tion without a teacher; but, for most students in such a situation, it is too expensive, while most of the teachers in advanced schools and colleges will prefer the finer plates of some of the foreign comparative anatomies, or the drawings to be found in the books of reference of the larger libraries. To teachers of zoölogy who have not such libraries at their command, or who, on account of ignorance of the language, are unable to use German text-books, the atlas would undoubtedly be a very great assistance.

NEW METEOROLOGICAL JOURNALS.

Meteorologische zeitschrift. Herausgegeben von der Deutschen meteorologischen gesellschaft. Redigirt von Dr. W. KÖPPEN. Heft i., January. Berlin, *Asher*, 1884. 8°.

American meteorological journal. Edited by Prof. M. W. HARRINGTON. Vol. i., no. 1, May. Detroit, *Burr*, 1884. 8°.

METEOROLOGY has received an impulse, both in Germany and America, by the almost simultaneous issue of a monthly meteorological journal in each of these countries. The two journals are intended, however, to cover different grounds, and so it will be necessary to state the position of each separately.

The *Meteorologische zeitschrift* has for its editor one of the greatest of living meteorologists, and it is intended to be a sort of co-laborer with the Austrian journal of meteorology. Much will be expected of this publication, and the first number leads us to believe that these expectations will be realized. In fact, but for the slight difference in appearance, one might think he was reading a number of its Austrian rival. We find such names as Neumayer, Zenker, Krankenhagen, Sprung, Van Bebber, and Köppen, appearing as contributors to this first number. Its first twenty-eight pages contain original communications, then come nine pages of correspondence and notices, then four pages concerning the founding of the society, followed by four pages of members of the German meteorological society, three pages of bibliography and book-notices, and two pages of plates. Although this January number is issued in April, yet the editor hopes to send out the successive numbers in such rapid succession, that after September they will appear at the proper time.

The American meteorological journal is edited by a professional astronomer, who has recognized the needs of American meteorologists, and is self-denying enough to offer his services for their benefit. From no journal of this kind can one derive any pecuniary benefit; and it is the duty of meteorologists to help the editor, not only by communications, but also by subscriptions.

The matter of this first number of the journal is principally meteorological, and the topics treated are varied. The principal article is one on barometric waves of short period, and is by a well-known astronomer. In the early stages this journal will need the support of all astronomers and physicists who take an interest in meteorology, because we have not enough working meteorologists in this country to supply material enough to make the undertaking a success. Similar first steps taken in foreign countries have required this same aid.

Heretofore American contributions to our knowledge of meteorology have been scattered through various periodicals; but now they can be published together, and where they will be brought soonest to the notice of those interested. Although the editor will be forced to deal with the popular side of meteorology in order to make the journal readable to enough people to make the circulation large enough to pay the expenses, yet it is hoped that he will aim to make its scope as purely professional as possible. There are so many journals devoted to meteorology now, that one can only read the most important articles in each; and quality is of greater importance than quantity. The contents of this American journal are divided as follows: editorial notes; current notes; original communications; translations, etc., distributed over forty pages.

THE STUDY OF HEREDITY.

Life-history album, prepared by direction of the collegiate investigation committee of the British medical association. Edited by FRANCIS GALTON, F.R.S. London, *Macmillan*, 1884. 8+172 p., 8 pl. 4°.

Record of family faculties; consisting of tabular forms and directions for entering data, with an explanatory preface. By FRANCIS GALTON. London, *Macmillan*, 1884. 4+68 p. 4°.

WE have become accustomed to look for care and thoroughness in Mr. Galton's work, and it is pleasant to say that the two volumes before us fulfil our expectations. We can but assign to them an uncommon importance; for it is indeed significant, that the novel duty of recording the biological history of ourselves, our parents, and our children, is thus made easy to us by Mr. Galton. It is mainly to his influence that we must trace the conviction of thoughtful and earnest minds that it is really a duty to record the characteristics of every

individual and family; for Mr. Galton, more than any one else, has brought home to us the fact of our close dependence upon our ancestors for our traits of body, mind, and character. Mr. Galton's two small volumes provide most admirably for the facts in individual cases. The thicker of the two, the life-history album, will undoubtedly be the most widely used. It provides for the systematic record of the principal facts which may serve to indicate the constitutional character and the course of development of an individual from birth to seventy-five years of age. Directions, admirable in clearness and simplicity, are prefixed to the volume. The first of the blank tables that follow is for a brief genealogical record; the second, for the description of the child at birth. The remainder of the record is divided into five yearly periods. For each period the headings and blanks are repeated, so that the same qualities may be traced through all their changes. The data to be entered are of four kinds: first, physical characteristics, the stature, complexion, acuteness of the senses, etc.; second, other peculiarities, bodily endurance, recent trial of mental power, artistic capacity, resemblance to relatives; third, photographs in profile and full face; fourth, any other observations, including especially the full medical history. There are also charts on which to record graphically the growth; and these charts also give the curves of average growth for males and females. At the end of the volume are a few pages for records of the wife (or husband) and children. An appendix gives tests for vision.

Only those having experience can appreciate the study and thought which have been expended upon this remarkable album, — the product of a noble and wise philanthropy. Parents who earnestly desire their children's welfare will gradually learn to recognize the necessity of profiting by Mr. Galton's guidance in preserving a knowledge of their children's lives, for the plan which he has formulated can hardly be improved at present. Such knowledge is valuable to the child, not only as indicating its constitutional tendencies, but also often as giving warning of incipient disease, and as revealing the influence of change in residence, occupation, diet, or habits, upon health. More valuable still will the accurately kept album be when the child becomes a parent.

> "For mental and physical characteristics, as well as liabilities to disease, are all transmitted more or less by parents to their children. . . . The world is beginning to perceive that the life of each individual is in some real sense a prolongation of those of his ancestry. His character, his vigor, and his disease are principally theirs. . . . The life-histories of our relatives are, therefore, more instructive to us than those of strangers: they are especially able to forewarn and encourage us, for they are prophetic of our own futures."

The thinner volume is designed especially to further the science of heredity by gathering histories of families. It is arranged to contain brief records of the principal traits, bodily and psychic, of a person, and the person's parents, grand-parents, great-grand-parents, and children. Those who are able to do so, can render a valuable service, not only to themselves, but also to knowledge, by filling out accurately a record of their family faculties, and transmitting a duplicate to Mr. Galton, who will use it as a confidential document for statistical purposes only. That he will draw most valuable deductions from such materials, those who know his earlier researches are convinced beforehand. The album of family faculties has the same general plan and excellences, and deserves the same general praise, as the life-album.

Of the laws of heredity, but little is really known; but, when they are better and more generally understood, a great revolution must ensue in human society. Mr. Galton is laying the foundation of a thorough knowledge of heredity; and, because imagination hastens to conceive the future changes that may result, we are inclined to designate Mr. Galton's two recent publications as the most important books of the year. But in such matters, wisdom may be boldness in theory, but must be conservatism in practice: therefore let us diligently gather knowledge of heredity, and meanwhile postpone the anticipated revolution.

To all persons we earnestly recommend the faithful use of the two volumes we have reviewed.

INTELLIGENCE FROM AMERICAN SCIENTIFIC STATIONS.

GOVERNMENT ORGANIZATIONS.

U. S. geological survey.

Fulgurite from Oregon. — During Mr. Diller's reconnoissance of the Cascade Range in the summer of 1883, Mr. E. E. Hayden collected from the summit of Mount Thielson, one of the sharpest and most precipitous peaks in the Cascade south of the Columbia, specimens of fulgurite, the product resulting from the