

## US telescopes

**Uncertain future for 100-inch***Mount Wilson (California)*

THE Carnegie Institution of Washington has shunned the recommendation of a scientific committee that it should continue to support the two solar towers and the 60-inch telescope at Mount Wilson observatory until an alternative sponsor is found. The institution announced last week that it will end its support for the 60-inch telescope and the solar towers by 1 July 1986, and confirmed previously announced plans to mothball the 100-inch telescope on 1 July this year unless another operator steps forward.

The scientific committee, chaired by R. Grant Athay of the High Altitude Observatory, records "profound dismay" at the "seemingly abrupt" decision to close the 100-inch telescope and the solar towers. It also describes as "impractical and unrealistic" the suggestion that the 60-inch telescope could be supported entirely by external grants, a conclusion endorsed by users of the instrument who sent evidence to the committee. The Carnegie Institution's announcement last week made no reference to Athay's report, which was undertaken at the request of Dr George Preston, director of the Mount Wilson and Las Campanas observatories.

Mount Wilson is not suited to deep-space

observations requiring dark sky conditions because of light pollution from nearby Los Angeles. But Athay notes that there are many "frontier problems" which are unaffected by light pollution and which could benefit from the excellent seeing and the long periods of uninterrupted clear weather at Mount Wilson. High-resolution spectroscopy is not limited by sky brightness and photometry and low-resolution spectroscopy can be done usefully by subtracting sky light. Important solar and stellar synoptic programmes now in progress would suffer from even a temporary interruption to observations. Furthermore, the Coudé spectrograph on the 100-inch telescope could be the best of its type in the world, and the observatory may be ideal for speckle interferometry and variable baseline stellar interferometry.

Athay's committee urges Carnegie to set up a blue-ribbon panel to oversee the transfer of the Mount Wilson observatory to another organization that can make good use of the equipment and the huge collection of observational records. But it is still not clear whether any of the several interested groups will be able to put forward a convincing plan for the observatory in time to prevent the shutdown of the 100-inch telescope in July. Carnegie has undertaken to keep the telescope maintained and exercised after July for an unspecified period.

One interested group, the Mount Wilson Corporation for Research in Stellar and Solar Physics, is trying to raise \$10 million, the earnings from which would support basic operations at the site. The founder of the corporation, George Roberts, expresses cautious optimism that the goal will be reached: negotiations are in progress with a major foundation. Roberts says a deal to provide the \$9 million still needed will be concluded "within 60 days or not at all". The Smithsonian Institution and the Jet Propulsion Laboratory have both previously expressed interest in a consortium to manage the observatory, and Roberts claims support from several prominent scientists and industrialists for his endeavour.

The Carnegie Institution intends that savings made by withdrawing from Mount Wilson — about \$750,000 per year — will be used to expand facilities at its Las Campanas observatory in Chile. Preston says the Carnegie Institution will increase its total spending on astronomy in coming years. New instruments are being fitted to the existing telescopes at Las Campanas — which has "unsurpassed" dark-sky conditions — and there have been initial discussions on a proposed new 8-metre single mirror telescope at the site. This instrument, like other planned telescopes, would use new technology being developed by Roger Angel at the University of Arizona.

Angel's mirrors are spin-cast in parabolic shape and consist of a lightweight glass honeycomb sandwich. Angel hopes that his recently-devised computer-actuated lap will solve the problem of polishing deep parabolic dishes to an accuracy of 1 micrometre and plans a mirror with an  $f/1$  focal ratio. If it works — the technology is not yet proven on a large mirror — the cost of building telescopes with very large mirrors would fall dramatically. Preston will say of the proposed new telescopes only that "it's big", and he discourages speculation.

Tim Beardsley

## Indian electronics

**Transfer halted***New Delhi*

INDIAN scientists have stalled a move by their government to acquire high polysilicon technology and equipment from the United States for the expanding indigenous electronic industry and photovoltaic programme to harness solar energy. A review of the matter has been ordered by the new Prime Minister, Rajiv Gandhi. It is a temporary setback to the agreed first transfer of US high technology to India.

Hemlock Semi-conductors Inc. of Michigan had signed an agreement with the Indian department of electronics last April to provide polysilicon technology for the proposed National Silicon Facility to be set up in Baroda in western India to produce high purity silicon crystals. The deal ran into rough weather at both ends. The US Department of Commerce declined to issue an export licence until a memorandum of understanding was signed between the two governments in November, after US suspicions about sensitive technology finding its way to a third country, implicitly in the Soviet bloc, had been allayed.

Indian scientists, on the other hand, say that the import of US technology is a disincentive for the indigenous research effort to develop the required technology. Already a two-tonne-a-year capacity polysilicon plant has been set up, based on process know-how from the National Chemical Laboratory at Pune. The process can be upgraded to produce silicon of high purity. Opponents also argue that the Indian silicon requirement will not exceed 20 tonnes a year in the next 10 years, so the proposed 200-tonne Baroda plant costing 90 million rupees will be unnecessary. Moreover, Hemlock's technology based on the Siemens process is said to be outdated and costly, so that it will not be possible to export the excess Baroda production at a competitive price.

The controversy has political implications for the national governments of both India and the United States. Mr Gandhi has therefore sought first a review by the political affairs committee of his ministry. Opposing scientists are keenly awaiting the eventual verdict of the full cabinet.

Sunil Suraf

**Japanese science budget**

Science and Technology Agency	Yen (thousand million)	Percentage increase or decrease
Total research-related budget	420.9	+ 3.1
EXPO '85	9.4	-65.0
Special promotion funds	7.3	+ 12.3
Space	91.5	+ 6.7
Nuclear energy <sup>1</sup>	254.3	+ 8.5
Cancer campaign	8.4	+ 10.4
Disaster prevention	2.1	-
ERATO	2.5	+ 11.9
Ministry of Education, Culture and Science		
Grants-in-aid of research	42.0	+ 3.7
Ministry of International Trade and Industry		
Total research related budget <sup>2</sup>	193.2	+ 12.6
Basic technology promotion centre	10.0	-
Basic technologies for next generation industries	6.4	+ 11.0
Large-scale industrial projects	14.8	+ 13.3
Sunshine project	39.8	+ 8.1
Moonlight project	11.1	+ 15.6
Fifth generation computer project	4.8	- 5.8

1. Not including special account for nuclear plant siting

2. Regional science promotion budgets etc. are extra (~15%).