forcing both fluids into the mixing chamber of one of the observing apparatus described above. It was found that the combination was a very rapid one, the reaction being complete in one hundredth part of a second at 10° C. At body temperature it is probable that the velocity would be even higher. This gives some idea of the intense rapidity with which oxygen entering the blood, as the latter passes through the lungs, becomes chemically combined with hæmoglobin. It seems to us possible that similar methods might be useful for determining the velocity of other rapid chemical reactions.

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February 7.

Stages of Golgi Bodies in Protozoa.

IN the *Anatomischer Anzeiger* (47 Band, 1914) Jan Hirschler, in his paper "Ueber Plasmastrukturen in den Tunicaten-, Spongien-, und Protozoenzellen," gives a description of the trophozoite of *Monocystis ascidiæ*, in which he figures Golgi bodies. This has never hitherto been confirmed, nor are any other stages known.

For some time we have been carrying out work on an Adelea, and after considerable difficulty succeeded in getting excellent preparations of the Golgi apparatus in many stages of the life cycle. In the accompanying illustration (Fig. 1) is the young

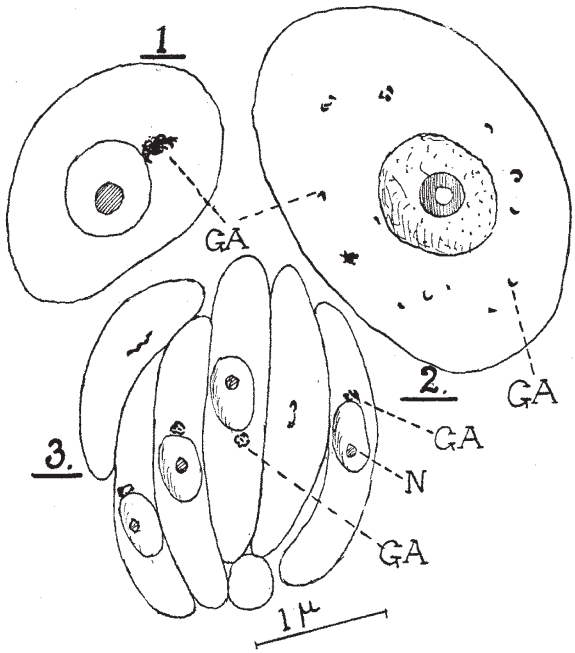

FIG. 1.

trophozoite showing an excentric and juxta-nuclear apparatus (GA); 2, the older trophozoite has a scattered apparatus, and in the "corps en barillet" stage in 3 the apparatus in each cell is again juxta-nuclear and excentric. The work is still proceeding in several species, and this is merely a preliminary announcement.

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Selective Interruption of Molecular Oscillation.

MR. FAIRBOURNE (NATURE, February 3, p. 149) has reopened a subject which I believed was certainly closed; but since the fallacy is practically the same as before, though a little less easy to detect, I feel that I cannot then have been sufficiently clear for him.

None of Mr. Fairbourne's arguments has yet disposed of the validity of the ordinary treatment to be found in any text-book on the kinetic theory; for the elementary kinetic treatment of gaseous pressure is independent of the diameters of the gas-molecules, and would be perfectly valid if they were, as for the first approximation they are assumed to be, particles of a finite mass but zero radius; in this case, however, the mean free path would be infinite at every pressure, so that Mr. Fairbourne has introduced no new factor by confining himself to the case of long free paths.

This being so, it is not to be expected that space can be found in these columns for a disproof of whatever inadequate alternative to the accepted methods of analysis may be brought up; but I suggest that in this particular case he has not proved that he has satisfied a condition which he admits is vital, namely, that the numbers of molecules crossing XY and AD *in unit time* must be shown to be not proportional to their lengths. Many of the "superfluous" molecules which ultimately cross XY spend first a long time in the cone; there is nothing in his treatment which prevents such molecules being counted a very large number of times, since all points on their long paths may equally be taken as centres of small spheres O. Mr. Fairbourne's treatment is inconvenient; but it is obvious, since it does not discount the classical method, that, if carried out correctly, even it would have given the classical result.

I have always maintained that the length of the mean free path is irrelevant; I observe that he now admits this ("Subsequent intermolecular collision in the cone cannot destroy the excessive downward bias," etc.). The inevitable conclusion, as I pointed out last July, is that the pressure is without any influence except on the *magnitude* of the effect. It being granted that the molecules do not interfere with one another in any relevant way, the effect must be directly proportional to their number, *i.e.* to the total pressure. At atmospheric pressure, therefore, perpetual motion should be an accepted phenomenon even if the effect were measurable only with ambiguity at the pressures used by Mr. Fairbourne.

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A Biochemical Discovery of the Ancient Babylonians.

AT a lecture given recently in Cambridge by Prof. Okey my attention was directed to a passage written by Galileo in 1623 in which this pioneer of scientific method attacks the doctrines of the classical philosophers with his usual irony and vehemence. I refer to a section of his "Il Saggiatore," in which Galileo replies to his contemporary Sarsi, who had quoted Suida to the effect that the Babylonians used to cook eggs in an emergency and when no fire was available, by rapidly whirling them in slings. ("Babylonii iniecta in fundas ova in orbem circumagentes, rudis et venatorii victus non ignari, sed iis rationibus quas solitudo postulat exercitati 'etiam crudum