CONCLUSION.

The report concludes with a review of the development of agriculture and commerce during the past twenty years, and of the contributions by the Department of Agriculture to the progress of events and the building up of domestic and foreign trade. The Secretary says that coincident with this growth numerous institutions have grown up in this country and abroad, devoted to the application of science to the service of agriculture, thus creating a great demand, at good salaries, for the right sort of men. Each nation is seeking to extend its productions, and is depending more and more upon the aid of science. Men combining knowledge with practical experience and ability are hard to get, and hence the Department has to face the necessity of paying much higher salaries, or of being compelled to either lose opportunities of getting the best men or to lose some of those who, under its training, have developed such qualities as make them exceptionally valuable.

He concludes by saying that he would urge upon Congress, in the strongest terms and for the best interest of the country, such liberality as will enable him to obtain and retain the best men that can be found to fill the important places at his disposal.

MEMBERSHIP OF THE AMERICAN ASSOCIATION.

THE following have completed their membership in the American Association for the Advancement of Science during the month of November:

Samuel L. Bigelow, Ph.D., Asst. Prof. Chemistry, University of Michigan, Ann Harbor, Mich.

Thos. A. Chittenden, Instr. in Mechanical Engineering, A. & M. College, W. Raleigh, N. C.

Patrick B. Delany, Electrician, Inventor, South Orange, N. J.

Wm. Fox, Asst. Prof. Physics, The College of the City of New York, New York, N. Y.

Manuel R. Gutierrez, Prof. Physics, Normal School, Calle de las Victimas, No. 1, Jalapa, Vera Cruz, Mex.

John J. Hollister, Mining Engineer, Gaviota, Santa Barbara Co., Cal.

John W. Leonard, Author-Lawyer, Wheaton, Ill.

Wm. L. Martin, Augusta, Ga.

George H. Maxwell, Chairman, Natl. Irrigation Ass'n, 1827 Phelps Place, Washington, D. C.

Charles P. Nott, Palo Alto, Cal.

C. Howard Parmly, Asst. Prof. Physics, The College of the City of New York, New York, N. Y.

Wm. B. Potter, Ch. Eng. Ry. Dept. G. E. C., Gen. Elec. Co., Schenectady, N. Y.

Ferdinand A. Schiertz, Rosario Mines Ltd., Guadalupe y Calvo, Chihuahua, Mexico.

Solon Shedd, Prof. Geology and Mining, State Agric. College, Pullman, Wash.

Dr. Edw. G. Spaulding, Instr. Philosophy, The College of the City of New York, New York, N. Y.

Dr. Edw. W. Taylor, Instr. Neuropathology, Harvard Medical School, Boston, Mass.

Jos. B. Tyrrell, Mining Engineer, 181 Metcalfe St., Ottawa, Canada.

SCIENTIFIC BOOKS.

Practical X-Ray Work. By FRANK T. EDDYMAN, B.Sc. (Lond.), F. I. C. London, Scott, Greenwood & Co.; New York, D. Van Nostrand Company. Price, $4.00.

This little book, as the name indicates, seems to be a thoroughly practical guide for the beginner in X-ray work. As would be expected, the scientific knowledge to be gained by even a careful study of the treatise must be almost entirely empirical. The scope and purpose of such a book quite preclude treating the physics of the subject in any but a statement-of-fact way.

The work is divided logically into three parts; the first part, wisely brief, treats of the history of the development of X-ray practice; the second, of the apparatus and of its management; the third, of practical X-ray work.

It is to be noted that Mr. Eddyman is a physicist and presumably trained in the science of the subject; also that he has charge of the radiographic work in a large hospital, and so has had ample experience in the practical application of X-ray diagnosis in surgical and medical cases. Such a combination is almost necessary if one is to prepare a book of real value on this subject. The author seems to have succeeded admirably, giving only enough of the pure physics to make the application of it intelligible, and

going into the detail of manipulation with great care and thoroughness.

In Chapter II., dealing with sources of electricity, somewhat more space than is necessary seems to be given to primary batteries, since in this country at least such sources of current are seldom if ever found desirable. The use of the alternating-current supply is discouraged rather briefly (p. 42) when we consider that a motor-generator is known to be a very convenient and efficient method of deriving a low-voltage direct current from a higher-voltage alternating source.

A very important point in the design of contact breaks is emphatically presented (p. 66) and exceedingly well explained. It is very desirable that the duration of 'make' be long as compared with the time of 'break'; thus an interval is allowed long enough for the current to reach a maximum value before it is interrupted. Makers quite often pay too little attention to this, and writers frequently ignore it altogether.

The classification of breaks (p. 66) should, in the writer's opinion, include a fifth, viz., mechanical breaks. Such breaks have been used in this country with much success.

In the description of various tubes (Chap. 5), it is a cause of surprise and regret that one or two very effective American tubes are not mentioned. The automatic regulating tube invented by Sayen is used all over the United States and has been highly spoken of abroad by no less authorities than Lord Kelvin and Röntgen himself. The scope and plan of the book in general is such as to commend it to the writer as the best of the few that have yet appeared on the subject.

It should be a very valuable aid to all engaged in X-ray work who have not had much experience of their own, though, as the author clearly states, such personal experience is absolutely necessary to all who would produce reliable results.

Very little seems to be said in Mr. Eddyman's book about the use of X-ray methods in medical diagnosis, though that line has been considerably developed in this country. The results of investigators in all countries except in England seem to have been rather consistently overlooked.

ARTHUR W. GOODSPEED.

Lehrbuch der Meteorologie. Von DR. JULIUS HANN. Leipzig, Tauchnitz. 1901. Royal 8vo. Pp. xiv + 805. Pls. 8. Charts 15. Figs. 111.

That a text-book of meteorology from the hand of the leading meteorologist of the world would be a masterly presentation of the subject was a foregone conclusion. No one is better qualified than Dr. Hann to write such a book. As director of the Hohe Warte in Vienna; professor in the Universities of Vienna and of Graz; editor of the *Meteorologische Zeitschrift;* a life-long original investigator of the widest range of meteorological phenomena; an earnest student of meteorological publications in all languages, Dr. Hann has brought to his latest work a wonderfully rich experience and an amazing fund of knowledge.

The 'Lehrbuch der Meteorologie' is more than a text-book. It is rather a treatise on meteorology. It ranks as a worthy companion to the same author's 'Handbuch der Klimatologie.' The 'Lehrbuch' is not intended to be a 'popular' presentation for beginners, nor is it adapted for general reading. It is a systematic and concise review of the whole subject of meteorology, as complete as is possible within the limits of 800 pages. Nothing of any importance is omitted. Admirable brief historical summaries of the different topics are followed by references to the results of the most recent investigations. So many, so well selected, and so complete are the references, in text and footnotes, that the book is indispensable to every student of meteorology simply as a bibliography. In fact, teacher and student alike will want to have this volume always close at hand, on their desk, or on the nearest shelf of their bookcase.

Since Schmid published his classical 'Lehrbuch der Meteorologie,' in 1860, no author has attempted so complete a presentation of the subject as has been given by Dr. Hann. In its general plan the new 'Lehrbuch' is not unlike that of Schmid, allowing for the natural changes which have resulted from the advance of the science during the last forty years. Schmid's 'Lehrbuch' was a landmark in its time, and is so still, as a classic. Hann's 'Lehrbuch' now occupies, and will continue to occupy, a similar position. Schmid's book was overweighted