



Jack Bennett's Catalogue of Southern Comet-like Deep-sky Objects

Deep-sky Observing Challenge

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Jack Bennett and his catalogue

For two decades, starting in the late 1960's, the southern sky was patrolled by a dedicated South African comet-hunter named Jack Bennett. He observed from his urban backyard with a 5-inch low-power refractor. Not only did he discover two comets, he also picked up a 9th magnitude supernova in NGC 5236 (M83), becoming the first person ever to visually discover a supernova since the invention of the telescope.

Bennett was born on April 6th, 1914 and passed away on May 30th, 1990. A long-standing member of the Astronomical Society of Southern Africa (ASSA), he was elected President in 1969. The Society awarded him the prestigious Gill Medal for services to astronomy in 1970 and in 1986 he received an Honorary Degree of Master of Science from the University of Witwatersrand. In 1989, at the recommendation of Rob McNaught of Siding Springs Observatory, the asteroid VD 4093 was named after him.

Bennett was a skilled observer and in the spirit of Charles Messier drew up two lists of southern objects that appeared comet-like in his telescope. His first list (Bennett, 1969) was published four months before he discovered his first comet. The supplementary list (Bennett, 1974) was followed three months later by his second discovery.

In his 1969 Presidential Address to the ASSA Bennett said: "As an aid to the recognition of comet-like objects in the Southern sky, and to help observers to eliminate them in comet searches, I have over the past five years compiled a list of 130 such objects visible south of the celestial equator. Nearly a hundred of these have been encountered under varying conditions in comet sweeps using a 5-inch short-focus refractor with a magnification of 21 diameters. The rest have been added, and duly observed with the same telescope, after consulting various sources, notably E. J. Hartung's first-rate book *Astronomical Objects for Southern Telescopes* which includes details of the appearance in telescopes of various apertures of all but 16 of the 130 objects." Bennett's 1974 article "Some objects of interest in the southern sky" introduced 22 new comet-like objects "which had been observed (many of them repeatedly) in comet sweeps" since his first list was published. These two lists have been combined to form the Bennett Catalogue (Appendix 4, page 35). Bennett's list reads like the "Who's Who of the Deep Sky". Among the 152 objects are the Tarantula, Omega Centauri, 47 Tucanae, Sombrero and the Silver Coin. Twenty-six of Messier's objects are listed. Bennett noted that including such bright objects may be unnecessary, but added: "it is surprising how easily even these can be mistaken for comets when seen at low altitudes and poor conditions."

Almost half the objects in Bennett's list are globular clusters, which makes sense since these bear a striking resemblance to comets. The constellation richest in Bennett objects is Sagittarius, followed by Ophiuchus. Bennett wrote that "the constellations Scorpio, Ophiuchus and Sagittarius . . . contain a bewildering variety of comet-like objects. These are mostly globular clusters and all except the largest defy attempts to distinguish them from tailless comets. This relatively small area of sky contains about a third of all the comet-like objects visible with small telescopes south of the equator."

Dorado also contains many Bennett's – five galaxies and six clusters and nebulae. The latter lie within the Large Magellanic Cloud which, according to Bennett, "should normally be avoided like the plague by anyone looking for comets. There are, however, a few objects on the outskirts of the Clouds which are regularly encountered in comet sweeps, and these have been included in the list, if only as a warning to the observer of the perils that lie ahead of him!"



Jack Bennett at the eyepiece of the 12-inch Pretoria Centre telescope. It is housed in the Jack Bennett Observatory which is on the grounds of the Christian Brothers College. On the reverse side of the original photo, in Bennett's handwriting, is the caption: "Pretoria Centre telescope, 1977, with antiquated observer".

The Bennett Catalogue

Bennett number	Other designation	RA			Dec		Con
		h	m	s	°	'	
Ben 1	NGC 55	0	14	54	-39	11	Scl
Ben 2	NGC 104	0	24	06	-72	05	Tuc
Ben 3	NGC 247	0	47	06	-20	46	Cet
Ben 4	NGC 253	0	47	36	-25	17	Scl
Ben 5	NGC 288	0	52	48	-26	35	Scl
Ben 6	NGC 300	0	54	54	-37	41	Scl
Ben 7	NGC 362	1	03	12	-70	51	Tuc
Ben 8	NGC 613	1	34	18	-29	25	Scl
Ben 9	NGC 1068	2	42	42	-00	01	Cet
Ben 10	NGC 1097	2	46	18	-30	17	For
Ben 10a	NGC 1232	3	09	48	-20	35	Eri
Ben 11	NGC 1261	3	12	18	-55	13	Hor
Ben 12	NGC 1291	3	17	18	-41	08	Eri
Ben 13	NGC 1313	3	18	18	-66	30	Ret
Ben 14	NGC 1316	3	22	42	-37	12	For
Ben 14a	NGC 1350	3	31	06	-33	38	For
Ben 15	NGC 1360	3	33	18	-25	51	For
Ben 16	NGC 1365	3	33	36	-36	08	For
Ben 17	NGC 1380	3	36	30	-34	59	For
Ben 18	NGC 1387	3	37	00	-35	31	For
Ben 19	NGC 1399	3	38	30	-35	27	For
Ben 19a	NGC 1398	3	38	54	-26	20	For
Ben 20	NGC 1404	3	38	54	-35	35	Eri
Ben 21	NGC 1433	3	42	00	-47	13	Hor
Ben 21a	NGC 1512	4	03	54	-43	21	Hor
Ben 22	NGC 1535	4	14	12	-12	44	Eri
Ben 23	NGC 1549	4	15	42	-55	36	Dor
Ben 24	NGC 1553	4	16	12	-55	47	Dor
Ben 25	NGC 1566	4	20	00	-54	56	Dor
Ben 25a	NGC 1617	4	31	42	-54	36	Dor
Ben 26	NGC 1672	4	45	42	-59	15	Dor
Ben 27	NGC 1763	4	56	48	-66	24	Dor
Ben 28	NGC 1783	4	58	54	-66	00	Dor
Ben 29	NGC 1792	5	05	12	-37	59	Col
Ben 30	NGC 1818	5	04	12	-66	24	Dor
Ben 31	NGC 1808	5	07	42	-37	31	Col
Ben 32	NGC 1851	5	14	06	-40	03	Col
Ben 33	NGC 1866	5	13	30	-65	28	Dor
Ben 34	NGC 1904	5	24	30	-24	33	Lep
Ben 35	NGC 2070	5	38	36	-69	05	Dor
Ben 36	NGC 2214	6	12	48	-68	16	Dor
Ben 36a	NGC 2243	6	29	48	-31	17	CMa
Ben 37	NGC 2298	6	49	00	-36	00	Pup
Ben 37a	NGC 2467	7	52	36	-26	23	Pup
Ben 38	NGC 2489	7	56	12	-30	04	Pup
Ben 39	NGC 2506	8	12	00	-10	47	Mon
Ben 40	NGC 2627	8	37	18	-29	57	Pyx
Ben 40a	NGC 2671	8	46	12	-41	53	Vel
Ben 41	NGC 2808	9	12	00	-64	52	Car
Ben 41a	NGC 2972	9	40	18	-50	20	Vel

Bennett number	Other designation	RA			Dec		Con
		h	m	s	°	'	
Ben 41b	NGC 2997	9	45	36	-31	11	Ant
Ben 42	NGC 3115	10	05	12	-07	43	Sex
Ben 43	NGC 3132	10	07	00	-40	26	Vel
Ben 44	NGC 3201	10	17	36	-46	25	Vel
Ben 45	NGC 3242	10	24	48	-18	38	Hya
Ben 46	NGC 3621	11	18	18	-32	49	Hya
Ben 47	Mel 105	11	19	39	-63	30	Car
Ben 48	NGC 3960	11	50	52	-55	41	Cen
Ben 49	NGC 3923	11	51	00	-28	48	Hya
Ben 50	NGC 4372	12	25	48	-72	40	Mus
Ben 51	NGC 4590	12	39	30	-26	45	Hya
Ben 52	NGC 4594	12	40	00	-11	37	Vir
Ben 53	NGC 4697	12	48	36	-05	48	Vir
Ben 54	NGC 4699	12	49	00	-08	40	Vir
Ben 55	NGC 4753	12	52	24	-01	12	Vir
Ben 56	NGC 4833	12	59	36	-70	53	Mus
Ben 57	NGC 4945	13	05	24	-49	28	Cen
Ben 58	NGC 4976	13	08	36	-49	30	Cen
Ben 59	NGC 5061	13	18	06	-26	50	Hya
Ben 59a	NGC 5068	13	18	54	-21	02	Vir
Ben 60	NGC 5128	13	25	30	-43	01	Cen
Ben 61	NGC 5139	13	26	48	-47	29	Cen
Ben 62	NGC 5189	13	33	30	-65	59	Mus
Ben 63	NGC 5236	13	37	00	-29	52	Hya
Ben 63a	NGC 5253	13	39	54	-31	39	Cen
Ben 64	NGC 5286	13	46	24	-51	22	Cen
Ben 65	NGC 5617	14	29	48	-60	43	Cen
Ben 66	NGC 5634	14	29	36	-05	59	Vir
Ben 67	NGC 5824	15	04	00	-33	04	Lup
Ben 68	NGC 5897	15	17	24	-21	01	Lib
Ben 69	NGC 5927	15	28	00	-50	40	Lup
Ben 70	NGC 5986	15	46	06	-37	47	Lup
Ben 71	NGC 5999	15	52	12	-56	28	Nor
Ben 72	NGC 6005	15	55	48	-57	26	Nor
Ben 72a	Trumpler 23	16	01	30	-53	32	Nor
Ben 73	NGC 6093	16	17	00	-22	59	Sco
Ben 74	NGC 6101	16	25	48	-72	12	Aps
Ben 75	NGC 6121	16	23	36	-26	32	Sco
Ben 76	NGC 6134	16	27	42	-49	09	Nor
Ben 77	NGC 6144	16	27	18	-26	02	Sco
Ben 78	NGC 6139	16	27	42	-38	51	Sco
Ben 79	NGC 6171	16	32	30	-13	03	Oph
Ben 79a	NGC 6167	16	34	24	-49	36	Nor
Ben 79b	NGC 6192	16	40	18	-43	22	Sco
Ben 80	NGC 6218	16	47	12	-01	57	Oph
Ben 81	NGC 6216	16	49	24	-44	44	Sco
Ben 82	NGC 6235	16	53	24	-22	11	Oph
Ben 83	NGC 6254	16	57	06	-04	06	Oph
Ben 84	NGC 6253	16	59	06	-52	43	Ara
Ben 85	NGC 6266	17	01	12	-30	07	Oph

Bennett number	Other designation	RA			Dec		Con
		h	m	s	°	'	
Ben 86	NGC 6273	17	02	36	-26	16	Oph
Ben 87	NGC 6284	17	04	30	-24	46	Oph
Ben 88	NGC 6287	17	05	12	-22	42	Oph
Ben 89	NGC 6293	17	10	12	-26	35	Oph
Ben 90	NGC 6304	17	14	30	-29	28	Oph
Ben 91	NGC 6316	17	16	36	-28	08	Oph
Ben 91a	NGC 6318	17	17	48	-39	27	Sco
Ben 92	NGC 6333	17	19	12	-18	31	Oph
Ben 93	NGC 6356	17	23	36	-17	49	Oph
Ben 94	NGC 6352	17	25	30	-48	25	Ara
Ben 95	NGC 6362	17	31	54	-67	03	Ara
Ben 96	NGC 6388	17	36	18	-44	44	Sco
Ben 97	NGC 6402	17	37	36	-03	15	Oph
Ben 98	NGC 6397	17	40	42	-53	40	Ara
Ben 98a	NGC 6440	17	48	54	-20	22	Sgr
Ben 98b	NGC 6445	17	49	12	-20	01	Sgr
Ben 99	NGC 6441	17	50	12	-37	03	Sco
Ben 100	NGC 6496	17	59	00	-44	16	CrA
Ben 101	NGC 6522	18	03	36	-30	02	Sgr
Ben 102	NGC 6528	18	04	48	-30	03	Sgr
Ben 103	NGC 6544	18	07	18	-25	00	Sgr
Ben 104	NGC 6541	18	08	00	-43	42	CrA
Ben 105	NGC 6553	18	09	18	-25	54	Sgr
Ben 106	NGC 6569	18	13	36	-31	50	Sgr
Ben 107	NGC 6584	18	18	36	-52	13	Tel
Ben 107a	NGC 6603	18	18	24	-18	25	Sgr
Ben 108	NGC 6618	18	20	48	-16	11	Sgr
Ben 109	NGC 6624	18	23	42	-30	22	Sgr
Ben 110	NGC 6626	18	24	30	-24	52	Sgr
Ben 111	NGC 6638	18	30	54	-25	30	Sgr

Bennett number	Other designation	RA			Dec		Con
		h	m	s	°	'	
Ben 112	NGC 6637	18	31	24	-32	21	Sgr
Ben 112a	NGC 6642	18	31	54	-23	29	Sgr
Ben 113	NGC 6652	18	35	48	-32	59	Sgr
Ben 114	NGC 6656	18	36	24	-23	54	Sgr
Ben 115	NGC 6681	18	43	12	-32	18	Sgr
Ben 116	NGC 6705	18	51	06	-06	16	Sct
Ben 117	NGC 6712	18	53	06	-08	42	Sct
Ben 118	NGC 6715	18	55	06	-30	29	Sgr
Ben 119	NGC 6723	18	59	36	-36	38	Sgr
Ben 120	NGC 6744	19	09	48	-63	51	Pav
Ben 121	NGC 6752	19	10	54	-59	59	Pav
Ben 122	NGC 6809	19	40	00	-30	58	Sgr
Ben 123	NGC 6818	19	44	00	-14	09	Sgr
Ben 124	NGC 6864	20	06	06	-21	55	Sgr
Ben 125	NGC 6981	20	53	30	-12	32	Aqr
Ben 126	NGC 7009	21	04	12	-11	22	Aqr
Ben 127	NGC 7089	21	33	30	-00	49	Aqr
Ben 128	NGC 7099	21	40	24	-23	11	Cap
Ben 129	NGC 7293	22	29	36	-20	48	Aqr
Ben 129a	NGC 7410	22	55	00	-39	40	Gru
Ben 129b	IC 1459	22	57	00	-36	28	Gru
Ben 130	NGC 7793	23	57	48	-32	35	Gru

Key: The first column gives the Bennett number followed by a cross reference in other catalogues NGC or IC. One object Ben 47 is listed in the catalogue of open clusters by Melotte while Ben 72a is included in Trumpler's catalogue. The RA and Dec follow (epoch 2000.0). The second last column contains the chart number in Uranometria 2000.0 on which the object appears. The last column names the constellation containing the object.

Notes: Bennett remarked: "It should be noted that some of the objects are not truly comet-like even under low magnification unless conditions are second-rate. They have been included because such conditions all too often befall the comet-hunter." He used a 5" short-focus refractor working at 21x for his comet sweeping. There are 22 objects with a Bennett number suffix "a". These objects appeared in a later list see reference 2. Twenty-six of Messier's objects are included in the catalogue.

- Sources**
1. Monthly Notes of the Astronomical Society of Southern Africa, Vol 28 No 8 August 1969
 2. Monthly Notes of the Astronomical Society of Southern Africa, Vol 33 No 8 August 1974 pp 107-109
 3. New General Catalogue JLE Dreyer

Obituary: John Caister Bennett (1914-1990)

by Jose A. da S. Campos

South African astronomy became poorer and indeed that of international amateur astronomy, with the loss of Jack Bennett who passed away on the morning of 30th of May 1990 in Pretoria, at the age of 76 years old.

John Caister Bennett was born on April 6th, 1914 in Estcourt Natal; his mother was British and his father was from Longford, Tasmania.

Jack became interested in Astronomy when as a teenage, his mother used to point out to him the Southern Cross and the brightest stars and planets, in the evenings after church services, on their way back home.

A long standing member of ASSA, Jack became its President during 1968-69 and in 1970 he was presented with the Gill Medal and made Honorary Member on October 1989. He was also an Honorary Member of the Pretoria Centre, having served as its Chairman for several terms. The University of Witwatersrand in 1986 conferred on him the Honorary Degree of Master of Science and last December, at the recommendation of Rob McNaught, Siding Springs Obs., the IAU named asteroid VD 4093 after Jack Bennett.

His instruments were a 3-inch refractor, 10x60 binoculars plus a fine Zeiss 7x35 binoculars and an 8-inch Celestron telescope that he purchased during the late seventies. However, as Jack had a preference for "low power" observing, his favourite instrument was a 5-inch refractor (apogee telescope), 21 power, giving a field of view of a degree and a quarter, mounted on an altazimuth mounting. It was with this instrument that he discovered a 9th magnitude supernova (1968L) in M83 (NGC 5236) in Hydra, on the night of July 16th 1968, becoming the first person ever to visually discover a supernova since the invention of the telescope. It was also with this same instrument that on December 28, 1969 he discovered his first comet of 8.5 mag in Tucana, after 333 hours of searching; comet Bennett 1970 II became a fine naked-eye object seen and admired and remembered by many amateur and professional astronomers all over the world; his second comet discovery was made on the early morning of November 13 1974 - comet Bennett 1974 XV of mag. 9 - after another 482 hours of comet-searching from the back-yard of his home at 90 Malan Street in Pretoria.

During his searches for comets, Jack compiled a list of southern hemisphere objects that appeared cometlike in small telescopes using low power - "shades of Messier" he told me; this list was published in MNASSA, Vol 28, August 1969, followed by a Supplementary list that appeared in MNASSA, Vol 33, August 1974 - a bonus for any comet hunter!

Since he took up comet searching in 1967, seeing conditions deteriorated due to increasing artificial light pollution and severely limited his observations - I recall him saying that on two occasions, possible new comets were lost due to poor sky visibility not enabling him to make positive confirmations and on the following sweeping sessions they were subsequently lost. Jack had a keen, general interest in Astronomy but his favourite subject was comets, with meteors as a close second; in 1968 Jack took over from the late S.C. Venter, as Director of the ASSA Comet & Meteor Section, a position he that he held until July 1985 when his health declined, due to arthritis.

On October 16, 1976, Jack attended an AAVSO meeting in Cambridge, Mass., and was presented with their 'Nova Award' in respect of his being the first AAVSO member to discover a supernova. Following a suggestion from AAVSO, Jack organized a Nova Search for interested observer in Southern Africa, thus, serving as Director of that Section during 1975-1987. For several years, Jack was associated with the IAU Commission 20 (Comets).

Jack Bennett – An Appreciation

by Brian Marsden

Jack Bennett was as accomplished an amateur astronomer as one could meet - yet also one of the most modest and unassuming. Although best known for his discovery of comet 1969i, which went on to become one of the greatest of the 20th century, he was never aggressively competitive about his comet hunting, generally being quite content to make accidental discoveries of comets that were already known and being magnanimous enough to encourage other amateur astronomers in this sport. Following a discussion on some of these cases I concluded a letter to him in January 1968 with the sentence "I hope it will not be long before we indeed have a 'Comet Bennett' ". Although almost two years elapsed before this rather dramatically came to pass, he did also make history within six months with the first visual discovery by an amateur of a supernova in another galaxy. The galaxy was Messier 83, and on picking it up on the course of his comet hunting he was astute enough to notice that the novel presence of a bright point in the vicinity of the nucleus made the galaxy look more like a comet than usual. It was on account of this supernova that I finally got a chance to meet him - when he was finally awarded the AAVSO medal for visual nova/supernova discoveries in 1976.

Even when he did happen on comet 1969i, what seemed most to impress his was that he found it while using the ephemerids I had prepared for searching for members of the Kreutz sungrazing group. The other Comet Bennett, 1974h, also happened to be near the Kreutz track, although this time he was not using the ephemerids. It clearly puzzled him to have this comet, an easy object for his Moonwatch Apogee telescope but not obviously moving, all for himself. Although this comet was slightly brighter on the following two mornings, it then faded rapidly, all the while becoming larger and more and more diffuse. This was a classic and well documented case of a comet failure, and the circumstance tended to support Jack's conclusion that the object must just have started to flare when he discovered it. It also tended to support his feeling that other diffuse objects he had detected but could not subsequently confirm, in March 1965 and February 1966, may have been comets that were just ending similar outbursts when first seen.