

The Determination of the Specific Gravity of Mineral Fragments by Heavy Liquids

By R. P. D. GRAHAM

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It not infrequently happens that a determination of the specific gravity affords one of the readiest means of identifying a doubtful species, or of ascertaining its composition if it be an isomorphous mixture, such as a plagioclase feldspar. In many such cases, as for instance where minute feldspar crystals are distributed through a rock, it may be a long and tedious process to isolate, in a pure state, a sufficient quantity of material for the pycnometer, or any other method involving weighing, while the employment of such methods becomes impossible when only one or two minute crystals or fragments of the mineral are available. At such times, the employment of the heavy liquid method becomes advantageous or imperative. The usual procedure is to immerse one or more fragments of the mineral in the liquid or solution selected, add a suitable diluent to the latter until the mineral remains exactly in suspension, and then find the specific gravity of the liquid by introducing substances of progressively increasing or decreasing density from a standard set. As a rule, however, there are frequent wide gaps between successive indicators in such sets, and unless these can be bridged by additional test fragments, it becomes necessary if the result is to be at all accurate, to make an actual determination of the specific gravity of the heavy liquid by the Westphal balance or some other method.

To overcome this difficulty, Sollas¹ suggested the diffusion column, which he obtained by placing some methylene iodide in a tube, carefully adding benzene, and then allowing the mixture to stand for some time. In this way there results a column of liquid whose density increases in a uniform manner from the surface downward to the bottom. The desired specific gravity of any fragment is then found accurately from its position of suspension relative to the positions of two substances of known specific gravity, one lighter and the other heavier than the unknown.

The writer's experience with the diffusion column has not been altogether successful, and, in place of it, he has found the simple and rapid burette method described below to give good results.

¹ "Nature," February 26th, 1891.