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ness are used in mounting objects for projection purposes, so that the projector may be brought to the proper focus with the least possible delay.

To secure the best results it is evident that the rotary stage must be accurately and rigidly built, in order to secure precise double centering of the object, and freedom from vibration.

AMON B. PLOWMAN.

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HELIUM IN NATURAL GAS.

SOME three years ago a strong flow of natural gas was struck at Dexter, Kans. Upon the first attempt to utilize this, it was found that it would burn with difficulty and that only in previously heated enclosed space. Experience has so far improved the method of handling the gas that at the present time it is being successfully used for burning brick. The whole difficulty is due to the fact that it contains only a little over fifteen per cent. of combustible constituents. The first publication upon this gas was a paper by Haworth and McFarland, *SCIENCE*, Vol. 21, p. 191, in which they reported that it contained in addition to a large amount of nitrogen some inert residue.

We have taken up the further investigation of this gas and at the New Orleans meeting of the association Dr. E. H. S. Bailey reported for us that it contained 1.84 per cent. of helium. The occurrence of such a large percentage of helium in one of the gases of the Kansas field has led us to the examination of others. Up to the present time we have investigated some twenty samples from the most widely separated points of this field and have found helium in every case, but always in much smaller amounts than at Dexter. From the latter gas, we have with the aid of liquid air extracted a very fair amount of helium.

Accompanying the determination of helium, we are making complete analyses of the gases and shall have within a short time results from thirty to forty samples covering in detail the entire Kansas field as at present developed—an area of some twelve thousand square miles. The rather large number of analyses is re-

quired because the gas is extremely varied in its character. This is illustrated by the fact that the wells at Arkansas City, less than twenty miles from Dexter, yield more than 97 per cent. of combustible gases and only .16 per cent. of helium as compared with 15 per cent. and 1.84 per cent., respectively, for these constituents in the Dexter gas. Samples are also being obtained from the other fields of the country and the results from these will be included in a detailed paper to be published soon.

As the gases are run through the analyses spectral tubes are filled, and various residues and fractions are saved with the intention of subjecting them to a detailed spectroscopic examination. Some work of this kind has already been done.

We feel that we have here a very unusual opportunity for obtaining helium in practically unlimited quantities, and as we have worked out the details for its separation we shall have a large amount prepared and will attempt its liquefaction. While the necessary preparations are in progress we shall devote ourselves to the spectroscopic work above mentioned.

HAMILTON P. CADY,

DAVID F. MCFARLAND.

THE UNIVERSITY OF KANSAS, LAWRENCE,

July 12, 1906.

CURRENT NOTES ON METEOROLOGY.

DR. HANN AND THE 'METEOROLOGISCHE ZEITSCHRIFT.'

THE fortieth anniversary of Dr. Hann's assumption of the editorship of the *Meteorologische Zeitschrift* was fittingly observed by the publication of a special number of that excellent journal, to which friends and colleagues contributed articles. The 'Hann-Band' numbers 404 pages; contains 42 papers by as many different writers, and has as a frontispiece an engraved portrait of Dr. Hann. An appropriate introduction, by Pernter and Hellmann, refers to the remarkable work which Hann has done for his science in the *Zeitschrift*. Among the papers, all of which are of immediate importance, the following are of most general interest: Paul Schreiber:

'Untersuchung über die Genauigkeit der Tages-, Monats- und Jahresmittel aus den Temperaturbeobachtungen für die drei Stunden-Kombinationen: 6 A.M.-2 P.M.-10 P.M.; 8 A.M.-2 P.M.-8 P.M.; 7 A.M.-2 P.M.-9 P.M.' Dr. Schreiber is at the head of the Meteorological Institute of Saxony, and is well known through his accurate statistical work there. H. H. Hildebrandsson: 'Sur la Circulation des Couches supérieures de l'Air au dessus du Maximum de l'Atlantique Nord.' Dr. Hildebrandsson, as is known to readers of these notes, has lately advanced a new view of the general circulation of the atmosphere, and all his contributions to this subject are of peculiar interest. A. Woeikof: 'Die Verteilung und Akkumulation der Wärme in den Festländern und Gewässern der Erde.' Woeikof has given special attention to the larger relations of land and water and climate; this is a study in this connection. W. N. Shaw: 'The Law of Sequence in the Yield of Wheat for Eastern England, 1885-1904.' In this paper the director of the British Meteorological Office gives the results of his recent studies into the relations of weather and the wheat crop in England. L. Teisserenc de Bort: 'Sur la Circulation générale de l'Atmosphère,' an investigation of the relations between temperature and pressure at sea-level and in the free air. Cleveland Abbe: 'The Trade Winds and the Doldrums,' being notes on observations made by Professor Abbe during a voyage in the U. S. S. *Pensacola* in October, 1889, and May, 1890. A. L. Rotch and L. Teisserenc de Bort: 'The Meteorological Conditions above the Tropical North Atlantic,' dealing with results already summarized in these notes.

ANTI-TRADES IN CENTRAL AMERICA AND THE WEST INDIES.

A BELATED note on the drift of the upper air currents as shown by the carriage of smoke and ashes during the volcanic eruptions of 1902-3 in the West Indies and Central America is found in the *Meteorologische Zeitschrift* for July. The writer, Dr. K. Sapper, points out that but little attention has yet been paid to this subject. The anti-

trade in the West Indies was clearly evidenced by the drift of smoke and ashes from St. Vincent and from Mont Pelée. The altitude of this upper current is not great, but was not accurately determined. In Central America the anti-trade seems to occur, if at all, at very great altitudes. Observations of the drift of smoke and ashes at heights of 7,000 to 8,000 meters above sea-level showed a movement towards the west or north-northwest. There was a slight carriage of ashes in an easterly direction, but of no considerable importance. The famous eruption of Coseguina, in 1835, showed that in southern Central America, at any rate, the anti-trade blows from west-southwest. Ashes fell in Jamaica. Smaller eruptions of other volcanoes in 1880, 1864, 1828 and 1833 showed a westward drift of the upper currents.

RAINFALL, TEMPERATURE AND TREE GROWTH.

IN the *Bulletin of the American Geographical Society* for July, Mr. Henry Gannett discusses 'Certain Relations of Rainfall and Temperature to Tree Growth' in the western United States. He finds that the timber-line has a mean annual temperature of approximately 30°, but the data relating to rainfall are more definite and more significant than those of temperature. It appears that the lower limit of the yellow pine is at or just below 20 inches of rainfall. The lower limit of the red fir is at or about 30 inches, and there is apparently no upper limit, the fir being abundant where the rainfall exceeds 100 inches a year. The redwood belt in California includes only one station with a rainfall less than 30 inches. This seems to show that the isohyetal line of 30 inches is the lower limit of this species.

CUMULUS CLOUDS OVER THE SAN FRANCISCO FIRE.

WE have seen but one notice of the development of cumulus clouds over the fire which followed the San Francisco earthquake. This is in a letter from Mr. Charles Van Norden (*Nature*, Vol. 74, 1906, p. 133), who observed the conflagration from the deck of a ferry boat. A white cumulus cloud was seen, dark

at the bottom, hanging over the city. The morning was clear and mild, and no other cloud was in sight. Cumulus clouds over fires have frequently been observed, and they have several times received mention in these columns (see SCIENCE, V., N. S., 1897, 60-61, for a good illustration of a cumulus cloud thus formed).

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*PROPOSED UNION OF MEDICAL SOCIETIES
IN LONDON.¹*

A MEETING of the General Committee of Representatives of Medical Societies in London was held on July 17 to consider the report of the organizing committee.

Sir William Church, who was in the chair, pointed out that at the first meeting of the members of societies, which was held at the Royal College of Physicians in 1905, the feasibility of union was considered, and that as the outcome of the opinions expressed at that meeting a committee of representatives of the various societies was appointed. The committee of representatives appointed an executive committee to go more thoroughly into the feasibility of union and to outline some scheme of union if such were thought possible. This executive committee reported that a union was feasible on certain lines, and its report was confirmed by the committee of representatives on July 19, 1905. With that report the executive committee's work came to an end, and an organizing committee was appointed to draw up a definite and, as far as possible, a detailed scheme of union. This scheme was before the meeting, and if approved would be sent to the societies to act upon or not as they thought fit. Those societies which approved of the report and decided to join the proposed union would be asked to appoint a representative before December 7 next to sit upon a committee which would act as the first council of the new society and deal with the necessary details of amalgamation.

The report recommended that all male members of those societies which took part in the amalgamation should be permitted to join the

new society on its formation as members or fellows without election, and that all women members of a society taking part in the amalgamation should become members of the corresponding section or sections of the new society. It was further recommended that the society should consist of the following sections which represented existing societies, but that the new society should have power to add new sections:

1. Anæsthetic.
2. Balneological and Climatological.
3. Clinical.
4. Dermatological.
5. Diseases of Children.
6. Electro-Therapeutical.
7. Epidemiological.
8. Laryngological.
9. Life Insurance.
10. Medical.
11. Neurological.
12. Obstetrical and Gynæcological.
13. Odontological.
14. Ophthalmological.
15. Otological.
16. Pathological.
17. Surgical.
18. Therapeutical.

It was hoped that in the early future an anatomical and physiological section and a section of preventive medicine might be formed. The Medico-Psychological Association and Medico-Legal Society hoped to join the new society at some future date. It was recommended that each section should be self-governing as far as possible, and should have direct representatives on the council of the society and on the editorial committee, but that its expenditure should be subject to the control of the finance committee of the general council. The general management of the society would be under the control of a general council consisting of the president, the presidents of the various sections, two treasurers, two librarians, two secretaries and eight other fellows.

CHEAPER LIQUID AIR.

ACCORDING to a consular report recent experiments in England of an invention by Mr. Knudsen, a Dane, furnished liquid air at

¹ From *The British Medical Journal*.