often be distinguished in the region previously occupied by the apparatus. This diploid body occurring in the middle of the Golgi apparatus certainly has every appearance of being a true centrosome.

The apparatus of type 2 consists of twisted and branched rod-shaped elements which, in the oocytes surrounded by a single layered follicle, are chiefly at the animal pole of the cell, being scattered in the peripheral cytoplasm in this region and often partly aggregated into a loose irregular mass close to the nuclear membrane (Fig. 1, GA_2). The difference of position and shape in the oocytes at this stage between the two types of apparatus is very constant. Both these types of apparatus fragment and become scattered throughout the cell in the form of fine granules which impregnate with the silver.

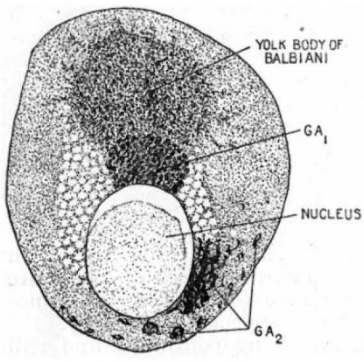

FIG. 1.

For some time after the apparatus of type 1 has fragmented, that of type 2 can be seen in intact pieces scattered in the peripheral cytoplasm. Indeed, it increases considerably in amount and becomes scattered throughout the entire periphery of the cell in the form of many small spherical or ovate reticular masses closely resembling those to be seen in the follicle cells. They have every appearance of being intruded into the oocyte from the follicle cells, it being possible to distinguish the various stages in the process: the apparatus in a follicle cell first enlarges somewhat, then breaks into two and passes through the membrane into the periphery of the egg, where it lies opposite the follicle cell (Fig. 2, GA_2,

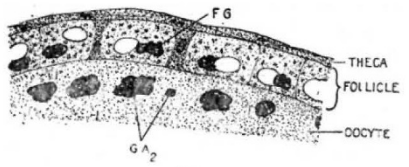

FIG. 2.

apparatus from follicle in oocyte; FG, Golgi apparatus in follicle cell). This process of intrusion ceases at the time when the follicle becomes many-layered, and by the time the zona pellucida has commenced to form, all the apparatus in the egg has fragmented.

At present I am driven to the conclusion that the apparatus of type 1 represents the true Golgi apparatus of the oocyte, and that that of type 2 has been intruded from the follicle cells. I hope shortly to publish a more complete account of my work.

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Sunshine and Health in Different Lands.

AT a time when the importance of sunlight—particularly of the ultra-violet constituent—to health is being emphasised by the medical faculty in Great Britain, perhaps it may be permitted to a layman, and climatologist, to point out that there is some need of co-ordinating the various aspects of a question which is not the same in all climates and thermal belts of the globe. A wealth of bio-climatic evidence indicates that it is possible to have too much, as well as too little, sunshine, and that there is such a thing, in the matter of sunshine as in other meteorological elements, as an optimum above which some countries rise, below which others fall, those most likely to hit the happy line lying between the 40th and 50th parallels of latitude. There is a widespread belief that in England we experience too little sunshine; but when it is considered that the climate of England takes a very high rank among the salubrious climates of the earth, it seems unlikely that the deficiency below the optimum of such a vital element as sunshine can be very serious, except, of course, in the smoke-laden industrial districts in winter, which are deprived of the allowance *natural to the climate at that season*.

To take another aspect of the question. We are insistently being told that direct sunshine exerts a powerful destructive effect upon germs of disease. Very well then! the fact must be co-ordinated with another fact, namely, that it is precisely in hot sunny climates that many species of pathogenic organism acquire such deadly virulence, particularly those which are correlated with the appalling fecundity of insect life in the tropics. It would appear a necessary deduction that the question of benefit from direct sunshine is so far subordinate that it must always be considered separately with respect to each of the great thermal belts of the globe which are determined by latitudinal variations in the intensity and duration of insolation, or sunshine, itself. In polar climates, for example, living organisms have to adapt themselves to a continuous winter night of several months, and the testimony of explorers is to the effect that these cold regions are intrinsically salubrious to man. Yet people in the great cities of England languish from light-starvation because during the short days of winter they are robbed by smoke of a certain natural allowance of sunlight, which in conjunction with the large summer allowance would be ample for the needs of health. Hence in the study of this sunlight element of climate, the importance of which is at last being fully realised, the best results are likely to accrue if a wide geographical point of view is adopted, to which the varying local aspects of the subject can be related.

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March 16.

Apparatus for measuring Photographic Densities.

IN NATURE of March 8, Dr. Slater Price refers to two new types of photometric density measurers. Therein he strongly advocates the use of a selenium cell for such purposes, rather than the photo-electric cell containing one of the alkali metals. Recently Dr. Toy and Mr. Rawling kindly allowed me to see their density measurer, referred to by Dr. Price, in which a selenium cell is used. After being accustomed to use a density measurer containing a photo-electric cell, which has perfect steadiness, and entire absence of lag, it was at once evident that the lag of the selenium cell is a most serious drawback, and makes accurate measurement both slower and more difficult.

In favour of the selenium cell it may be urged that it is readily obtainable commercially, whereas the photo-electric cell had—up to now—generally to be made by oneself in the laboratory. Also, that the selenium cell passes a larger current, and thus necessitates a less delicate galvanometer. As photo-electric cells are now to be made commercially, the first objection is removed. Secondly, if a quick-period electrometer is used with a high-resistance leak (pure xylene plus a few per cent of pure alcohol in a capillary