thariscope into a dark room he will notice that the first visible effect is a slight general luminosity when the visual gaze is directed down the optical centre of the little tube. If, however, the gaze is shifted to the side of the tube, the whole spinthariscopic display with its scintillating flashes becomes distinctly visible. On opening the door of the dark room and going into the daylight the subsidence of the central and peripheral responses can be followed, whilst on returning to the dark room the re-appearance, first peripheral and then central, can be observed with great distinctness. The essential difference between the light-adapted eye and the dark-adapted eye is thus readily demonstrable, and the rapidity, as well as the efficiency, of such adaptations can be easily followed if the eye is subjected to appropriate periods of darkness and of light.

It is evident that with such a minimal test the influence of a large number of other conditions may be investigated. Without going into these, I may mention one of considerable interest. If the observing eye is kept in the dark-adapted stage by means of a removable bandage, whilst the other eye is subjected to periods of darkness followed by daylight illumination, then the visible effects in the dark room still indicate modification. In my own case illumination of one eye causes a distinct lowering of the retinal excitability of the other one, this being especially characteristic of the peripheral region of the retina. In this connection it should be remembered that the pigment cells alter in the frog as the result of illumination, and that this alteration has been shown by Engelmann and v. Gendre to occur when, the eyes being kept dark, the skin of the frog is illuminated; one eye thus influences the other. The spinthariscope with its constant minimal excitation affords a means of demonstrating this consensual effect. It appears to me that with slight modifications the instrument may become of considerable clinical value. For clinical use it has the merit of being portable and easily used. It furnishes, with no apparent decrease through time, use, &c., a constant and continually recurring stimulus which is of threshold exciting value. It can be easily applied to either the central or peripheral portions of the visual field, and gives indications which are comparable with each other, and are only altered through alterations in retinal excitability. No doubt it can be modified in form so as to be still more useful from the clinical point of view, but even in the form in which, as a scientific toy, it is now presented, its use will show whether the central or peripheral retinal excitability is abnormal, and I anticipate that before any changes can be observed with the ophthalmoscope, it will be possible by its means to ascertain alterations in retinal excitability in the early stages of disease. FRANCIS GOTCH.

Physiological Laboratory, Oxford, June 10.

Solar Changes and Weather.

IN NATURE of June 8 (p. 129) Dr. Lockyer says:—"*Up to the present time*" (italics mine) "those who have been attempting to explain variations of weather on the supposition of solar changes have been looking for the effect of solar action as either increasing or decreasing simultaneously the rainfall over the whole earth."

This is, I think, somewhat inaccurate. The possibility of a given phase of solar change being causally related to opposite weather conditions in different regions has been recognised by many, if I mistake not, for a considerable time. I might instance M. Angot, who expressly affirms it in his "Traité de Météorologie," published a few years ago; and what he there says on the subject indicates a certain currency of the idea previously, of which (no doubt increasing) currency back volumes of NATURE and other serials give evidence. The idea of a barometric see-saw in Asiatic regions, connected with sun-spots, was discussed in NATURE so far back as the 'seventies, if I remember rightly. A. B. M.

WITH regard to Mr. A. B. M.'s remarks above, may I, in the first place, mention that I am familiar with some of the meteorological researches of such high authorities as Chambers, Meldrum, Blandford, Eliot, Hann, Angot, &c., but still there seems to be a tendency for the solar changes, that is, changes indicated by sun-spots, to be considered as affecting the whole earth simultaneously at any one epoch. It would have been more correct for me to have written "Up to the present time many of those who have, &c.," than "Up to the present time those who have, &c.," but at the time of writing I was considering more the generally conceived impression as to the relation between sun-spots and meteorological changes than the results of investigation of any particular region on the earth's surface.

To take a case in point, two years ago M. Charles Nordmann (*Comptes rendus*, vol. cxxxvi., p. 1047, May 4, 1903) communicated to the Paris Academy of Sciences a paper entitled "La Période des Taches solaires et les Variations des Températures moyennes annuelles de la Terre." This title implied that the solar changes were affecting the whole earth similarly, but the investigation was only restricted to the equatorial regions, where the conditions are most favourable for such an inquiry. Further, I am inclined to think that the result he obtained will be found to apply only to that portion of this equatorial belt lying between about longitude 40° E. and 140° E. The reason for this is that out of the thirteen stations in all which he employed, eight were included in this region (five stations of which were given double the weight of the others), and only five were situated in the other part of the belt. If it were possible to include more stations in the western hemisphere, the relation between temperature and sun-spots which he obtained might probably be reversed. WILLIAM J. S. LOCKYER.

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Fictitious Problems in Mathematics.

ON reference to § 156 of "Rigid Dynamics," it will be seen that the definition there given is identical with that contained in Dr. Routh's letter of May 25, with the exception that the words "When the bodies . . ." occur in my edition instead of "When bodies . . . ." No statement is made as to what is meant by saying that *a body* is perfectly rough, and it is against this latter mode of expression that my attack is directed. For this reason it may be maintained that the definition given in the book in which the problem occurs is inapplicable to the problem as at present worded. Otherwise we appear to be dealing with a plank such that in the given circumstances, one of which is resting on a smooth table, the amount of friction necessary to prevent sliding can certainly be called into play, and this is apparently inconsistent with Dr. Routh's interpretation.

I would challenge your correspondent, "An Average College Don," to point to any text-book containing an explicit definition of *a* perfectly rough *body* (not *bodies*); also *a* perfectly smooth *body*. If he succeeds, I anticipate no difficulty in furnishing him with examples of questions which are either inconsistent with his definition, are ambiguously worded, or are open to some equally serious objection. G. H. BRYAN.

History of a White Rhinoceros Skull.

THE interesting specimen of the skull of the white rhinoceros (*R. simus*) referred to by Prof. H. F. Osborn, of the American Museum of Natural History, New York, in NATURE of June 8 (p. 127), was, thanks to the kindness of Mr. Graham, carefully examined by me before its sale. Its chief interest lay in the fact that the horns had never been detached, and consequently showed the true position of the nasal horn in this species; it was at right angles to the downward sloping surface of the nasal bones, thus bringing it into a most efficient position for attack.

There is a fine skull of this species in which the horns have been placed in their true position; it is numbered 2154 in the osteological series of the Museum of the Royal College of Surgeons. The animal was shot by Gordon Cumming.

The length of the nasal horn is 860 mm. (34 inches).

C. STEWART.