meteorite, since my histogram was constructed from a different sample.

In the course of preparing my histogram, however, I noted that the size-distribution pattern of the magnetite globules, which are present in approximately double the number of the transparent globules, is exactly the same as that of the transparent globules (see Fig. 8, ref. 3). To the best of my knowledge, none of the proponents of the biogenic origin of the transparent globules attributed a similar origin to the opaque magnetite globules. However, we are forced to conclude that the agency that caused the sorting of the opaque magnetite globules must also have been responsible for the sorting of the transparent globules.

I suggest that the globules in question represent fine solidified spray particles which were ejected by gases from the interior of the parent body and gradually became arrested and sorted in the course of the gases permeating the hydrated silicate—carbonaceous phase, close-to-surface cosmic dust—through gravitational factors and the effects of random collisions with other spray particles and cosmic dust particles.

The characteristic form of the histograms with their 2–3 maxima can be explained by assuming that several gusts of gas traversed the cosmic dust at different epochs: the relatively faster gusts transported, as a rule, coarser matter and therefore produced a maximum at a higher diameter, while the slower blow-outs were responsible for the maxima at smaller diameters.

The third point which I discussed in my paper was the fact that the proportion of single crystals of olivine (olivine microchondri) increases as the diameter of the globules increases. This will be realized when we consider that with greater diameter the probability of nucleation of olivine in the glass of close-to-olivinic composition progressively increases.

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[1] Claus, G., and Suba-C., E. A., *Nature*, **204**, 118 (1964).
[2] Mueller, G., *Nature*, **196**, 929 (1962).
[3] Mueller, G., in *Advances in Organic Geochemistry. Proc. Intern. Meeting*, Milan, 1962, 114 (Pergamon Press, London and New York, 1963).

In our recent article[1], a size distribution histogram of 303 randomly selected type 1 and 2 organized elements was presented and the results were interpreted as possibly indicating a biogenical origin for these elements. Prof. Mueller in his note reiterates his older argument in favour of an abiogenical origin of these structures and suggests that the particles arose through the solidification of fine sprays and were ejected by gases from the interior of the parent body of the meteorite. He refers to his histogram, which, according to him, is practically identical to the one we presented. Several points, however, speak against the acceptability of the identity of the histograms. Since one of us (G. Claus) was a participant at the first International Meeting in Organic Geochemistry in Milan, 1962 (Prof. Mueller[2] mentions our presence in his paper, p. 118), naturally we are well aware of Prof. Mueller's results; however, even at that Meeting, during the discussion, it was pointed out that a basic misunderstanding exists over the identification of what Prof. Mueller calls glass particles or olivine crystals and what we call type 1 or 2 organized elements. In his histogram (*loc. cit.*, p. 114), the curve indicated as glass and homologized with the organized elements is clearly not identical with the histogram we presented. Indeed, the organized elements are never 'transparent globules', as stated by Mueller, and are definitely not composed of glass. This has been demonstrated by the electron microprobe (Nagy *et al.*[3]); most of, and probably all, the type 1 and 2 organized elements are structures which possibly contain limonite. It is possible that Prof. Mueller may have missed this article and, similarly, the subsequent work on the properties of the organized elements, for example, that of Urey[4] in which it is stated that after acid treatment of the meteorite an acid-insoluble residue is obtained which is composed primarily of spherical bodies. The large number and size of these bodies show good correlation with the numbers and shapes of organized elements in native meteorite preparations. Mueller does not make any allusion to this finding; furthermore, he does not take into account the work of Nagy *et al.*[5] concerning the ultra-micro ultra-violet absorption spectra derived from single organized elements, which indicate the possible presence of proteinaceous and nucleic acid-like substances in them. Clearly these data definitely contradict his assumption about the glassy nature of the organized elements. It seems that we are dealing with a quite different group of particles from that which Prof. Mueller counted.

So far as the size distribution of the olivine crystals is concerned there is no correlation whatsoever between Prof. Mueller's histogram (*loc. cit.*) and our data.

The size distribution of the magnetite particles is interesting. However, it is not at all clear from Prof. Mueller's data whether he considered in his histogram only the really globular forms, which are rather rare, or if all kinds of magnetic 'globules' were represented. Should the latter be the case, it is easy to understand the size-distribution diagram which he presents. In an earlier paper (Nagy *et al.*[6]) we pointed out the differences which exist between the sizes and shapes of the magnetic particles. According to further investigations which we have carried out (unpublished results) these particles, even if one strictly separates the completely globular forms, do not show a uniform size distribution. On the other hand, if all kinds of magnetic particles are carefully measured and the elongated or more or less shapeless forms are also included, dependent on whether their longest or shortest measurement is taken, it is possible to construct histograms which have 2, 3, 4, 6 or even 8 peaks. This is just a question as to which measurements the investigator is inclined to use in constructing these curves.

The number of magnetite particles was reported by us (Nagy *et al.*[6]) to be approximately 7,000/mg of the meteorites belonging to Wiik's[7] type 1 carbonaceous chondrites. Prof. Mueller[2] gives a count which is approximately double the number of the organized elements. As the number of organized elements in 1 mg of meteorite is approximately 1,500, the number of the magnetic particles would be 3,000 according to Mueller. There is definitely a discrepancy between these two numbers, which again does not help to identify the granules that Mueller calls magnetite and represents in his histogram. The number of unquestionably spherical magnetite granules is only about one-seventh to one-eighth of the total number—again a much smaller number than would account for the number of magnetite granules possibly represented by Mueller.

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