

Rain, 3rd, 6th, 7th, 8th, 9th, 19th, 23rd, 25th, 29th. First half of month rather dry—fires in the woods.

BELLEVILLE.—On 1st, thunder. 25th and 29th, lightning, with thunder and rain. 17th, wind storm. Dense fog from Saturday 20th till Thursday 25th, supposed to have been conveyed from the fires in the Ottawa region. Very strong gales from W and SW during 17th. Rain, 3rd, 5th, 8th, 9th, 12th, 23rd, 25th, 28th, 29th. Weather hot and close; fires through 10 square miles, in Madoc, Tudor and Elzevir, before the rains of the 25th.

GODERICH.—On 1st, 7th, 24th, 28th, lightning. 1st and 5th, thunder. 23rd and 24th, thunder and lightning, with rain. 2nd, three shooting stars. 20th, brilliant auroral display—maximum about 8.40 P.M.; whole sky, save a space S below 45° covered with auroral light; corona 4° south of Z, with waves from all sides moving rapidly towards it; coloured arches and streamers after disappearance of corona. 26th, frost in the country. Wind storms, 17th, 19th, 25th, 29th. Tremendous rain storm, with thunder and lightning, 23rd. Rain also on 3rd, 7th, 9th, 13th, 19th, 24th, 28th, 29th, 31st.

STRATFORD.—On 1st, lightning, with thunder. 3rd, lightning, with rain. 7th, 19th, 23rd, 24th, 28th, 29th, lightning and thunder, with rain. Hoar frost on 27th. Storm on 23rd and 24th, remarkable for the excessive rain fall, with the wind, causing a great amount of damage in the adjacent country. Wind storm also, 29th, and rain on 3rd, 7th, 9th, 13th, 19th, 23rd—25th, 28th, 29th, 31st. Fogs, 10th, 13th, 14th. The frequency of aurora towards the end of the month is noteworthy.

HAMILTON.—On 8th, lightning. 17th, wind storm. 19th, splendid display of streamers; crimson vapour observed in west. 20th, a still grander display; corona formed at 8.30; waves, also, in E at 8.45; the phenomena extended southward to within 30° of the horizon; at 8.55 crimson vapour N.E. and NW; at 9 began subsiding; general movement of waves tended westward. 24th, lightning and thunder, with rain. 29th, violent storm of wind and rain, accompanied by thunder and lightning, passed over station from SW, causing much damage, from 1 P.M. to 2.27. Rainbow, 19th, 24th, 29th. Hoar frost, 27th. Rain, 3rd, 5th, 7th, 8th, 13th, 19th, 23rd, 24th, 25th, 29th.

SIMCOE.—On 13th and 14th, auroras very brilliant, and covered half the sky. A brilliant meteor in W at 8.15 P.M., 14th. Lightning and thunder, with rain, 23rd, 24th. Wind storms, 1st, 17th, 18th, 29th, 30th. Rain, 3rd, 15th, 23rd, 24th, 25th, 29th.

WINDSOR.—Lunar halo, 7th, 8th, 9th, 10th, 12th. Meteors seen as follows: on 14th, two; 17th, one; 18th, two; 21st, two; 24th, four; 25th, one; 26th, one; 28th, seven; 29th, two; 30th, one; 31st, three;—the observer also notes the directions of most of these. Lightning on 1st. Lightning, with thunder, 31st. Wind storms, 17th, 19th, 25th, 29th. Fog, 4th. Rain, 2nd, 3rd, 7th, 9th, 13th, 19th, 23rd, 24th, 29th.

2. ECLIPSE OF THE SUN IN DECEMBER, 1870.

Astronomers in all parts of the world are now busy in making their preparations for observing the eclipse of the sun in December 21-22, 1870. Although it will not be visible in the United States, it has been suggested that some of the American observers of the last eclipse be sent abroad for the purpose of taking part in the observations of the one in question, and Congress has already appropriated \$29,000 to the Coast Survey for the purpose. Great praise was awarded by foreign physicists to the American astronomers for the excellence of their work, and especially for the remarkable photographic pictures that were taken, and at so many points; and it is urged that these same gentlemen, or a selection from them, would be admirably fitted for a renewed investigation of the kind, since their experience of the first phenomenon would enable them to utilize their time to better advantage during the second. According to a recent writer this eclipse will begin in the North Atlantic Ocean; the line of central and total eclipse, moving in a southeasterly direction, crosses Portugal a little to the south of Lisbon; passing over part of Spain and the Mediterranean Sea, it enters Africa near Oran, and soon afterward attains its extreme southern limit; the shadow of the moon, now moving in a north-easterly direction, leaves Africa, and, crossing the island of Sicily, the south of Turkey, the Black Sea, and the Sea of Azof, disappears; the penumbra of the moon decreasing rapidly, leaves the earth with the setting sun in Arabia. The sun will be centrally and totally eclipsed at noon in lat. 36° 38' N., long. 5° 1' W., a little to the north-east of Gibraltar.—EDITOR'S SCIENTIFIC RECORD in *Harper's Magazine* for September.

3. LUMINOUS FLAMES AND SOUND.

Among the curiosities of physical science is the well-known fact that luminous flames are very sensitive to sound, exhibiting different phenomena under different circumstances. An ingenious savant proposes to turn this to practical account, and for this purpose has devised an apparatus, consisting of two upright copper rods, one of which, at its upper extremity, has a metal band attached at a right angle, and consisting of thin layers of gold, silver, and platinum, welded together. When exposed to heat the bands expand unequally and bend to one side, thereby coming into contact with a platinum point which is attached to the other bar, so as to stand at about four-tenths of an inch from the bands. Both ends are connected with the poles of a small electrical battery, in the circuit of which an electrical bell is introduced, in a distant part of the room, and which sounds whenever the circuit is closed. A flame is now brought to about ten inches from the metal band, and on re-

moving to a distance of ten or fifteen yards from the flame, and whistling, the flame answers immediately, by becoming shorter and broader. In this way it comes into contiguity with the metal band, and this curving to one side as it is heated by the flame, touches the platinum point, closes the current, and we hear the distant bell sound each time in answer to the whistle. In a similar manner, the cry of a child in its cradle by night may be carried to the room of its parents; and, by a somewhat similar arrangement, a thief attempting to open a door with a key, can sound a distant alarm-bell if he makes the least noise. It is even possible to arrange an apparatus resembling this, by means of which, in a fog or by night, the approach of a boat or vessel can be detected at a great distance, by the sounding of a bell in the captain's cabin.—EDITOR'S SCIENTIFIC RECORD, in *Harper's Magazine* for October.

IV. Papers on Education of Women.

1. CAMBRIDGE EXAMINATIONS OF WOMEN.

The syndicate appointed by the senate of Cambridge University, England, to conduct the examination of persons not members of the university, but applicants for degrees, recently submitted a report that they had examined thirty-six female candidates in English branches, languages, mathematics, science, political economy, &c., with the following curious results:—Seventeen of the candidates declined to be examined in "religious knowledge." The "Scripture papers" of the other nineteen "were not satisfactorily answered," and "a strong predilection was shown for the mystical interpretation of Scripture, generally at the expense of all sound criticism." The examiner, however, is kind enough to say that the failures were the result of "inadequate preparation rather than deficient ability." In arithmetic, six of the candidates did "very well," eleven others "creditably," and the others failed. In English history and composition nearly all the candidates "acquitted themselves extremely well." In English literature the examiner reports that "the knowledge displayed is at least as much as I looked for," and in the papers written there "is hardly a touch of fine writing," and "not four words wrongly spelt." There were only two candidates in Latin; "both were quick at catching the general meaning, but were inclined to get at it by short cuts." The knowledge of syntax was not good, and "the meaning of a passage was often entirely missed by mistaking the relation of the dependent sentence to the main one, and by failing to understand the uses of the subjunctive mood." Twenty-four candidates attempted the papers in French; two obtained marks of distinction, and five failed to pass. Very few had an accurate knowledge of the syntax of the language, and "several showed that they did not in the least understand what they had written." There were ten candidates in German; one passed brilliantly, four creditably, and the other five failed entirely. In Italian there were four candidates, three of whom passed. In mathematics there were only two candidates; one failed, the other acquitted herself creditably. There were three candidates in political economy, all of whom passed with some credit. In drawing, two out of four candidates passed; and in music only one out of three candidates was at all successful. In this examination the lady candidates were examined by the same persons who examined the male students, and were tried by the same standard. They had been afforded a year of preparation, and the course which the examination would take was pointed out beforehand. The result is not a flattering one; no candidate presented herself for examination in Greek or logic; and in the branches in which the female candidates thought themselves proficient, they seem to have fallen far short of the standard by which the requirements of male students are tested.

2. SIMMONS' FEMALE COLLEGE, BOSTON.

Another of the millionaires of America has left a very large sum for the purpose of benefiting a large class who, in the estimation of the donor, stand in great need of a kind helping hand. Mr. Simmons, the gentleman referred to, made his fortune by trade in Boston. He began business on his own account, and on a very small scale, in a clothing store when 21 years of age. So greatly did he prosper in his work that he has left \$1,400,000 for the purpose of endowing and maintaining a college for the purpose of teaching females "medicine, music, drawing, designing, telegraphy, and other branches of art, science, and industry, best calculated to enable the scholars to acquire an independent livelihood."

Mr. Simmons was led to this idea from what he had observed when engaged in the ready-made clothing business. He had then occasion to employ a great many young women as well as men, and he noticed that a large number, of the former especially, were to a