

the slit, the sky spectrum, of course, shows the oxygen lines as absorption lines.

From the length of the emission lines as seen in my photographs with a straight slit tangential to the sun's limb, the greatest height reached by oxygen in the chromosphere is deduced to be 3.5"; but since the limb of the sun is probably a little distance from the slit at its nearest point (in order to avoid the risk of photospheric light entering the spectrograph) this is very likely an underestimate. In eclipse photographs, it is to be expected that the oxygen lines will extend to greater heights than this.

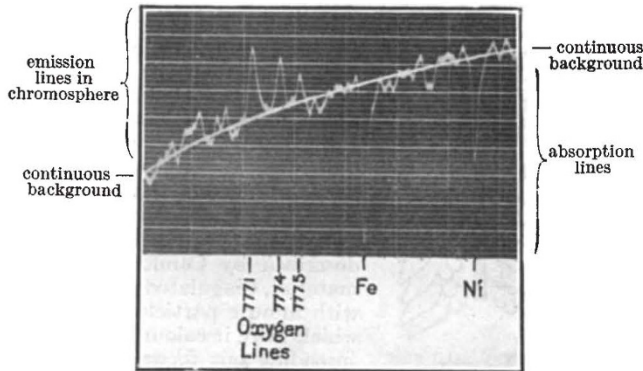


FIG. 1.

The presence of oxygen in the chromosphere, in addition to the previously known presence of H, He and Ca⁺, is of importance for the theory of support of the chromosphere. This question is more fully discussed, together with details of the observations, in *Kodaikanal Observatory Bulletin* No. 107 which will appear shortly.

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Aug. 29.

Records of Fatalities from Falling Meteorites

WITH reference to the remark in *NATURE* of July 27, p. 128, in a notice of Prof. Heide's "Kleine Meteoritenkunde" that "it is reassuring to find that there is no certain evidence of any person having been killed by a falling meteorite", may I direct attention to the following:

(1) Humboldt in his "Cosmos", vol. 1 (English translation by E. C. Otte. London, Bohn, 1849, p. 124), writes: "Several persons had been struck dead by stones falling from heaven, as for instance, a monk at Crema on September 4, 1511; another monk at Milan in 1650 and two Swedish sailors on board-ship in 1674".

(2) T. L. Phipson, in his "Meteors, Aerolites and Falling Stars" (p. 85) (London: Lovell Reeve, 1867), also mentions these incidents and describes particularly the Crema incident at great length, as the result of a meteoric shower, citing "The Commentary" of Surlius, a Carthusian monk of Cologne, "De Rerum Varietate" of Jerome Cardan, and "Opus Epistoliarum" of Petrus Martyr; and adds that "birds, sheep and even some fish were killed by the shower".

Prof. H. H. Nininger, secretary of the Society for Research on Meteorites, in his book "Our Stone-pelted Planet" (The Riverside Press, Cambridge,

U.S.A., 1933), chapter xvii, "Danger from Falling Meteorites", refers to a man being wounded by the fall of a meteorite at Mhow, U.P., India, on February 16, 1827, and to another being stunned by the concussion from a meteorite which fell at Nedagolla, Madras, on January 23, 1870. The cases cited by Humboldt are not mentioned in this book, possibly because no specimens from these falls are preserved or are identifiable at present.

Ward's Bulletin (vol. 3, Nos. 1 and 2, October and December 1934, Rochester, U.S.A.) invited correspondence on the subject of 'homicidal' and 'man-killing' meteorites, but the accounts of alleged recent incidents received from correspondents either did not stand the test of accurate inquiry or were much too vague to call for an investigation.

There are several accounts of narrow escapes, some of which are mentioned in Nininger's book above referred to. I may mention one from the shower of September 29, 1928, near Naoki, Hyderabad, Deccan, described in the *Journal of the Osmania University College, Hyderabad*, vol. 1, No. 2; 1934, in which an aerolite is reported to have fallen "only twelve paces" from a shepherd at Kawagam.

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Most of the cases referred to in the above letter are mentioned in Prof. Heide's book along with several others; unless the two Indian cases quoted by Mr. Khan are better substantiated than the others I must prefer to accept Prof. Heide's statement that "noch kein einziger, sicher beglaubigter Fall ist vorgekommen, dass ein Mensch von einem Meteoriten erschlagen oder verletzt worden ist".

THE WRITER OF THE REVIEW.

Social Science Investigation

CERTAIN difficulties with regard to investigation in the social sciences are discussed in the leading article in *NATURE* of September 14. May I point out that perhaps these are not so great as at first sight appears?

In the first place, the difficulty of social experiments is largely overcome by legislation. An Act of Parliament concerning some social problem is in the nature of an experiment in dealing with it: it is the application of forces derived from the State designed to act on a particular part of society in certain ways more or less defined according to the terms of the Act. A certain amount of control also is not altogether lacking. Knowledge is obtainable as to the condition of the part of society affected before the operation of the Act, and it is obtainable also during and after its operation over any desired period; while the changes which are thus disclosed may frequently be connected with the Act in the relationship of cause and effect. Further information, too, is to be had in many cases where legislation on similar lines has taken place in our own past history, or in the history of other countries, and something may be learned regarding the effects produced in such cases.

We may take it as tolerably certain, however, that the changes effected in society by an Act of