

These photographs showed that the spectrum was practically identical with that of the star α Cygni—that is, it was practically an absorption spectrum. This star is noted for exhibiting fine, sharp lines representing metals at a very high temperature, these lines being enhanced when passing from the temperature of the arc to that of the spark. Two nights afterwards, when the nova attained its maximum brilliancy, all the lines became broad and fuzzy, and bright components to the lines began to show up at the red end of the spectrum. More recent work at the

α Cygni do not fit those in the nova is that, owing to the great velocity in the nova, these lines are displaced towards the left—i.e. towards the violet. From measurements made, the velocity in the line of sight works out at about 400 to 900 km. per sec., depending on the date on which the photograph was taken. In this particular case—namely, August 26—the velocity was about 900 km. per sec., and was actually the maximum velocity attained.

At a late stage in their career novæ begin to exhibit the nebular lines. The first indication of

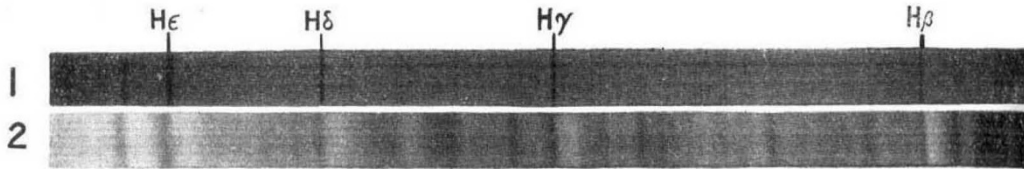


FIG. 2.—The spectrum of Nova Cygni on August 26, showing the *typical* nova spectrum. The comparison spectrum is that of α Cygni, which the nova closely resembled on August 22.

Hill Observatory has shown that at later stages all lines became more diffuse, a larger number of bright components appeared, and the continuous spectrum began to dim.

The stage when the nova showed a *typical* nova spectrum is illustrated in Fig. 2. It will be noticed that amongst others all the dark hydrogen lines have bright components on the right-hand side. For the sake of comparison, a spectrum of the star α Cygni is placed above the nova spectrum, and the line $H\beta$ is made to fit the dark $H\beta$ in the nova.

The reason why the other hydrogen lines in

this stage having been reached in the present nova was recorded on a photograph taken at the Hill Observatory, Sidmouth, on October 22. The stage might have been reached at possibly an earlier date, but no records were available between October 2 and the date mentioned above.

As a rule, new stars are far more scarce than comets, but Mr. Felix de Ray points out the interesting fact that for a couple of years novæ have been more plentiful than comets, and that at the present time no fewer than four novæ, including Nova Aquilæ III., Nova Lyræ, and Nova Ophiuchi IV., can be observed with small apertures.

Obituary.

DR. HERMANN STRUVE.

DR. KARL HERMANN STRUVE, who died on August 12 at the age of sixty-six, belonged to a family famous in astronomy, being the son of Otto Struve, and the grandson of F. G. W. Struve. All three were gold medallists of the Royal Astronomical Society, this being a unique case of hereditary distinction in the annals of that body.

K. H. Struve was born at Pulkova in 1854, being the third of the four sons of Otto Struve, who was then director of Pulkova Observatory. He studied at Dorpat University, where he showed special aptitude in physics and optics. Apparently it was the acquisition of the 30-in. refractor at Pulkova that tempted him to devote his life to astronomy. It was with this instrument that he made the splendid series of observations of Saturn's satellites for which his name will be chiefly remembered. He adopted the plan of comparing the satellites with each other, instead of with Saturn, which led to a great increase in accuracy. His discussion of the observations

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gave greatly improved values of the masses of primary, ring, and satellites, and of the positions of Saturn's equator and the orbit planes; it also revealed some interesting librations in longitude. For this work Struve was awarded the R.A.S. medal and the Damoiseau prize of the Paris Academy. A similar investigation on the system of Mars gave the position of Mars's equator, the amount of its oblateness, and the rate of motion of the nodes.

Other astronomical work included double-star measures, star parallaxes, micrometer measures of Eros, and drawings of Jupiter; moreover, in 1874 Struve took part in the Russian expedition to Port Possiet, Eastern Asia, to observe the transit of Venus.

In 1895 Struve became professor of astronomy at Königsberg, and director of the observatory, for which he obtained a 32.5-cm. refractor. In 1904 he succeeded Dr. W. Foerster as director of the Berlin-Babelsberg Observatory, retaining this post until his death. So late as 1916 he made further observations on Saturn's satellites with

the 26-in. refractor there. He suffered for some time from heart trouble, and his death was probably accelerated by a bad fall last spring. He married in 1885, and leaves a son and daughter.

ALFRED LIONEL LEWIS.

WE regret to record the death of Mr. Alfred Lionel Lewis on October 22. Mr. Lewis, who was in his seventy-ninth year, joined the Anthropological Society of London in 1866, and was elected a member of its council in 1869. When the society was absorbed by the foundation of the Anthropological Institute in 1871, Mr. Lewis became a member of this body, of which at the time of his death he was one of the oldest members. He was elected a member of the council in 1876, and in 1886 he became treasurer, an office which he continued to hold for seventeen years. From 1905 to 1907 he served as vice-president. Mr. Lewis's interests were directed almost exclusively to archæology, and in particular to megalithic monuments, a subject on which he was for many years recognised, especially in France, as one of the foremost authorities. The great accuracy of his measured plans and drawings was not the least valuable feature in the numerous papers on this subject which he contributed to the Proceedings of the Anthropological Institute, the Prehistoric Congresses of France, the International Congresses on Prehistoric Archæology, the International Congress of Religions, and the British Association. He had already attained the fiftieth year of his membership of the last-named body, and had looked forward eagerly to taking part in 1921 in the celebration of the jubilee of the Royal Anthropological Institute.

THE death is announced, at the age of seventy-five, of DR. ANTON WEICHELBAUM, emeritus professor of pathological anatomy in the University of Vienna. Soon after graduation, Weichselbaum became interested in pathology, and published work on the nature of rheumatoid

arthritis. Before long he turned his attention to the then young science of bacteriology, and investigated the cause of pneumonia. About 1886, after a detailed investigation of a number of cases of this disease, he published a paper in which he described a coccus, the *Diplococcus pneumoniae*, as the causative organism, which corresponded with the organism previously described by Fraenkel. In 1887 his *magnum opus* appeared, on the discovery and description of the causal organism of cerebrospinal fever, the *Diplococcus intracellularis*, which is now almost universally accepted as the causative organism of this disease. In 1885 Weichselbaum succeeded Rokitansky in the chair of pathological anatomy, remaining on the active staff of the university until last year, when he was appointed emeritus professor. In 1912 he was installed as Rector Magnificus for the year, the highest honour in the gift of the university. Weichselbaum was a great investigator and a teacher of repute. In addition to numerous original papers and communications, he was the author of "Elements of Pathological Histology," which was translated into English.

THE death of MR. WILLIAM MELVILLE is recorded in *Engineering* for October 29 as having occurred on October 21. Mr. Melville was born in 1850, and served his pupilage with the North British Railway Co., under Mr. James Bell. He joined the Glasgow and South-Western Railway in 1874, and rose to be engineer-in-chief of the company, a position from which he retired in 1916. Mr. Melville was responsible for a large number of extensions and improvements on the railways and docks in Scotland, among which may be mentioned the widening of the City Union lines, Glasgow, which comprised the demolition of the old viaduct carrying the railway over the Clyde, and the substitution therefor of a new viaduct carrying four lines on the site of the old viaduct. He also extended St. Enoch Station, Glasgow, adding six new platforms to the six of the original station.

Notes.

WE are glad to note that a movement is on foot to establish a memorial to the late Mr. W. Duddell, whose early death in November, 1917, deprived many of a valued friend and cut short a career of scientific research of great brilliance. Mr. Duddell's work on the recording of the wave-form of alternating currents, including the development of the oscillograph, had great influence on alternating current theory as well as on telephony, while his well-known researches on the electric arc led up to a large field of development in wireless telegraphy. The memorial is to take the form of a medal to be awarded periodically by the council of the Physical Society at its discretion to those who have advanced physical knowledge by the invention or design of scientific instruments or

of materials used in their construction. If sufficient funds are available, it is also proposed to form a fund to be devoted to the foundation of scholarships or prizes to be awarded to students of the Physical Society under conditions to be determined by the council. We are sure that the many friends whom Mr. Duddell made among the members of the Institution of Electrical Engineers and of the Röntgen Society, of both of which he had been president, and of the Physical Society, of which he was for some years the treasurer, will be glad of the opportunity to support the scheme. An influential committee has been formed under the chairmanship of Sir William Bragg (president of the Physical Society). Mr. R. S. Whipple (president of the Optical Society) is acting