A F I Forbes of Hermanus

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One of the first things I spotted when we moved to Hermanus was a house which had an observatory dome in the roof. Enquiries revealed that the house was owned by George and Mary Stoddart but, although it was considered a bit of a curiosity, it was believed that there was nothing in the dome.

I received an e-mail from Cliff Turk asking if I could find any information about A F I Forbes, who had in the past been credited with a comet discovery believed to have been made from Hermanus. The background which Turk gave made it fairly obvious that Forbes must have been the original owner of the Stoddart's house with its observatory, and also that it was very likely still equipped with what might be left of its original equipment.

Alexander Forbes Irvine Forbes (1871–1959), an architect by profession, was an active amateur astronomer and a member of the Cape Astronomical Association and was serving on its council when the ASSA was formed in 1922. He was also a member of the Cape Centre where he served as Treasurer. He was President of the Society for 1942–1943. Forbes retired to Hermanus in 1932, to the house which he had designed and built in preparation for this event and had moved his telescope from its original location at Liesbeek Road, Rosebank, Cape Town (anon. 1959).

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Further research, with the help of Turk and Tim Cooper, came up with information that Comet C/1932Y1, discovered 1932 December 15, is credited to AFI Forbes of Hermanus (Cooper 2002). Spurred on by this, I introduced myself to George Stoddart who has owned a flourishing plumbing business in Hermanus for some 31 years. He bought the house from Andrew van Wyk who was retiring at the time from the Hermanus Magnetic Observatory.

An unresolved puzzle is that van Wyk must have bought the house prior to 1952 January 15 which is the date of Forbes' Will (signed in Cape Town). A copy of the will, obtained by Turk from the Registrar, shows no record of any fixed property in Hermanus. Yet, it is recorded that Forbes returned to Cape Town in 1956 due to ill health.

Although interested in astronomy, and having been acquainted with Forbes, van Wyk apparently did not make use of the observatory. Forbes, according to van Wyk, had a substantial and valuable library (anon. 1973). So far, no trace of this potentially very interesting library can be found – Turk is pursuing this lead. George Stoddart did have some interesting anecdotal stories of Forbes, the man.

Forbes was an architect by profession and several examples of his designs still exist in Hermanus. His own house reveals something of the scientist as it has three gables fashioned as perfectly proportioned semi-

(left) West and south gables at 20 Fourie Street, with the observatory dome visible on the north side. (right) East Gable. The original staircase platform now supports a large solar panel. All photographs with this article (c) 2002 Steve Kleyn.

ellipses, this motif being repeated in several details, such as superbly crafted doors throughout the house which have the upper half in leaded glass surrounding a replica semi-elliptical solid wood panel. He was a skilled craftsman as well and it is believed that he made these doors himself.

He was reputed to have been a recluse and did not participate in the social life of the town but was treated with great respect as he was ever the true gentleman, always immaculately dressed in a suit wearing a soft hat and spats over his shoes. This picture agrees perfectly with the photographs one sees in old astronomy publications showing astronomers in suitable pose at their telescopes, dressed in what would, by today's standards, be considered formal attire.

His house was obviously designed at the outset to incorporate his private observatory as it is very much an integral part of the structure and not an 'add on'. The observatory is situated above the kitchen area on the north side of the house, and has solid cast concrete walls and floor befitting a professional class observatory. There was an exterior wooden staircase to a concrete platform outside the dome with a low door through the wall into the square room under the dome. This external staircase has been removed as it had deteriorated and became unsafe and the platform now supports a very large solar panel. The original concrete footing of the staircase bears the year 1935 engraved into the surface. It seems therefore that this external staircase was only completed at this time as the observatory was obviously already operational in 1932, access being firstly from an inside door.

This inside door, connecting the house roof volume to the kitchen, still has the original counterbalanced, retractable ladder. This is now the only access. One can imagine the gentleman astronomer mounting the outside staircase at twilight, giving the sky a quick visual scan before going in to do his nights observing; sometime later his wife or dutiful servant would come in through the inner door, bringing him up a cup of hot cocoa to ward off the chill of the night.

The dome is 2.4 m in diameter, and is a very solid steel frame structure, clad with aluminium and is to this day still perfectly weather tight. The shutters are of teak and

are secured with 12 steel bars and eccentric clamps which have to be removed, and the shutters then manually lifted outwards and turned sideways to clear the frame and brought to the inside. All are numbered in what one would suppose is the sequence in which they should be removed/installed as each piece has obviously been hand-made and fitted and must therefore be returned to its correct position. I certainly would not relish having to close up in a hurry when a sudden storm or strong wind comes up as it is wont to do in Hermanus! The room below the dome is 3 m square with solid cast concrete walls 1.5 m high to the underside of the dome rail. There is remarkably little corrosion evident, in spite of the proximity to the sea, and the general condition of the surrounding building and masonry is remarkably good. The whole of the inner circumference of the rail on which the dome rotates has a 30 mm wide painted strip which is accurately marked in 1° increments from 0 to 360°. There are four screws spaced at 90° with turned wooden knobs which lock the dome against turning and secure it against strong winds.

Forbes' 210mm Newtonian. Note the astronomers steps and adjustable seat in the background.

The telescope itself is unhappily in a rather poor state of repair. Too many years of not being used and maintained have taken their toll and extensive restoration will be required. But at first sight it seems that the basic mechanical structure is still sound, damage being mostly to finish and some of the very fine detail. It is of Newtonian design, on an equatorial fork mount, with a 210 mm f/7.6 primary mirror and a three-vane spider carrying a 32 mm diagonal mirror, housed in a fully enclosed 1.6 m cylindrical tube.

The tube is of wood, made up in narrow strips of exceptionally thin section, turned perfectly circular on the outside and securely banded with copper rings at close centres. Black velvet cloth, still in good condition, lines the full length of the tube interior. The two ends are fitted with solid brass stiffening rings. The mirror cell is attached by three 6 mm (¼″) studs fixed to brass reinforcing plates on the tube. This seems a little flimsy but is quite adequate. Attachment to the fork is by hand-wrought steel split-clamps over the tube, the clamps being riveted to a solid saddle with bearing spigots turning in split-bearing shells on the fork ends with adjustable friction caps of brass.

The fork is either of light steel encased in very hard cement mortar, or solid cast concrete with suitable steel reinforcing, and imparts a feeling of unshakable solidness to

the assembly. The fork is supported on an L-shaped cradle of solid cast concrete with a lower bearing and an upper bearing attached to the flat surface between the fork arms. This upper bearing limits the movement of the fork in RA to 25° above the east and west horizons. This horizon limit is the same in declination due to the declination axis of the tube mounting being a little below the edge of the dome rail. In other words, the telescope has an all-round altitude limit of 25°. The cradle has its north end built into the wall and the south supported on a masonry pillar to the floor. I suspect that this masonry pillar probably encloses an original adjustable steel stand which would have been required in order to make accurate polar alignment. The original stand might have become insecure through corrosion or other damage. An interesting point is that the fork mounting cradle has the year 1922 cast into the south face, suggesting the year of manufacture.

The mirror cell is very simple with no visible adjustment for collimation. However, the mirror cell as a whole can be adjusted by means of backnuts on the mounting studs. The outside of the cell has strips of lead sheet riveted in place for fine balancing of the tube assembly. Most of the original silver coating is gone, fingerprints on the remaining patches being an indication of what has happened. The mirror surface seems undamaged and could therefore be cleaned and aluminised, although some corrosion of the glass surface from fingerprints could have taken place and re-figuring may be necessary. The cell has been dropped (in more recent times I suspect) resulting in a flake chip on the edge of the front surface about the size of a small fingernail. This should not seriously affect performance if it is suitably masked.

There are three eyepieces of unknown pedigree, one having a 38 mm (1½″) barrel and the other two have 32 mm (1¼″) barrels with turned wood sleeves to 38 mm. The lenses are heavily coated with grime and will need extensive, careful cleaning. There is no focusing mechanism. The eyepiece mounting, which is very short and close to the tube, provides only a snug friction fit allowing the eyepiece to be slid in or out to focus. As this gives only about 20 mm of movement, the eyepieces need to be reasonably close to parfocal.

Forbes wrote three articles for the *Journal of the Astronomical Society of Southern Africa* (JASSA), the fore-runner of *MNASSA*.

His first contribution (*JASSA*, November 1926) describes an "Articulated Tripod Stand for a Telescope". He gave clear instructions for making a simple, heavy-duty tripod that works equally well in an alt-azimuth and equatorial configuration. Since a sturdy tripod today costs well over R300, but is an essential tool for mounting binoculars or a small telescope, Forbes' design is well worth looking into.

In the April 1938 *JASSA*, he described how to construct a hemispherical dome, the "chief aspiration of an amateur astronomer after becoming the possessor of a good telescope." The article has thorough instructions and detailed engineering sketches. Forbes concluded: "When all is complete and painted we should have a very convenient and comfortable observatory; it should look elegant both outside and inside and we need not be ashamed to see it rear its head amongst the most pretentious of roof forms."

In the same edition he described an ingenious zero-power finder to replace the small telescopic finder usually fitted onto telescopes. "More often than not," he noted, the usual telescope finder "gets into an inconvenient position and necessitates the observer moving away from the eyepiece of the telescope altogether in order to get into a position to get a sight." His pivoted design neatly solves this problem.

The tube is fitted with two different 'aiming sights' (there is no sighting scope). What would be the original is a simple fold-down wooden frame at the mirror end of the tube, with a small aperture backsight and single foresight set 300 mm apart on the top of the frame. The second one, an obvious 'add on', is mounted at the top end of the tube, also a fold down wooden frame which stands higher off the surface, and is fitted with a simple, open backsight and an illuminated foresight. Illumination is achieved by a small torch reflector with bulb, fixed to the front upright of the frame, aimed through a small hole in the frame to illuminate the foresight. A bracket holds a single 'D' size dry cell with a very old and battered looking Eveready cell still in the holder.

The declination axis is fitted with a large setting circle of aluminium which is in perfect condition. The scale is comfortably large, allowing direct reading to 30′, and appears to be machine divided. The polar axis has a setting circle of only 8 hours (which is in keeping with the limited RA movement noted above) divided in 1-hour blocks, allowing direct reading to 4 min. It is made from a paper print glued to a stiff card backing. Fishmoths have feasted well off the surface, but it is still legible. It is fixed to the fork and cannot therefore be set to sidereal time. This might have posed a few problems for the astronomer when aligning the instrument for the evenings observations or logging a particular sighting. With this shortcoming, no clock drive and very rudimentary finding facilities, star hopping, using good star maps, would have been a very necessary skill.

This 80 year old telescope is a fine example of the skill and craftsmanship of a dedicated amateur astronomer of yore, a monument to Forbes who, by all accounts, enjoyed his interest in astronomy and was always happy to share this pleasure with others. It is sad to think that this fine instrument might never be used again and without restoration and care it will surely be lost to future generations of interested astronomers and members of the public. It would be fitting if it were restored and placed on exhibit at a venue such as the visitors centre at Sutherland or at the SAAO in Observatory, not far from its original home in Liesbeeck Road, Rosebank. Perhaps George and Mary Stoddart might be persuaded to allow it.

References

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Anon (1973) The house of comets. *MNASSA*, 32, Centrepiece.

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A F I Forbes, Presidential Address, 1943

"The science of astronomy at it simplest is exact, difficult and complex, and nowadays, owing to advanced instrumental aid, more so; owing to specialization, it seems to offer so few opportunities, not only of doing useful work but also, of ever hoping to understand the many branches of it."

"... our members come from all walks of life and our approach to the subject of astronomy is set from many different points of view; from different stages of knowledge, capacity and experience... Most of us become attracted to the subject simply because our minds are built that way... our minds naturally long to escape from the narrow routine of the daily drudge and we feel drawn out of ourselves in the contemplation of the wider and fuller conceptions we see and hear of in the universe around us, and we have come to realise to some extent the greatness of the privilege we enjoy in being a living and conscious part of so glorious and majestic a whole."