Angot, which is published by Gauthier Villars, at the price of about $3.00, is eminently adapted, and we must commend it most heartily to all the readers of the MONTHLY WEATHER REVIEW who are familiar with the French language or have even made a beginning in its study, as Angot's style is very simple and clear. This work will come as a special boon to the meteorological observers and students of Lower Canada and the French colonies of the East and West Indies, and possibly to many of the citizens of the Louisiana Purchase.

Among the illustrations we notice the beautiful photographs of clouds for which Angot has long been famous. His explanation of the formation of clouds and rain is, of course, in harmony with the latest views of physical science. In fact, in every respect this volume represents the present condition of our knowledge about as correctly as would seem practicable in an elementary work.

THE ROYAL METEOROLOGICAL SOCIETY.

This Society which has done so much for meteorology has for many years been located at 22 Great George street, Westminister, London, S. W., but now announces its removal to Princes Mansions, 70 Victoria street, Westminister, London, S. W. American meteorologists, both students, teachers, and observers would do well to correspond with this Society through the Assistant Secretary Mr. William Marriott, in so far as they desire to keep in touch with the progress of meteorology in Great Britain and her colonies. The Society publishes an excellent monthly journal and extends its interest over all parts of the world. Of course, it does not receive much relative to America, but that may easily be remedied by communications from our own citizens. Its publications are sent to those who become members of it, and it is fair to presume that in the absence of a special American journal that of the Royal Meteorological Society of London may serve as a medium for the English-speaking world.

CIVIL SERVICE EXAMINATIONS FOR ASSISTANTS.

The remarks on a preceding page by Mr. Kimball are quite in line with the experience of the Editor with reference to the examination papers submitted by some of those who recently took the examinations in "Division A" for the grade of "assistant in the Department of Agriculture." This grade has reference to the scientific and technical positions in the Department, and the applicant is submitted to an examination in one special subject as a major, and two or more correlated subjects as minors, according to section 67 of the recent editions of the Manual of Examinations. The successful applicants are appointed to the lowest class as regards salary, and are then in line of promotion to higher positions; the initial salaries vary between $840 and $1,600, and promotions to salaries of $2,500 and $3,000 may follow. As the duties required imply much technical knowledge, and often considerable responsibility, it is necessary that the competitive examination should be correspondingly thorough.

The actual examinations in physics and meteorology have frequently shown that the applicants had such an imperfect knowledge of these subjects as to suggest that they had had no opportunity of properly preparing themselves for the work. They were not the class of men that were needed to fill such positions. A second examination of the same kind will undoubtedly be held in April, 1899, and it is to be hoped that a better class of men will apply. Those who have merely done well in the best high schools of the country stand little chance of passing these examinations, which are intended especially to secure young men who have pursued special studies in the higher scientific schools.

Hereafter these major examinations in meteorology should presuppose a knowledge of Loomis's Three Contributions to Meteorology, Ferrel's Recent Advances in Meteorology, Cottier's Equations of the Movements of the Earth's Atmosphere, Abbe's Mechanics of the Earth's Atmosphere, and his Treatise on Meteorological Apparatus and Methods.

In the examinations for assistants more than one day is required. Three hours are given to the major subject, and two hours for each minor. The whole examination is divided into five parts, and the credits are given on the following scale:

	Per cent.
Orthography	1.5
Arithmetic	2.5
Letter writing	2.5
Penmanship	1.5
Copying	2.0
General training and experience	5.0
English composition	5.0
Major examination in special scientific subject	50.0
Minor examinations in two required subjects	20.0
Minor examinations in electives	10.0
Total	100.0

An applicant for the position of assistant in the Division of Soils would, for instance, have to take his major examination in physics, especially as applied to meteorology and soil study. His minor examinations might be in meteorology, physical geography, Latin, German, French, Italian, Swedish, or Spanish.

An applicant for the position of assistant in the Weather Bureau would take his major in meteorology, his minor in physics, physical geography, and modern languages.

The term assistant is used here in a general way to designate officials whose duties are scientific rather than clerical, and whose rank and pay are next to those of the chief and assistant chief of the respective divisions of the Department of Agriculture.

As the chief purpose of the examinations is to provide eligible registers for appointments to technical and scientific positions of the lower grades, the standards for the examination questions and papers should be made with reference to the necessary qualifications for such positions, and should be of a uniform grade in the different subjects.

As regards the higher scientific and expert positions, in case vacancies are not filled by promotions, special examinations will be ordered by the Commission whenever it appears that existing registers do not contain eligibles having the qualifications necessary for the positions to be filled.

The above examination for the grade of assistant is much more difficult than that prescribed for the position of observer, as defined in section 91 of the Civil Service manual. The latter covers the following points:

	Per cent.
Spelling	5.0
Arithmetic	5.0
Letter writing	5.0
Penmanship	5.0
Copying from plain copy	5.0
Copying from plain draught	5.0
Meteorology	40.0
Essay writing	20.0
Geography	10.0
Total	100.0

The samples of questions published by the Civil Service Commission show that this examination for observers is, as regards meteorology, about equivalent to the easier portions of the published elementary meteorologies of Waldo, Davis, and other popular authors, but it is not probable that one who crams either of these books into his memory and neglects the broader education obtainable in our best high schools will make a very good showing at the examination.

If there should be no vacancy in the grade of assistants, properly so called, there is still likely to be an opening in the

grade of observers in the Weather Bureau. Those who pass the examination for assistants will, of course, be also eligible as observers, and their promotion to higher grades will follow in due course.

The steady progress of meteorology and the increasing scope of the work of the Weather Bureau justify a demand for the services of the best class of men. Inasmuch as the highest professorships must be filled by steady promotion from the lower ranks, and as they presuppose a wide range of knowledge in physics and mathematics, languages and meteorology, it is evident that the young men who enter the service of the Weather Bureau must show acquirements that give promise of future study and progress and, consequently, eminence.

It is not to be denied that many who would naturally have made meteorology their life work, failed to do so because in early life no stimulus by way of instruction in this line of study was available. At the present time, however, this need can easily be supplied, since many high schools are introducing physics and meteorology into their courses of instruction, and the colleges will, undoubtedly, introduce it into their curricula as soon as the funds are provided to satisfy the increasing demand.

It is, however, a grave question whether in the present condition of affairs it would not be well to have at Washington a central school for both elementary and advanced courses of instruction in physics, mathematics, climatology, meteorology, and modern languages. This would relieve observers in charge of stations of the necessity of training inexperienced men in their duties, and secure both greater uniformity and higher standards in the attainments of the Weather Bureau observers. If a four-years' course is necessary for the preliminary education of a second lieutenant in the Army and the ensigns in the Navy, still more must this be true of the men who are to do the weather forecasting, river and flood predictions, and cognate scientific problems of the highest complexity that are pressing upon us for solution. The general organization of the Weather Bureau, like that of all Government offices, looks to the accomplishment of a great amount of very useful daily work, but, in addition to this, there is a demand for the solution of difficult problems in science as a prelude to still wider and more important daily work. Such solutions are not likely to be forthcoming until we have evolved men who have the genius and the training necessary for original research. Our standard of scientific efficiency must be raised higher.

RHODE ISLAND WEATHER.

Mr. William Foster, Jr., of Warwick, R. I., writes:

In my younger days I was a pretty close watcher of weather phenomena. * * * On several occasions I suggested in the public papers that the Government should institute definite observations throughout the country for obtaining the necessary data to determine the laws of storms. Though this has now been done the end is not yet. There are influences coming in which seem to block the general trend of the ordinary conditions. Hence, forecasts sometimes fail and the Weather Bureau gets a scoring. Early this season I removed from Providence to Warwick * * * and have become satisfied that some of our conditions here are abnormal. In July, August, and September, I noticed that the smoke from the locomotives passing in front of the station presented a peculiar appearance not readily mingling with the atmosphere. I also noticed that there is a prevalent haze, but this has passed away since early in November. Has this been observed elsewhere?

ST. ELMO'S FIRE.

Mr. E. P. Alexander, from Georgetown, S. C., communicates the following interesting item:

In August, 1885, I was traveling from Shoshone Falls, Idaho, to the Union Pacific Railroad about dark of a cloudy afternoon. The country is uneven tableland of volcanic formation, moderately covered with sage brush and a raw wind of about 8 miles per hour faced us. As darkness approached, from a rear seat I saw a faint streak of light on the frayed end of a stout switch with which our driver drove his tired mules. I vaguely thought that the sun must be still above the horizon and shining horizontally through a very fine slit in the clouds, so as to catch the end of the switch 3 feet above the level of my eye, but not observable by me. But in about three minutes the driver struck the mule again, and again there was a streak of light illuminating the top of his switch as it was raised in the air. I borrowed his switch and raised it over my head and about 3 feet above, the end of it glowed with something like St. Elmo's fire. It was sharply extinguished when held just below that level, and as sharply ignited when raised into or above it. The phenomenon was repeated as often as we tested for it until we reached our destination, the nearest station to Shoshone Falls. My idea at the time was that the friction of the breeze on the resinous foliage of the sage brush had in some way caused the existence of an electrified current about 8 feet above the earth, such as that which causes the St. Elmo's lights at sea.

BALL LIGHTNING.

The following letter from Mr. Edward M. Boggs, civil and hydraulic engineer, at Los Angeles, Cal., seems to corroborate the suggestion of the Editor on page 358 of the August REVIEW. If our explanation is correct, then similar phenomena should be frequently observable by the employees on our railroad trains. Will not some one inquire of them?

Referring to the supposed "ball" lightning described by Mr. C. N. Crotsenburg on page 358 of the August REVIEW, I beg to offer the following as a plausible explanation of the phenomenon:

The appearance and the movements of the luminous body were such as might be caused by the reflection of some strong light, carried on the train, from a close succession of raindrops depending from a telegraph wire. Perhaps the strong red glare from the locomotive fire box was the origin of the light. The undulations of the telegraph line would change the height of the object, cause its observed oscillating motion, and would account for the seeming change in horizontal distance and the occasional disappearances, while the varying angle of reflection, due to curves in the road, would cause the light to gain or lose in distance alongside the train.

Mr. T. P. Yates, voluntary observer at Waverly, N. Y., writes, under date of November 12, as follows:

I was much interested in your "ball lightning" article in the August REVIEW, but disappointed at there being no more data. I now give you a narrative related to me by Morris Barton some years ago, who saw it at the time he lived near Danby [Danbury?], in Connecticut:

"I was standing in a barn boor, facing a farmhouse, during a passing thunder shower, in the daytime, when my attention was taken by a ball of lightning moving toward the house. It entered the room through an open door, and passed out of an opening on the other side into the open air and out of my sight, and directly after there was a loud explosion as the ball encountered an apple tree beyond, which shattered the ball to pieces."

Further questioning only elicited the facts that "a woman who was doing some housework in the room was greatly frightened;" that he "drew a breath of relief when it passed out on the other side;" that "it was as big as a pumpkin and of a deeper color;" and that "it floated and bobbed leisurely along until it hit the tree." I have no doubt he gave a correct account as it appeared to him. This is the most authentic account by an eye witness that I have come across. Nothing of the kind has yet come before my vision.

The exact date of the above occurrence can not now be stated, but it was over twenty-five years ago. Possibly some one now living in Danbury, Conn., may be able to send it to the Editor.

CLOUD PHENOMENA AT SUNRISE AND SUNSET.

Mr. S. L. Brooks, voluntary observer, The Dalles, Oreg., forwards two beautiful photographs showing streaks of light illuminating the under surface of a layer of alto-stratus cloud just before sunrise of December 2. The illuminated cloud resembles the tail of a comet reaching from the horizon far up to the northeast over an arc of nearly 90°. After 8:15