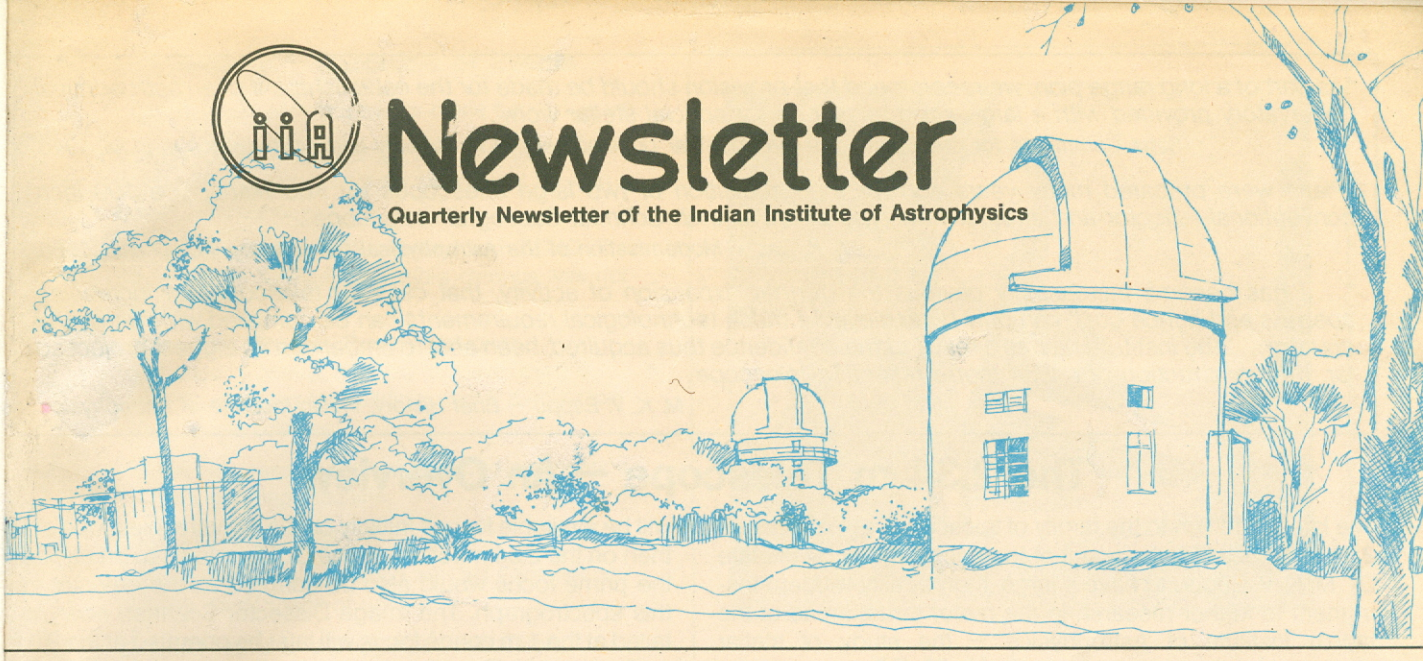


Newsletter

Quarterly Newsletter of the Indian Institute of Astrophysics

Volume 1 Number 1 January 1986

Our Expanding Horizons

The 2.34 metre telescope has started looking at the night sky. The preliminary tests of the control system are satisfactory and the prime focus is being equipped for photography. Naturally, efforts to tune the system for the best performance will continue over a period of time. The installation of the Cassegrain secondary will begin later in 1986. The VAX 11/780 computer system which will ultimately be on-line to the telescope control and data acquisition system has been in use in the off-line mode for the past one-and-half years. The VAX computer with COMTAL image processing and Tektronix 4115B interactive graphics systems constitutes a powerful data analysis and image processing facility. A PDS 1010 microdensitometer is being acquired for digitization of data acquired on photographic plates. In short we are stepping into a new area where frontline astronomical experiments will be possible.

Although we are pretty sure of filling up the entire observational time with astronomical programmes conceived by IIA scientists, we would like to share this unique observational facility with the rest of the astronomical community. We propose to keep this system open for any ideas in observational astronomy, so that chances of the new instruments tackling frontline problems are enhanced. We look forward to not only exciting programmes of observations but also a very fruitful interaction with the entire astronomical community.

It is this need for interaction that motivates this **Newsletter**. We plan an issue each quarter. We wish to announce through this medium the progress we achieve in improving our facilities for astronomical research. In return, we look forward to unrestrained feedback from the entire astronomical community.

J. C. Bhattacharyya
Director

"As part of a long range plan, we recommend that provision should be made for the establishment of an astronomical observatory provided with a large-sized telescope for special stellar work".

Saha Committee for the Planning of the Post-War Development of Astronomy and Astrophysics in India, 1946.

"Plans were prepared many years ago for the acquisition of two large telescopes for Kodaikanal — a 100 inch conventional reflector and another new type of 46/34-inch Schmidt-Cassegrain telescope".

A. K. Das — Modernisation of the Astrophysical Observatory, Kodaikanal, 1960.

"...it has become increasingly obvious that further expansion of activity, that calls for telescopes of increasing aperture and hence cost, can only be achieved if these technological requirements can be complied with within the country.... The Institute has, as a result of the confidence thus acquired, been able to embark on its biggest project so far, the construction of a 2.34 metre reflecting telescope...."

M. K. V. Bappu — Brief History, Indian Institute of Astrophysics.

The 2.34 m Telescope — An Overview

The latest addition to the family of telescopes at Kavalur, the 2.34 m reflector, is the result of the necessity felt by the late Dr M. K. V. Bappu to have a large, high quality modern instrument to further research in the major thrust areas of the Indian Institute of Astrophysics — the study of stellar chromospheres, the spiral structure of the Galaxy and the morphological and chemical composition of other galaxies. The telescope had to be made indigenously and the cost was not to be prohibitive. Engineering capability in India, in the mid-seventies, led to the choice of a 2.34 m (90 inch) telescope ; with advanced instruments and data acquisition facilities such an instrument would provide Indian astronomers an opportunity to compete with the best facilities elsewhere.

The equatorially mounted horse-shoe-yoke structure is ideally suited for low latitudes and permits easy observation near the celestial pole. The control system would enable pointing accuracies of better than a few arcsec and tracking of the order of an arcsec to be achieved. The telescope permits manual operation using push buttons for different speeds and, when all systems are fully implemented in the next few months, would also permit fully automatic operation.

At present, the telescope has a prime focus with a focal ratio of 3.25 and an image scale of about 30 arcsec/mm ; the first observations will be conventional photography. Imaging using CCD arrays would become possible within the next one year. A prime focus spectrograph, ideally suited for spectroscopy of faint extended objects is planned and should, hopefully be available in about two years.

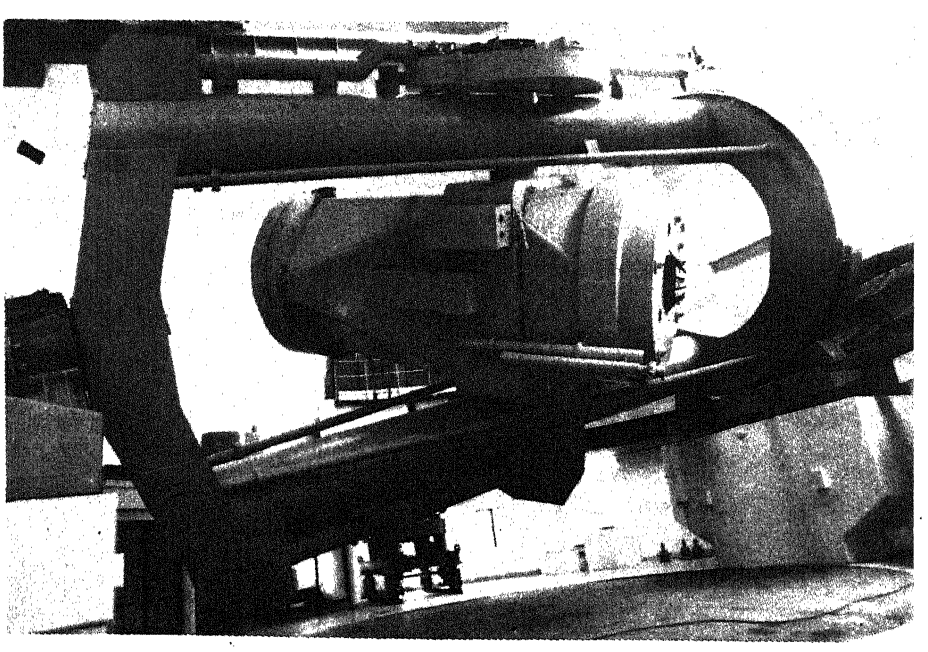
The Cassegrain focus with a focal ratio of 13 and image scale of about 6.6 arcsec/mm is expected to be ready in about one year from now. Apart from high resolution imaging using photographic plates or CCD arrays, this focus is well-suited for medium and high resolution spectroscopy, photometry and spectrophotometry.

By August-September 1986, a new Cassegrain spectrograph will be available for use initially on the 1-metre telescope and then on the 2.34 m reflector. The CCD systems to be used at the prime focus would also be adapted as the detector for this spectrograph. The Image Dissector Scanner, now installed at the 1 m coudé focus will later be operated at the 2.34 m Cassegrain. These systems will offer powerful means for spectroscopic observations. In addition, the single-channel scanner and automated photometer used at the 1 m reflector will also be available for part of the time. An infrared photometer presently under development should be available for use around mid-1986 at the 1 m telescope and in early 1987 at the 2.34 m Cassegrain focus.

The VAX 11/780 computer system with its picture processing and graphics capabilities has been in operation for the past 16 months and offers the standard CAMAC interface system in addition to the usual VAX interfaces. This computer system will provide a powerful on-line data acquisition and processing facility.

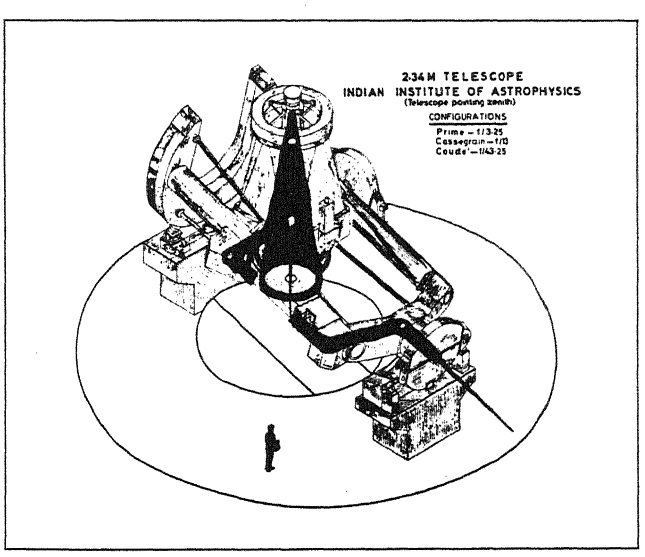
Scientists and engineers at the Indian Institute of Astrophysics are sparing no efforts in developing this modern facility, which would be a tribute to the vision of the late Dr M. K. V. Bappu and the mainstay of modern optical astronomy in India.

Ashok Pati



2.34 m Telescope — Chronicle of Events

1971	Indian Institute of Astrophysics came into existence.
1973	Professor M. K. V. Bappu got the go ahead from the Governing Council for an indigenous 90-inch optical telescope.
1974	The primary mirror blank received from SCHOTT and stored in Kavalur (Bangalore campus was not yet ready).
	Messrs Tata, Dilworth, Secord, Meagher & Associates (TDSMA), retained for developing a conceptual design for building, dome, mechanical mount and auxiliaries.
1976 July	TDSMA was assigned the design and engineering of mirror grinding machine.
Nov	Concept design accepted.
1977	Building construction started by Civil Engineering Division, Department of Space.
1978 Mar	Order for dome to Vikhroli Metal Fabricators.
Dec	Building completed.
1979 May	Mirror grinding machine installed at Bangalore.
Sept	Mirror blank loaded on machine.
Oct	Order for mechanical mount to Walchandnagar Industries Limited.
1981	Dome and auxiliaries installed.
1982 Jan	Import of computer system cleared by Department of Electronics.
1983	Aluminizing plant installed.
1984 July	Mechanical mount shop assembly and testing at Walchandnagar.
	VAX 11/780 computer system installed at Kavalur.
1985 May	Electrical and electronics systems installation started at Kavalur.
Oct	Preliminary tests of control systems.
Oct 31	First light on primary mirror
Nov 2	First trial photographs at prime focus.
Nov...	Fine tuning of control systems continues.



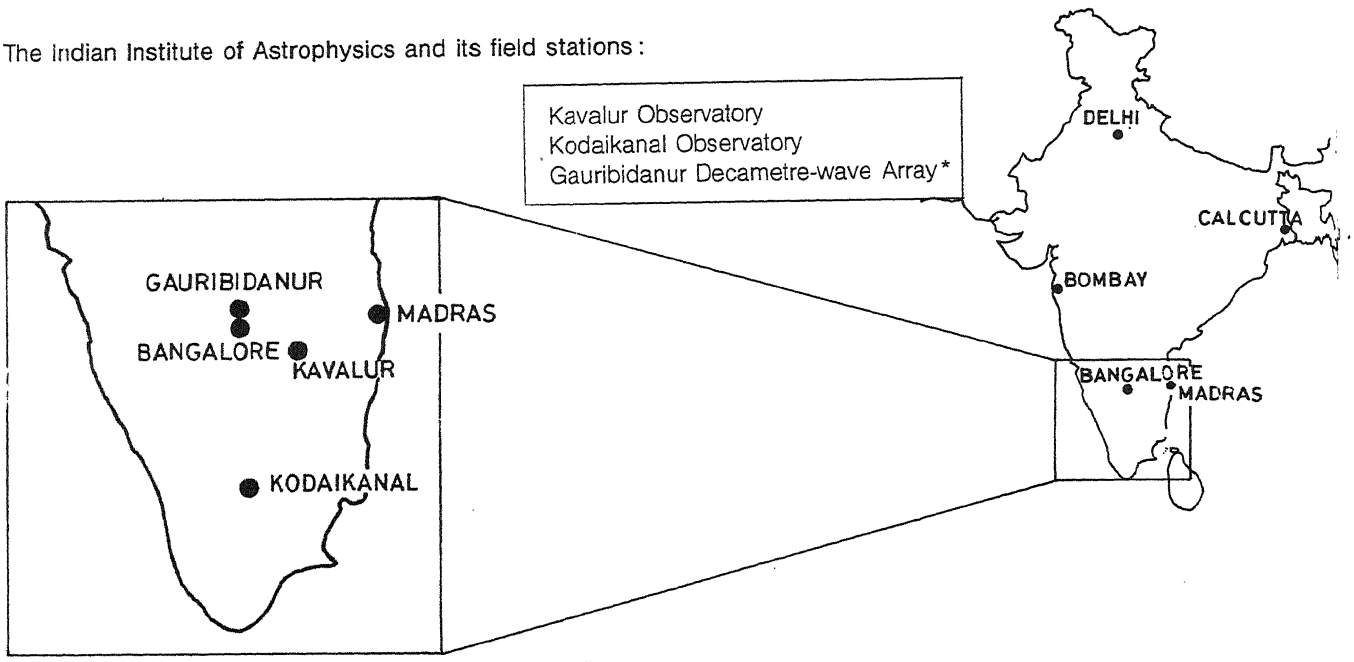
M. K. Vainu Bappu
(1927-1982)

Manali Kallat Vainu Bappu has influenced the advancement of modern astronomy in India in many ways. He was directly responsible for the creation of two astronomical centres — the U.P. State Observatory at Naini Tal, and the Indian Institute of Astrophysics at Bangalore.

Vainu Bappu also inspired the founding of the *Journal of Astrophysics and Astronomy*, and served as the Chairman of its Editorial Board through its formative years. He was a versatile astronomer and worked on a wide range of theoretical and observational topics encompassing the sun, the solar system, stellar chromospheres, Wolf-Rayet stars, galaxies and quasars. He was a co-discoverer of the Wilson-Bappu effect and of a comet (Bappu-Bok-Newkirk).

Several national and international distinctions were conferred on him. He was the President of the International Astronomical Union (1979-82). At the XIXth General Assembly of the IAU (New Delhi 1985) an asteroid (2596 Vainu Bappu) was named in his honour. He continues to be a source of inspiration to all of us in the astronomical community.

The Indian Institute of Astrophysics and its field stations :



* Operated jointly with Raman Research Institute, Bangalore 560 080.

Developments regarding the facilities and instrumentation for the 2.34 m telescope will be reported in this *Newsletter*. As has been the practice for the existing telescopes at Kavalur, proposals for observations with the 2.34 m telescope should be sent to the Director, Indian Institute of Astrophysics. Proposals will be reviewed by a committee. The details of the evaluation procedure will be formulated in the next few months.

Copies of the *Newsletter* can be obtained free of cost by interested individuals and institutions. Please write to :

Director
Indian Institute of Astrophysics
Koramangala
Bangalore 560 034

Editors : T. P. Prabhu & A. K. Pati
Editorial Assistant : Sandra Rajiva
Published by the Editors on behalf of the Director, Indian Institute of Astrophysics, Bangalore 560 034.

Photoset at eastern typotype Bangalore
Printed at The Bangalore Press Bangalore

Newsletter
Quarterly Newsletter of the Indian Institute of Astrophysics

To :

Indian Institute of Astrophysics
Bangalore 560 034.