ASTRONOMICAL NOTES.

BY BERLIN H. WRIGHT.

PENN YAN, N. Y., Saturday, June 22, 1878.

The following calculations are adapted to the latitude of New York city, and are expressed in true or clock time, being for the date given in the caption when not otherwise stated.

PLANETS.

	H.M.		H.M.
Venus rises	2 17 mo.	Saturn rises	0 08 mo.
Mars sets	9 25 eve.	Uranus sets	10 40 eve.
Jupiter rises	9 43 eve.	Neptune rises	1 41 mo.
Jupiter in meridian	2 33 mo.		

FIRST MAGNITUDE STARS.

	H.M.		H.M.
Alpheratz rises	10 06 eve.	Regulus sets	10 41 eve.
Algol (var.) rises	11 46 eve.	Spica in meridian	7 15 eve.
7 stars (Pleiades) rises	2 10 mo.	Arcturus in meridian	8 06 eve.
Aldebaran rises	3 29 mo.	Antares in meridian	10 17 eve.
Capella sets	9 12 eve.	Vega in meridian	0 32 mo.
Rigel rises	5 36 mo.	Altair in meridian	1 44 mo.
Betelgeuse sets	6 10 eve.	Deneb in meridian	2 36 mo.
Sirius sets	5 37 eve.	Fomalhaut rises	0 50 mo.
Procyon sets	7 48 eve.		

REMARKS.

Saturn arrives at western quadrature June 24, after which time he will set before midnight, and therefore be an evening star; near the moon June 22, being nearly 7° south. Venus is near the moon June 27, being about 7° south. She is about 10° southwest of the Pleiades, and will soon pass between that cluster and the Hyades.

Mars is in *Cancer*, and with the *Northern* and *Southern Aselli* (δ and γ *Cancri*) forms a neat equilateral triangle, the sides being about 4°. In the center of this triangle the naked eye may discern a rich cluster of stars, mostly of the sixth magnitude, called *Præsepe*. Algol at minima June 26, 4h. 16m. morning, and 29, 1h. 5m. morning.

PENN YAN, N. Y., Saturday June 29, 1878.

PLANETS.

	H.M.		H.M.
Venus rises	2 12 mo.	Saturn rises	11 43 eve.
Mars sets	9 12 eve.	Uranus sets	10 12 eve.
Jupiter rises	9 13 eve.	Neptune rises	1 14 mo.
Jupiter in meridian	2 02 mo.		

FIRST MAGNITUDE STARS.

	H.M.		H.M.
Alpheratz rises	9 39 eve.	Regulus sets	10 14 eve.
Algol (var.) rises	11 19 eve.	Spica in meridian	6 47 eve.
7 stars (Pleiades) rises	1 42 mo.	Arcturus in meridian	7 38 eve.
Aldebaran rises	3 02 mo.	Antares in meridian	9 50 eve.
Capella sets	8 45 eve.	Vega in meridian	0 04 mo.
Rigel rises	5 08 mo.	Altair in meridian	1 16 mo.
Betelgeuse sets	5 43 eve.	Deneb in meridian	2 08 mo.
Sirius sets	5 09 eve.	Fomalhaut rises	0 23 mo.
Procyon sets	7 20 eve.		

REMARKS.

The earth is farthest from the sun July 2. Mars still illumines the western sky, and is near the moon July 2, being about ½° north. Saturn will soon rise at a more seasonable hour in the evening. His rings may be seen to a better advantage at present than at any other time during the present year, the earth being about 5° above their plane.

Algol will be at minimum brilliancy July 1, 9h. 54m. evening, about one hour before rising; and as the increase in brilliancy occupies 3h. 20m., it will continue to get brighter for about two hours after rising.

How a Distinguished Scientist Raises Strawberries.

Some of the largest and finest flavored strawberries that we have seen this season were from the garden of our valued contributor, Alfred M. Mayer, South Orange, N. J. In forming new beds he invariably takes runners from new plants. Manures in the early spring. After the berries have formed he cuts off all runners and thins out the central leaves. Result: enlargement of the berry; improvement in flavor.

Lightning Conductors and Earth Contact.

The importance of a perfect earth contact for lightning conductors is shown by an accident at Nottingham, England, in 1868, which is mentioned by Dr. R. G. Mann, in the *Journal of the Society of Arts*. A copper lightning conductor, four tenths of an inch in diameter, was attached to the weathercock, one hundred and fifty feet from the ground upon the spire of a new church, and was carried in an unbroken line to the ground, and probably at first had a good earth contact; but after the accident an investigation showed that some thief had drawn it out of the ground and carried away all that was more than six inches below the surface.

On October 16, 1868, the church was struck by lightning, the fluid passing quietly until within about six feet of the ground. Had there been a good earth contact, all would have gone well, but at this point it was drawn from the conductor to a gas pipe on the inside of the wall, although separated from it by 4½ feet of solid masonry. The lightning then passed along the pipes to the gas mains and off into moist ground; but on its passage it totally destroyed a short piece of pipe near the gas meter and allowed the gas to escape, which, by the way, caused another accident on the following day, when a lighted lamp was carried into the cellar by the person sent to look up the leak. At the point where the electric fluid passed through the wall from the conductor to the gas pipe, the stone work was splintered into fragments through an area of about a square yard on either face of the wall, while the center of the wall, for a thickness of about a foot, was entirely uninjured.

FIRE TELEGRAPHS IN GERMANY.

The principle on which good fire telegraphs are based is that of establishing in sufficient numbers, and in easily accessible places, suitable apparatus by which the outbreak of a fire may be communicated by any person to the nearest fire engine and police stations, or to a central station, from where immediate orders are issued. Various methods may be adopted in order to obtain this result; but that which experience shows to be the most satisfactory, and which has best stood the test of time thus far, is the automatic system in use at many towns where a system of fire telegraphs has been established. By means of the automatic apparatus a certain sign may be telegraphed to the central stations indicating the street and district from which the alarm of fire was sent. It is evident that by sufficient distribution of this automatic apparatus over a town the time required for the dispatch of the brigade must be considerably shortened, thus allowing the fire to be attacked when in its infancy.

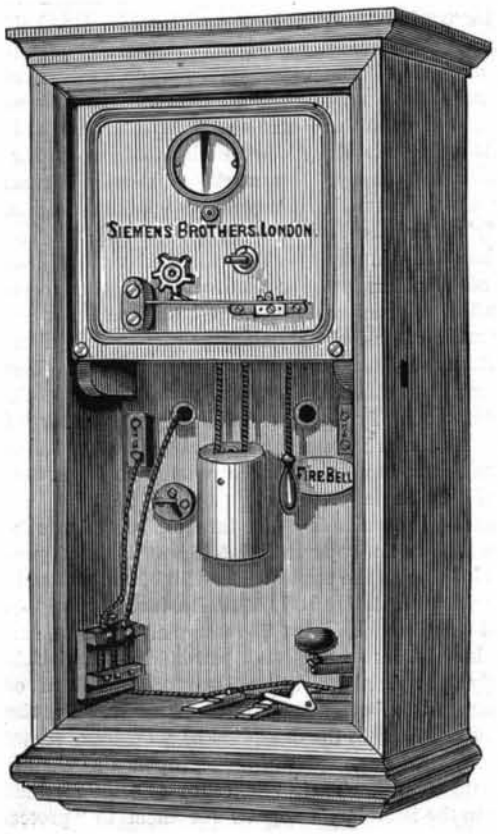

Fig. 1.—AUTOMATIC FIRE ANNUNCIATOR.

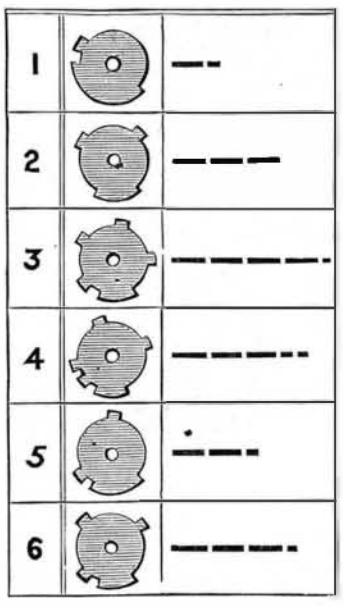

Fig. 2.—CONTACT WHEELS AND SIGNALS.

Mr. R. von Fischer Treunfeld, F.R.S., has recently read before the Society of Telegraph Engineers a valuable paper on this subject, the illustrations of which here given we take from *Iron*. Among other facts he states that in London, although there exists in that city a very efficient fire brigade, but no automatic system of fire telegraph, the proportion of serious fires reaches 10 per cent of the aggregate of all conflagrations; whereas in Berlin, where the fire department is not so well organized, but where an automatic telegraph system does obtain, the proportion is but 2·8 per cent. This difference he attributes to the fire telegraph used in the German cities, an account of which, as located in Hamburg, he gives as follows:

Hamburg possesses two central stations, the central fire brigade station and the central police station. Both stations are connected to seven district lines, which run radially from these centers to the suburbs, each line being connected with a number of fire brigade and police stations, as well as automatic fire annunciators. The chief object of these seven lines, with their annunciators, and fire brigade and police stations, is to send immediate notice to the brigade stations from the locality wherein the fire is first discovered. Besides this, telegraphic communication can be maintained between the different stations (as well as from the annunciators to the central stations), so that the required assistance may be properly disposed of. In this system it will be observed that all fires are first announced to the central station, and that all arrangements for the suppression of every fire are made from this central station, which thus regulates and controls the entire system.

The automatic fire annunciator, Fig. 1, is a very simple mechanical contrivance, introduced into the telegraph line, through which circulates a permanent current from a battery established at the central station. The annunciator, when brought into action, breaks the circuit, and thus sends a certain signal to the central station. The breaking of the circuit is caused by the rotation of a contact wheel, Fig. 2, the periphery of which is so shaped that the contact breaking corresponds to a certain Morse signal, and each signal to a certain district or street of the town. The annunciator is protected by a glass front, and is placed at street corners, in guard or railway stations, or in pillars situated in a prominent position, and where there is little likelihood of its being willfully damaged. On the discovery of a fire all that has to be done is to run to the nearest annunciator box, open or break the protecting glass, and pull the handle. The contact wheel then rotates, and the letter corresponding to the annunciator is transmitted several times in succession to the central fire brigade station, whence orders are telegraphed to the various engine and police stations.

There are, besides the two central stations, forty-seven Morse stations and fifty-three automatic annunciators, that is to say, 102 places from which the outbreak of a fire can be announced by telegraph. Both annunciators and Morse are connected to the same line, the former being situated at prominent places, as previously mentioned, the latter at fire brigade and police stations. The apparatus employed in the stations at Hamburg are Morse ink writers, with the usual complement of details. From the batteries, consisting of 350 Meidinger elements, fifty for each district line, a permanent current flows through the lines, all signals being made by breaking the circuit. The seven radial district lines all unite at the central fire brigade station, to which all fire alarms are first sent, and from which the requisite orders are immediately issued to the stations in the vicinity of the fire. By the different stations being thus connected together every facility is afforded to each station to give its help to the others as circumstances may require.

The telegraph lines are preferably underground, and consist of 151,631 feet of underground cable and 126,641 feet of overground line, the latter in the suburbs of the town only.

The working of the system is as follows: All stations except the central have their Morse instruments cut out, and only a loud sounding alarm in circuit. A signal sent by any of the annunciators or Morse stations is recorded at the central station on a self-starting Morse, attached to that line. The central station, after receiving this signal, sends, by means of a magneto-inductor, the fire alarm to all the stations of the district, or, if need be, to all the stations of the seven districts simultaneously, by means of a commutator fixed for this purpose. The operator at each Morse station, by a slight pressure of his foot on a lever, brings his instrument into circuit, and by this means each station is ready to receive orders from the central station, to which the exact position of the fire has been previously made known. The arrangement is such that when the operator takes up his po-

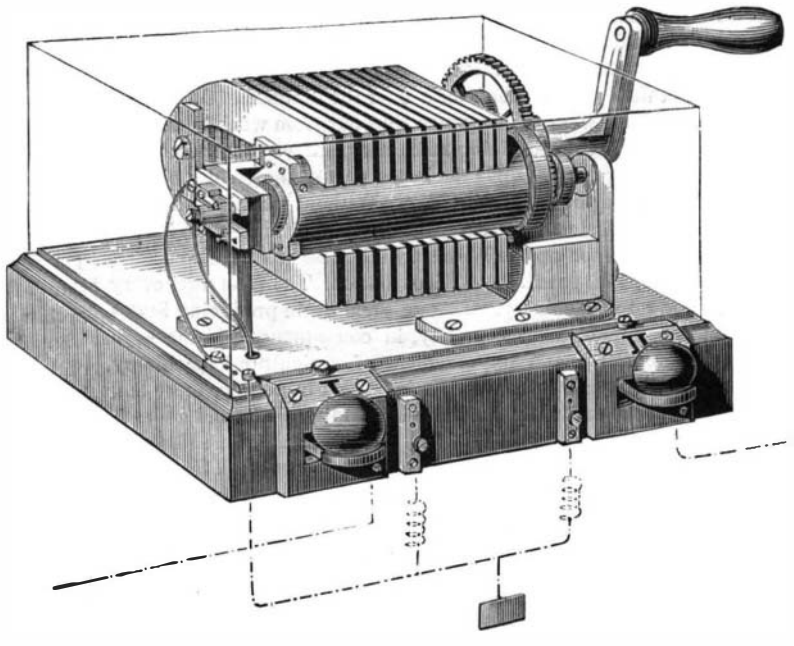

Fig. 3.—INSTRUMENT FOR TRANSMITTING ALARMS.