T^{-1}$.

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CRYSTALLOGRAPHY

Structure of Vapour-deposited Carbon

Although considerable information is available in the published literature on the effect of temperature and pressure of deposition on the microstructure and density of vapour-deposited carbon, only little has been reported on the pyrolytic graphite formed under these conditions from the crystallographic point of view. The purpose of this communication is to present X-ray results obtained in these laboratories from analysis of a series of experimental deposits produced over a range of high temperatures at a pressure of 50 mm. mercury. The perfection of three-dimensional crystallinity exhibited in some specimens produced at moderate deposition temperatures at this pressure is, to our knowledge, a new observation.

Pyrolytic graphite is deposited on a substrate by passing a vapour source of carbonaceous material at reduced pressure and raised temperature over a heated surface. The pyrolytic graphite produced in this way exhibits stacking such that the atomic basal planes are parallel, as in natural graphite, but the atomic layers are randomly oriented to each other. This arrangement destroys the periodic repetition of atom positions in the c axial direction, and produces greatly different electrical and thermal conductivities in the directions normal and parallel to the substrate surface.

X-ray patterns of pyrolytic graphite specimens produced in these laboratories, as well as a commercial graphite and a commercial pyrolytic graphite sample, were obtained with a 114·59-mm. Debye–Scherrer powder camera using copper K_α radiation. The details of the X-ray analyses of these samples are shown in Table 1 and Fig. 1. These results indicate that the

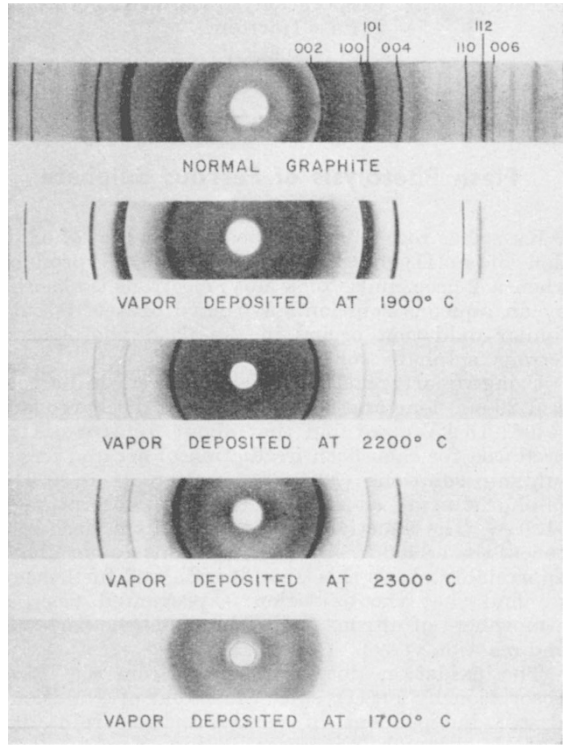

Fig. 1. X-ray photographs of graphite