

Spencer, director of the mineralogical department of the British Museum, in 1904.

GEORGE F. KUNZ

Optic Projection. Principles, Installation and Use of the Magic Lantern, Projection Microscope, Reflecting Lantern and Moving Picture Machine. By SIMON HENRY GAGE and HENRY PHELPS GAGE. The Comstock Press, Ithaca. 1914. Pp. 731. \$3.00.

Professor Gage and his son, Dr. Gage, have written a timely and compendious treatment of optical projection that will be heartily welcomed by all who are interested in the subject. Such recent developments of the art of projection as cinematography and opaque projection are discussed at length, while the older ordinary forms of projection are not neglected.

The titles of the fifteen chapters are, in order: Magic Lantern with Direct Circuit; Magic Lantern with Alternating Current; Magic Lantern for Use on the House Electric Lighting System; Magic Lantern with the Lime Light; Magic Lantern with Petroleum Lamp, with Gas, Acetylene and Alcohol Lamps; Magic Lantern with Sunlight, Heliostats; Projection of Images of Opaque Objects; Preparation of Lantern Slides; The Projection Microscope; Drawing and Photography with Projection Apparatus; Moving Pictures; Projection Rooms and Screens; Electric Currents and their Measurement, Arc Lamps, Wiring and Control, Candle Power of Arc Lamps for Projection; Optics of Projection; Uses of Projection in Physics, Normal and Defective Vision. In addition there is given a historical outline of the origin and development of projection apparatus, a list of manufacturers of and dealers in projection apparatus, a bibliography and an index of both names and subjects. There are 413 cuts and diagrams.

The authors state that their aim has been to explain the underlying principles upon which the art of projection depends and to give such simple and explicit directions that any intelligent person can succeed in all the fields of projection. The point of view throughout is that of the skilled amateur. To the professional operator the treatment will appear academic, to the theorist it will appear very prac-

tical, but all will agree that it covers the middle ground clearly and exhaustively.

P. G. NUTTING

*THE METEOROLOGY OF ADELIE LAND,
ANTARCTICA*

THE climatic facts set forth by Sir Douglas Mawson in his interesting volumes, "The Home of the Blizzard," reviewed last week in SCIENCE, justify his claim that it is the stormiest spot on the face of the earth. Although the data as to the weather are desultory and incomplete, except as to the winds, yet a brief survey of this newly discovered land is of scientific interest. Fortunately the expedition was equipped with recording instruments for barometer, sunshine, temperature, wind, etc., so that data exist for full and satisfactory discussion of local meteorology in the promised scientific volumes. Observations were made at the main base, Commonwealth Bay, 67° S., 133° E., and by the sledging parties through King George Land.

No table of monthly means of any kind are given, but it is stated that the mean temperature for the first year was slightly above zero. This is an exceedingly low temperature for the latitude, 67° S. It is, however, not a local cold of radiation, but a cold of translation through the continuous and violent downflow of air from the elevated plateaus of Antarctica, 11,000 feet or more above sea level. The sharp pitch of the land is shown by the rise of 1,900 feet in fourteen and a half miles from the sea. The temperatures were never exceeding low, but were steadily maintained. The minimum temperature at the seacoast was only —28°, and the lowest observed on the ice-cap of the hinterland during the spring sledging was —35°; on September 18, 1912.

From a shaft excavated in the nevé of the hinterland, at an elevation of 2,900 feet, Bage calculated that the mean temperature of the snow, which would be higher than the air, for the year was approximately —16°. It would not be unreasonable from these data to place the mean annual temperature of the southern polar plateau at —40°. The contrast between temperatures during high winds and in pe-