does in a very satisfactory manner, the chief features of the most recent developments in electrical engineering.

Chapter I. is devoted to definitions of terms and Chapters XII., XIII. and XIV. are devoted to the more or less theoretical questions of choice of frequency, weights of copper for various systems and calculation of transmission lines. The remaining chapters II. to XI. are devoted to the details of structure and operation of alternating current machinery of the polyphase type; and in an appendix is given the full report of the committee on standardization (of electrical machinery) of the American Institute of Electrical Engineers.

The author gives expression in his preface to a statement which has been current among electrical engineers for some time, namely that the most progressive engineering work of the day is that of switchboard design. The truth of this statement may be realized if we remember that the switchboard in a station includes all the controlling, regulating and safety devices, and that with the coming of our enormously powerful high-voltage generators the switchboard designer faces some of the most perplexing problems that have ever confronted electrical engineers.

W. S. Franklin.

Arithmetic of Electrical Measurements. By W. R. P. Hobbs. Ninth edition, revised by Richard Wormell. London, Thomas Murby. 1902. Crown 8vo. Pp. 112. 50 cents.

This is an excellent collection of simple problems illustrating the principles of current electricity. The problems are arranged in thirteen chapters and at the beginning of each chapter is given a series of explanatory paragraphs. An undue proportion of the problems are devoted to battery calculations such as grow out of series and parallel connections, while many important phases of modern electrical engineering are wholly untouched.

W. S. Franklin.

SCIENTIFIC JOURNALS AND ARTICLES.

The American Naturalist for June contains the first instalment of an article on 'The Colors of Northern Gamopetalous Flowers,' John H. Lowell; this is devoted mainly to a presentation of the character and colors of the flowers of the various orders of the group, though at the close we have a hint that bees have been largely instrumental in bringing about the survival of certain colored flowers. J. H. Powers discusses 'The Causes of Acceleration and Retardation in the Metamorphosis of *Amblystoma tigrinum*,' bringing forward a number of facts to show that the chief factor in change is a reduction in the food supply and not an insufficient supply of water for respiration by gills. Bradley Moore Davis considers at some length 'The Origin of the Sporophyte' and the balance of the number is devoted to notes and reviews.

The Popular Science Monthly for August opens with an article by Sir Oliver Lodge, on 'Modern Views on Matter,' the Romanes Lecture at Oxford; David Starr Jordan considers 'The Training of a Physician' and W. LeConte Stevens 'American Titles and Distinctions,' implying that here they are all too cheap. C. C. Nutting describes, with the aid of illustrations, 'The Bird Rookeries on the Island of Laysan'; Albert Schneider discusses 'Bacteria in Modern Agriculture,' showing what it is hoped to do by the aid of bacteria rather than what has actually been accomplished; and J. E. G. de Montmorency gives the second part of 'The Story of English Education,' bringing the subject down to date. Frederick A. Bushee has an article on 'The Declining Birth Rate and its Cause,' and J. A. Fleming the third instalment of a paper on 'Hertzian Wave Wireless Telegraphy.' There are many matters of interest discussed in 'The Progress of Science.'

The Museums Journal of Great Britain for June brings to a close the second volume of this valuable periodical, which comprises some 375 pages, besides the full index, and supplementary pages devoted to a directory of the Museums of Great Britain. Mr. Hoyle is to be complimented on the regularity with which the *Journal* has appeared and congratulated on the fact that he has made it a financial success.

WITH the July number *The American Museum Journal* begins its appearance as a quarterly. The leading article, illustrated, is on 'Martinique and St. Vincent Revisited,' by E. O. Hovey. Accessions are noted in various departments as well as the complete rearrangement of the halls of vertebrate paleontology on the alcove system, so that the attention of the visitor is concentrated on a given group. In connection with forthcoming improvements it is announced that two assembly rooms will be provided for the use of scientific societies. The supplement to the number, 'Guide Leaflet No. 11,' is devoted to a description of 'The Musical Instruments of the Incas,' by Charles W. Mead.

Bird-lore for July–August contains articles on 'The Bird Life of Cobbs' Island,' by Frank M. Chapman; 'In the Haunts of New Zealand Birds,' by Charles Keeler; 'The Loggerhead Shrike in Massachusetts,' by Jane Atherton Wright; 'System in Field Records,' by Eugene Murray-Aaron and 'Some Notes on the Psychology of Birds,' by C. William Beebe. There are the usual notes and reviews, and among the illustrations the fifth series of portraits of *Bird-Lore's* Advisory Councilors.

DISCUSSION AND CORRESPONDENCE.

ADDITIONAL FACTS CONCERNING THE BATH FURNACE METEORIC FALL OF NOVEMBER 15, 1902.

TO THE EDITOR OF SCIENCE: Since the announcement concerning Bath Furnace Aerolite No. 1, which appeared in SCIENCE of January 16, two other pieces have been found; one picked up within one hundred yards of where No. 1 fell, and the other one three fourth mile south of this. Named in the order in which they have been found, we have designated these as No. 2 and No. 3, respectively.

No. 2 weighed 223 grams. It was completely coated with the black enamel or varnish and pitted. It has been sawed into two pieces: one for the Field Columbian Museum and the other for the Kentucky State College Museum. It has the same specific gravity and presents the same interior appearance as Bath Furnace No. 1.

No. 3, found about the middle of May last, by a hunter who was led to search for it by noticing a skinned place some distance up on a white oak sapling, will weigh about 200 pounds. It is also completely coated with the black enamel, and is very characteristically pitted and furrowed. These furrows radiate from a smooth nose or boss. It was this portion which bruised its way downward into the base and roots of the tree. The side opposite to this is flat and not furrowed nor pitted, but presents a few nodular excrescences.

As a result of visiting the locality, examining the places where the pieces struck and securing the accounts of the residents, all of whom were much startled by the blinding light and terrific detonations accompanying the fall, I gather the following: There was probably one mass originally, which burst at a height of from eight to nine miles into many fragments. These fragments struck the earth in a district some four miles square, situated in the knobs of the extreme southern portion of Bath County. Most of the region is thinly populated. No. 3 was found almost in the center of this thinly populated district. The accounts given by the residents of the noise made by the 'explosion,' of the singing of the fragments as they hurtled through the air, and the sound made by their striking the ground or hitting the timber on the knobs, were very graphic.

No. 3, which is probably the main portion of the original mass, has left some record from which possibly the trajectory of this celestial body may be computed. From the way in which it grazed the sapling in its descent, and bruised its way into the roots of the tree at the base of which it was found, I estimate that it came in from a direction 13 degrees south of west, and at an angle from the horizontal of 77 degrees. As previously announced, the altitude of the point of the bursting of the meteor, as seen from Lexington, was 9 degrees and 30 minutes. The azimuth of this point is N. 81 degrees E. The point of fall, however, plots out on