

Tatlock organized and became president of a bank in the Bronx which, flourishing under his administration, was subsequently merged with one of the larger banks of New York City. Nominally this merger marked the close of Mr. Tatlock's business career but up to the very end of life his services were in constant demand for fiduciary purposes, in which he freely served a wide range of friends, including the Astronomical Society. During this period a prominent American university sought, but without success, to secure his services as its Business Manager.

Early in his career Tatlock identified himself with the New York Academy of Sciences and continuously maintained an active interest in its affairs that culminated in election to its presidency, a relation that subsisted up to the time of his decease.

In 1886 Mr. Tatlock was married to Miss Kate Chamberlin and to them was born one child, a son, who died in infancy. Mrs. Tatlock remains as the sole surviving member of his immediate family and to her there flow freely the sympathy and good will of his many astronomer friends.

ON THE APPEARANCE OF THE COMETS IN 1925 FROM OBSERVATIONS AT THE YERKES OBSERVATORY.

By G. VAN BIESBROECK.

During the year 1925 a record number of comets have been visible. It is true that none of them developed a spectacular appearance nor lent itself to a thorough physical study. Several were so faint that even at their brightest they could be seen only with large telescopes. Yet others presented in their physical appearance interesting features that are worth recording.

The year opened with only one comet under observation, an extremely faint little nebulosity discovered by M. Wolf at Heidelberg (Germany) at the end of 1924. It was followed only during a month but this was enough to show that the path described was an ellipse corresponding to a period of some eight years. The object was observed only photographically; the measures are few and uncertain since the light of the comet was not brighter than that of a 16^m star.

The series of newly discovered objects opens in March with two unexpected comets found at two days' interval. The curious circumstances of the discovery of G. Shajn's comet 1925*a* on March 22 at Simeis (Crimea) have been told in *P. A.*, Vol. 33, p. 337. When first seen with the 40-inch refractor the comet appeared to me as a round nebulosity, about 90" in diameter with a 13^m stellar nucleus. The total brightness was estimated 11^m at the end of March. In Fig. 1, reproduced from a 30-minute exposure, that I secured with the 24-inch reflector on March 26, we further notice that the nebulosity surround-

PLATE VII.



FIG. 1.
Comet Shajn, 1925 March 26.16 U. T.

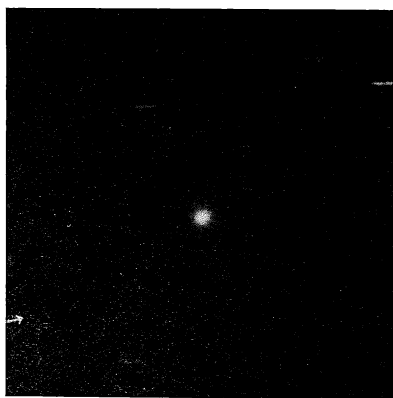


FIG. 2.
Comet Reid, 1925 March 28.29 U. T.

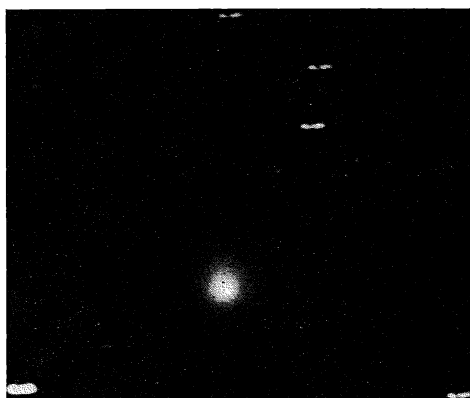


FIG. 3.
Comet Orkisz, 1925 April 23.40 U. T.



FIG. 4.
Comet Tempel II, 1925 July 23.15 U. T.

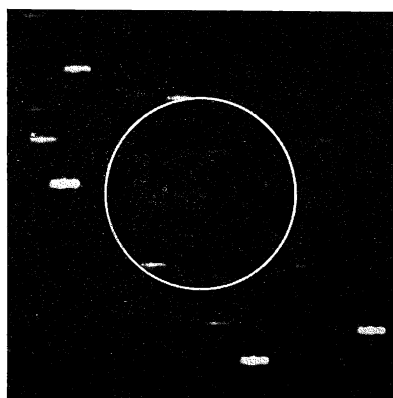


FIG. 5.
Comet Faye, 1925 October 22.40 U. T.

PHOTOGRAPHS OF THE COMETS OF 1925.

POPULAR ASTRONOMY, No. 334.

PLATE VIII.

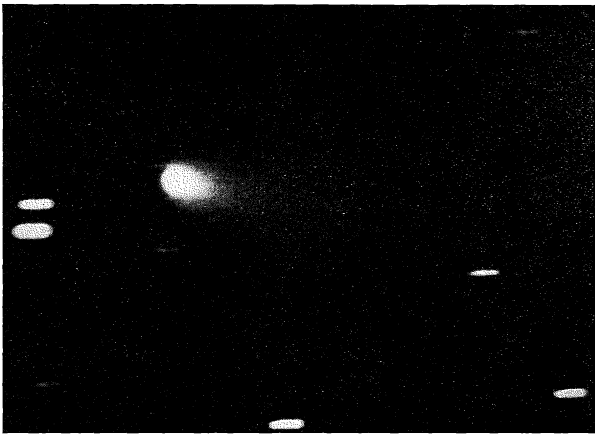


FIG. 6.
Comet Van Biesbroeck, 1925 November 21.45 U.T.

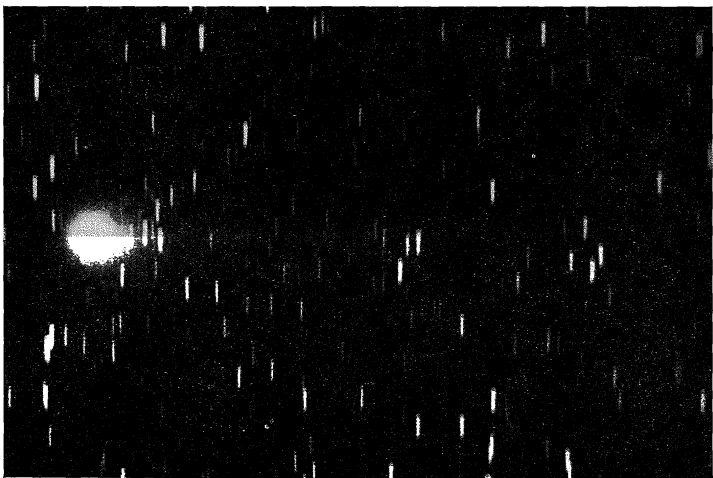


FIG. 7.
Comet Wilk-Peltier, 1925 December 10.00 U.T.

PHOTOGRAPHS OF THE COMETS OF 1925.

POPULAR ASTRONOMY, No. 334.

ing the nucleus is somewhat unsymmetrical and extends mostly in a southwest direction (position angle 240°); this extension could however hardly be called a tail. The object declined in brightness owing to its increasing distance. In June it was lost in the glare of the sun but was again observed in December with little change from its earlier appearance.

The orbit of this comet is exceptional in that at the time of the nearest approach to the sun, which occurred in September, its distance from the central body of our system was over four astronomical units, a figure which is larger than for any other comet known to this date. While slowly receding from both earth and sun this distant visitor will presumably be followed for several months yet in 1926.

The first dispatches about comet Shajn were still being exchanged when another comet was announced, this time from the southern hemisphere. It was picked up at Newlands near Capetown by W. Reid, an enthusiastic amateur, whose name has been mentioned frequently in recent years for similar discoveries. The comet was of about eighth magnitude and was recorded with the 40-inch refractor as a nebulosity of some 5' diameter, the light of which gradually increased towards a central, almost star-like nucleus. The nebulosity extended mostly in a northwest direction. Fig. 2 is a reproduction of a 40-minute exposure with the 24-inch reflector obtained by O. Struve on March 28. The nebulosity shows here a broad extension in position angle 310° , making a coarse tail 15' long. During the exposure a swift meteor crossing the field left a faint trail passing quite close to the head of the comet. The arrow shows the direction of the flight.

While the comet moved farther south its brightness increased and it became visible to the naked eye for observers in the southern hemisphere. Northern observers lost sight of it in May; but in January, 1926, six months after its nearest approach to the sun (July, 1925) the comet had moved sufficiently to the north to be again observable here. I recorded it then as a round diffuse nebulosity 15" in diameter with hardly any central condensation. Its brightness was estimated 12^m on January 12. It is not impossible that later in the year, after its conjunction with the sun, the object may be followed with powerful instruments. This would be very desirable in order to confirm the period of 14 years indicated by preliminary computations for the returns of this comet.

The third new comet of the year, 1925c, was discovered by L. Orkisz at Mount Lysin, a temporary station near Cracow (Poland). On April 18 I estimated its brightness as 8^m . It had a sharp stellar nucleus surrounded by a nebulosity about 5' in diameter, which extended mostly in a direction opposite to the sun. Moving rapidly to the north the comet was then near its greatest brilliancy; it had passed nearest to the sun shortly before its discovery. Fig. 3 shows the appearance on April 23, from a plate that I exposed 15 minutes with the 24-inch reflector. The dissymmetry of the nebulosity around the nucleus is quite notice-

able, but the plates reveal furthermore the existence of a broad tail, which can be followed on the original to about 12' from the nucleus in position angle 285°. Visual observations did not disclose this tail at all. From an examination of the spectrum with the 6-inch UV prism-camera, N. Bobrovnikoff finds that almost all the radiation is concentrated in two bands: one at λ 3883 due to cyanogen and one at λ 4693 of carbon monoxide. The continuous spectrum due to the reflected sunlight also showed quite distinctly (*P. A.*, Vol. 33, p. 417). This comet came within 8° of the pole on June 1, and was still of about 9^m at that time, but then it gradually became fainter. I observed it again in November and December as a 14th magnitude small nebulosity, only 20" in diameter, and expect to follow it for several months yet before it is too faint for our instruments.

Next in order of discovery comes an exceptional series of five periodic comets. For all of these good search ephemerides were available so that it would be better to call these recoveries rather than discoveries. The first of these is comet Temple II 1925*d* found photographically by J. Stobbe at Bergedorf (Germany) on June 11. When first seen here on June 18, I estimated the brightness as 11^m and noted that most of the light was concentrated in a sharp nucleus out of which emanated a broad fan-shaped tail some 3' long in position angle 290°. In the opposite direction there was no nebulosity to speak of, so that the nucleus was situated very eccentrically on the following side of the body. Fig. 4 reproduced from a plate that I exposed July 23 with the 24-inch reflector shows this characteristic shape. On July 15 I estimated the tail as 20' long. The spectrum was investigated about that time by N. Bobrovnikoff with the 6-inch prism-camera; it showed little reflected sunlight but three strong emissions, one corresponding to the cyanogen band at λ 3883 and two others due to carbon monoxide (*P. A.*, Vol. 33, p. 638). The comet reached a maximum brightness of 8^m about the time of its perihelion passage August 7. After that date its brightness fell off rapidly and northern observers soon lost sight of it on account of its southerly position. Toward the end of the year I saw it again on a couple of nights; on December 13, I estimated the brightness as 16^m. It appeared then as a round diffuse nebulosity some 15" in diameter, which was not seen after that date.

The next periodic comet 1925*e* (Wolf) was picked up by photography at Bergedorf, by W. Baade on July 13, almost exactly in the place predicted by Kamiensky, director of the Warsaw Observatory. On July 18, I recorded it as an inconspicuous small nebulosity, only 10" in diameter, and not brighter than 15^m. It stayed so through the summer months brightening up to 14^m.5 in August. On August 22 the nucleus itself was about 5" in diameter and situated on the following side of the nebulosity, which extended to 25" in direction 270°. In November the comet was much fainter and at the limit of visibility for the 40-inch refractor. With the 24-inch reflector a last exposure was obtained by Mr. Struve on December 19; the brightness was then estimated as 17^m.

Periodic comet Borrelly 1925*f*, which appeared next in the chronological order, became considerably brighter than the previous one. It was found on August 14 by A. Schaumasse, at Nice (France), by means of an ephemeris computed at that observatory. On August 18, I estimated it as of 13^m; it appeared as a small nebulosity with a tail of 1', in position angle 90°. In the following months it brightened up to 10^m, the tail-like appendix being quite noticeable all of the time. When last seen here on January 19, 1926, it was only of 13^m, with the tail in position angle 280°. Still well situated for observation in the northern sky, it will probably be followed for quite a while.

Two more faint periodic comets, Brooks (1925*g*) and Faye (1925*h*), were found near the predicted places on September 22 in Simeis and on October 20 in Bergedorf, respectively. Both were subsequently found on plates taken before the date of their first recovery. Comet Brooks was recorded here on October 10 as an elliptic nebulosity with an eccentrically placed nucleus situated towards the preceding side. It was then estimated at 13^m.5 and did not become any brighter afterward. When last photographed, on December 10, with the 24-inch reflector I estimated the brightness at 15^m.5. Comet Faye was hardly more conspicuous. On October 22 (Fig. 5) it showed a 14^m nucleus with a very faint tail 3' long in position angle 60°. This plate was exposed for 30 minutes with the 24-inch reflector; the comet appears very faintly. Like most faint comets it was very inactive photographically. In January, 1926, it had faded to 15^m but was still in good position for further observations.

The month of November was marked by the appearance of two unexpected cometary visitors.

On November 17, I turned the 40-inch telescope on the field of Comet Orkisz with the purpose of determining the position after its conjunction with the sun. In locating the field in the 4-inch Mellish finder, I was struck by the sight of an entirely different comet (*P. A.*, Vol. 33, p. 697). I knew Comet Orkisz was quite faint at that time, while here was a large object, fully 8^m in brightness; it had a sharp nucleus surrounded by a well-defined paraboloid envelope extending in a north-western direction into a tail visible over 30'. It was an impressive sight. The hope of seeing Comet Van Biesbroeck 1925*j* develop into a spectacular appearance was however quickly shattered. At discovery the object was already six weeks past its perihelion and soon it showed a marked decrease in brightness. The weather interfered badly with the photographic observations and besides the lack of blue light in the comet made the object decidedly fainter on the plate than it appeared to the eye. Fig. 6 is an enlargement from a 60-minute exposure with the 24-inch reflector obtained on a rather poor night, November 21. It shows the general appearance on that date, but the tail can be traced to only 15' from the head on the original plate, while visually it was plainly visible over twice that extent. With the increasing distances from both the sun and earth the comet decreased rapidly in brilliancy.

When last observed here (January 19, 1926) the brightness was estimated only $10^{\text{M}.2}$, but the tail was visible over a length of 8' in the 4-inch finder. We expect to follow this comet for several months.

The other fairly bright November comet was first found by the enthusiastic variable star observer L. Peltier at Delphos (Ohio) on November 14. His report of a rough position with the indication "motion southeast" reached the observatories after some delay, and in the meantime the object was independently found on November 19 by Wilk (Cracow, Poland), who gave the first accurate position and sent out the first telegraphic announcement. The object designated as Comet Wilk-Peltier 1925*k*, when first observed here on November 21, appeared as a round diffuse nebulosity, 2' in diameter with a coarse nucleus. The brightness was estimated as $7\frac{1}{2}^{\text{M}}$ so that it was not very much below the limit of naked eye visibility. A photographic plate on that date showed a faint narrow tail in position angle 25° extending to about 15' from the nucleus. Soon the moon interfered with photographic observations. When the object was photographed again on a black sky, December 10, it had the striking appearance shown by Fig. 7, obtained from a 24-minute exposure with the 24-inch reflector. The comet was then only three days past its perihelion. The tail is quite plain as far as 43' from the head; it can be traced fading out gradually for 13' more, making a total of nearly one degree. From the round head, about 3' in diameter, emanates a wide bundle of streamers, the axis of which is marked by a straight threadlike streamer in position angle 53° . At 20' from its origin the tail begins to spread out and takes at the same time a somewhat devious course. Of the lateral streamer, noticed on December 8 by M. Wolf at 10' from the head on the south side, there is left no other indication than a slight brightening up at 17' distance. That part of the tail material seems therefore to have travelled about 7' in an interval of 1.2 days. Over most of its length the southern edge of the tail is somewhat sharper than the northern.

In its rapid southward motion the comet soon became difficult to observe. It was followed here in its decline until the last of the year when the brightness had decreased to about $10^{\text{M}.5}$. Further observations will probably be obtained in the southern hemisphere.

Finally, before the year was over another new comet was reported from South Africa. Discovered by Ensor at Pretoria it was described as of 8^{M} , with a tail 15' long. Computation indicates that this object will brighten up as it moves north in February and March. Is this going to be a bright naked eye object such as we have not seen for many years?

Williams Bay, Wisconsin, February 6, 1926.

NOTE ADDED MARCH 18.

Our search for comet Ensor has been unsuccessful. I tried it with the 6-inch comet-seeker in the second part of February without finding anything. A photographic search by F. Ross was not more successful,