ing changes in the illuminating power of the flame being balanced against an electric lamp worked under constant conditions. The results are summarised in two formulæ, for the Harcourt and Hefner lamps respectively, showing the actual light of the lamp, expressed in terms of the light under normal conditions, the pressure, and the existing percentages of carbon dioxide and aqueous vapour in the air. A few experiments were also carried out on the effect of variations in the atmospheric conditions on the light of gas and candle flames. It was found that the changes were in the same direction, and approximately of the same order, as those of the Harcourt standard, and the conclusion is drawn that small variations in the atmospheric conditions of a gas testing room will not appreciably affect the results of photometric comparisons in which the Harcourt or Hefner lamp is used as the standard of light, and that these standards will give as accurate results as are anyhow practically obtainable in determinations of the illuminating power of gas, if they are used in all ordinary circumstances without correction for any divergence from normal atmospheric conditions.

WITH reference to a statement to be found in our issue of May 25 (p. 412) in a review of "Salvarsan or 606 (Dioxy-Diamino-Arsenobenzol): its Chemistry, Pharmacy, and Therapeutics," by Dr. W. H. Martindale and W. W. Westcott, in which trypan red is named as a remedy for bovine piroplasmosis (Texas fever), a correspondent resident in Australia has written to ask where the drug can be obtained, its price, and any literature concerning it. In reply, we would point out that the reference to "trypan red" was made in error (see correction on p. 526 of NATURE for June 15); the drug for the treatment of piroplasmosis is "trypan blue," particulars as to the cost of which can probably be obtained from such a firm as E. Merck, 16 Jewry Street, London, E.C. The remedy is discussed by Nuttall and Hadwen in *Parasitology* for 1909. We are informed that *large* doses of quinine have also been found to exert a curative action on bovine piroplasmosis in Malaya and Guatemala.

OUR ASTRONOMICAL COLUMN.

THE SPECTRUM OF KIESS'S COMET.—With spectrographs attached to the equatorial of the Juvisy Observatory, MM. de la Baume Pluvinel and Baldet secured photographs of the spectrum of comet 1911*b*, which they discuss in a paper published in No. 8 of the *Comptes rendus* (August 21). On their best photograph, the two bright bands at λ 4735 and λ 3882 are accompanied by many fainter bands, which present one or two noteworthy features. Three feeble condensations at λλ 3914, 4005, and 4026 are apparently only in the tail; they probably correspond with the λ 3914 of the kathode spectrum of nitrogen and with the doublet (λ 4003 and λ 4023) given by Fowler. While agreeing with the majority of cometary spectra, that of comet 1911*b* is different in many respects from those of several recent comets. For instance, the great comet 1910*a* showed a most intense continuous spectrum, of which there is very little in the radiations from the Kiess comet. Again, in Morehouse's comet the doublets traced by Fowler were common to the nucleus and the tail; here they are peculiar to the tail. To explain this, the authors suggest that in the former case the decomposition of the cyanogen was very active, and so one got the products of the decomposition surrounding the nucleus; but in the case of comet 1911*b* the activity was not so great, and the cyanogen was not sufficiently decomposed until it had been repelled from the nucleus into the tail.

THE ZODIACAL LIGHT.—In No. 4520 of the *Astronomische Nachrichten* Herr Josef Sedláček describes the Zodiacal Light as observed at the Neuschloss in Steiermark Observatory during January and February. At 7h. 15m. (M.E.T.) on January 18 the light was about twice as bright as the brightest part of the Milky Way, and the cone reached up some 49·5° from the horizon; its colour was reddish. On other nights it was noted that the brightness of the light fluctuated considerably with intervals of 1·0 to 1·5 minutes.

METEORITE FINDS.—Publication 145 of the Field Museum of Natural History is devoted to a description, by Mr. O. C. Farrington, of some recent additions of meteorites to the museum of which he is curator.

The Leighton meteorite is a stone weighing about 30 oz. and having a length of 4 inches; it has a very marked brecciated appearance, and contains small grains of nickel-iron. This stone fell on January 12, 1907, at a place eight miles south of Leighton, Colbert County, Alabama.

The Quinn Canyon meteorite, found in August, 1908, in Nevada, is a much larger specimen, and is one of the large iron meteorites of the world. The longest diameter of its oval face is 47 inches, with a diameter at right angles to this of 35 inches, and a circumference of 132 inches; its weight is 3275 lb. In addition to numerous knobs, pittings, furrows, and cylindrical holes all over the iron, the bottom of the meteorite shows two patches of crust of black magnetic iron oxide. These patches are each about 1 inch square, and the oxide adheres so firmly that it can only be detached by the use of a cold chisel and hammer. An analysis shows that the meteorite contains about 91·6 per cent. of iron and about 7·3 per cent. of nickel, and very fine etching figures have been produced. It is supposed to have fallen in a recorded fall which occurred on February 1, 1894.

Mr. Farrington also gives an interesting list of recorded falls since the year 1800, and accepts 331 as properly authenticated. He also analyses the records in months, and finds that May and June show the greatest numbers of falls; November falls below, and August slightly exceeds, the average number. He also gives a complete list of the known falls that have taken place in the United States, with brief particulars of each.

THE LEEDS ASTRONOMICAL SOCIETY.—No. 18 of the Journal and Transactions of the Leeds Astronomical Society contains the report for the year 1910, and also some of the papers read during the session. Of these, several deal with comets; and there is an interesting paper by Mr. Whitmell dealing with lunar eclipses, in which historical eclipses and various features producing and attending eclipses are lucidly described.

AN OPEN-AIR TELESCOPE.—A project for a large, long-focus telescope is described by Prof. Todd in No. 187, vol. xxxii., of *The American Journal of Science*. In order to obtain great size at relatively low cost, Prof. Todd proposes to do away with the costly dome and use the telescope in the open air. At present he describes an altazimuth mounting in which the azimuth motion would be secured by a revolving vertical shaft working on rollers. To secure the easy working of this he proposes to take up most of the weight by flotation with an arrangement whereby the telescope could be clamped in a "safe" position, when not in use, by pumping out part of the supporting liquid. The tube would be built on the cantilever principle, of angle steel, and would be supported in the middle. He estimates that a 60-inch objective would cost about 125,000 dollars, and such a mounting as is proposed would probably cost a like amount. Instead of observing chair, rising floor, &c., he proposes to carry the observer in a light carriage attached to the revolving tailpiece of the telescope, and he discusses the practicability of erecting such an instrument at some such altitude as that of Fuji-yama in Japan (12,400 feet).

LUMINOUS METEOR TRAINS.—Some further work on the origin of luminous and persistent meteor trains is described by Dr. Trowbridge in *The Popular Science Monthly* for August. Dr. Trowbridge has been able to reproduce the phenomena by causing gases at very low pressure to phosphoresce, and he suggests that in the upper air, generally at about fifty or sixty miles' altitude, the conditions are favourable for this action, the phosphorescence being produced by ionisation caused by weak electric currents or intense temperature generated by the meteor's flight.

THE OXFORD UNIVERSITY OBSERVATORY.—Further evidence as to the energy and versatility characteristic of the Oxford University Observatory is forthcoming in the

pile of abstracts and papers just received from them. These form part of the volumes issued under the title of "Miscellaneous Papers of the University Observatory, Oxford," and include important papers on the measurement of star photographs, eclipse work, variable star discussions, and mathematical astronomy.

In his report of the work during the year ended April 30, Prof. Turner states that the work of replacing defective plates in zone 25° (the last Oxford zone) was completed, and the volume of measures ready for immediate publication. The question of making differential measures by photographic means of the places of the reference stars has long been under consideration, and an apparently satisfactory method is to be given an extensive trial.

METEOROLOGICAL REPORTS AND YEAR-BOOKS.

VIENNA Central Meteorological Office (1908).—The forty-fifth year-book (new series) of this important service appears in the same form as heretofore; it includes daily observations and monthly and yearly results in the international form for a number of stations, hourly observations for Vienna, and temperature and rainfall observations at other stations. Purely rainfall statistics are published by the Hydrographic Office, and observations in Hungary and elsewhere are also separately published. Observations of the upper air are actively carried on by manned and registering balloons. Weather forecasts were sent free to all post and telegraphic offices between April and November, in addition to the daily publications of the usual weather report (with chart). A separate appendix issued with this volume contains the results of thunderstorm observations in Lower Austria in 1902–5, by Dr. A. Defant. These include two maps showing the districts of the first appearance and final disappearance of the storms. The greater elevations of ground are seen to offer favourable conditions for the formation of the storms, and to promote their development in a remarkable manner. Very few storms originate in the more level districts; these check their development, and become the places of dissolution of the storms which approach from other parts.

Meteorological Office (1910).—Summaries of the results have been published of the geophysical and meteorological observations in continuation of the reports of the observatory department of the National Physical Laboratory, in accordance with arrangements made between H.M. Treasury and other authorities. The tables in this volume are given in the usual form, and include observations for Eskdalemuir, magnetic results for Falmouth and Valencia, and the customary table of recent magnetic values for observatories in all parts of the world. In the year 1911 Eskdalemuir will replace Kew with regard to magnetic observations. The following data for Kew are extracted from interesting notes drawn up by Dr. C. Chree:—mean westerly declination, 16° 3·2′; inclination, 66° 58·7′; horizontal force, 0·18503. Solar radiation observations with an Ångström pyrheliometer made between 11h. 30m. a.m. and 12h. 30m. p.m., expressed in gram-calories per square centimetre per minute, ranged from 1·105 in August to 0·575 in December; the absolute values were 1·296 in May and 0·484 in December The largest seismograph disturbances occurred on January 22, amplitude (E.-W. displacement)>17 mm.; June 24, 11 mm., and December 13, 7·5 mm. Dr. Shaw states that the considerations of the most suitable forms for the future publication of the results obtained at the associated observatories, in view of international relationships, is now occupying attention.

Liverpool Observatory (1910).—The report of this valuable institution, maintained in great efficiency by the Mersey Docks and Harbour Board, appears in the same form as in previous years (NATURE, October 27, 1910). The annual means of the principal meteorological elements were practically normal; absolute maximum temperature, 77·3° in June (11·8° below the highest record); minimum, −5·9° in January (7·2° above the lowest record). An interesting experiment was made in the autumn, in connection with the determination of time, by observing the signals sent out by radio-telegraphy from the Eiffel Tower and from the German station at Merddeich; the signals were received at Waterloo station with great clearness. The amplitudes and other details of the seismological disturbances of January 22, June 24, and December 13 agree closely with those recorded at Kew; in the first case the amplitude exceeded the width of the paper.

Norwegian Meteorological Institute (1910).—These valuable observations are published in two volumes, as in previous years:—(1) the year-book containing daily observations with monthly and yearly summaries according to the international scheme, and hourly readings for Christiania; (2) daily amounts of rain and snow with summaries, and normal percentages for as many years as are available. This volume is accompanied by maps showing the annual isohyets for each 200 mm. These give a clear idea of the great variation according to geographical position (see NATURE, July 28, 1910) which it is difficult otherwise to obtain from the great mass of tables. They clearly show the influence of the rain-bringing winds of the Atlantic, and of the configuration of the land. One of the tables, giving the values at selected stations in 1910 in percentages of the normal amounts, shows yearly differences ranging from 59 to 169 per cent. of the normal. We have also received a "summary of air-temperature and rainfall for 1909" in a very handy form, being an excerpt from a periodical publication.

Toronto Observatory (1909).—The results of this valuable series of meteorological observations are given for each month and the year, together with the average for the past seventy years: mean temperature, January, 1909, 26·5°; July, 67·8°; year, 45·9° (average, 45·1°); absolute maximum, 95·8°, in August (highest on record, 99·2°); minimum, −8·7°, on February 1 (lowest on record, −26·5°). Depth of snow, 69·1 inches (mean 66·0 inches); rainfall, 26·01 inches (mean, 26·86 inches). The sunshine during the year was 2068 hours, 44 per cent. of the possible amount. Mean westerly declination was 6° 59·4′; inclination, 74° 37·5′; horizontal force, 0·162988 dyne.

Bremen Observatory (1910).—The observations are published in the same form as in previous years (NATURE, October 27, 1910) as one of the valuable series of German meteorological year-books; it contains, in addition, results for the lustrum 1906–10, and for the thirty-five years 1876–1910, with hourly means for twenty years. The following data are for the 35-year period:—mean temperature: year, 47·7°; January, 32·9°; July, 62·6°; mean of absolute maxima for July, 82·9°; of minima for January, 11·3°. Rainfall: annual amount, 27·23 inches; maximum in twenty-four hours, 3·39 inches. Results of observations with pilot balloons are exchanged daily by telegraph with the aëronautical observatory at Lindenberg.

THE AMERICAN INDIAN LANGUAGES.

THE admirable volume referred to below[1] forms the first portion of a systematic account of the American Indian languages. It has been in preparation for many years, and has grown out of an attempt to prepare a revised edition of Major J. W. Powell's "Introduction to the Study of Indian Languages." The filling of the schedules contained in the "introduction" caused an accumulation of much linguistic material without throwing much light upon the morphology, the phonetics, or the psychological basis of the languages. In this new work special emphasis is placed upon the importance of an analytical study of the languages. The work has been rendered possible by the cooperation of numerous investigators under the auspices of various institutions, particularly the American Museum of Natural History and the University of California.

The subject is introduced by Dr. Franz Boas in a very able exposition of the principles of linguistics as applied to ethnological problems. Though written with especial reference to the problems of American ethnology, this will be found of much value to the general student. In dealing with the three factors of physical type, language, and

1 "Handbook of American Indian Languages." By F. Boas. Part i. Pp. vii+1069. (Washington: Government Printing Office, 1911.) (Smithsonian Institution, Bureau of American Ethnology, Bulletin No. 40.)