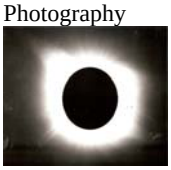
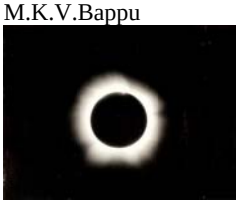
From the IIA Archives:

Solar Eclipses during 1868-1980 in which Madras, Kodaikanal Observatories and IIA participated

Participation in solar eclipse studies have been a notable characteristics of the institute for more than a century. For all major eclipses teams were sent and the expedition met with a considerable degree of success. Table presented here lists the various expeditions undertaken from 1868 – 1980, along with the results obtained.

YEAR, NATURE AND PLACE OF EXPEDITION	TEAM LEADER	EXPERIMENTS/PROGRAMMES	RESULTS
August 18, 1868 Total Solar Eclipse 1.Vanarpati 2.Masulipatam	N.R. Pogson C.Ragoonatha Chary	Spectroscopy  Handpainted solar spectrum of the solar eclipse 1868 showing D3 line	First time spectroscopy applied to solar eclipse. Detection of Hydrogen lines in emission in chromospheres. Observation of yellow line near sodium D line later attributed to Helium
December 12, 1871 Total Solar Eclipse Avinashy	N.R. Pogson C.Ragoonatha Chary  First page of the report prepared by C. Ragoonatha Chary in Tamil	Spectroscopy Photography Polarization measurements	Observation of bright lines in spectrum. This was the occasion when, what we term the F Corona, was first seen.
June 6, 1872 Annular Eclipse Madras	N.R. Pogson 	Photography Spectroscopy	This is the first observation on record of viewing the flash spectrum at an annular eclipse
January 22, 1898 Total Solar Eclipse Sahdol	M.Smith 	Photography 	White light photo-graphs of different scales were obtained
September 21, 1922 Total Solar Eclipse Wallal Australia	J.Evershed  Evershed and his wife at the camp site	Photography of the spectrum of the corona on the East & West limbs To determine the displacements of the green coronal lines due to solar rotation to obtain an improved value of the wavelength of this line To determine an important aspect of Einstein's theory of relativity that could be experimentally verified	The expedition was not successful due to bad weather

May 9, 1929 Total Solar Eclipse Kamishari, Japan	T. Royds 	To study the effect of scattering by the earth's atmosphere on wavelengths of Fraunhofer lines	Found that both at the centre and at the limb there is no significant difference in the eclipse spectra and those taken in full sunlight.
February 25, 1952 Total Solar Eclipse Artawi, Iraq	A.K. Das 	Photography of the corona photographic photometry of the flash spectrum and coronal spectrum	Observational programme frustrated by bad weather
June 20, 1955 Total Solar Eclipse Hingura Kgoda, Ceylon	A.K. Das	Optical Observations Geomagnetic, Ionospheric , Radio Astronomical observations	Bad weather prevented optical observations. But geomagnetic ionospheric and radio observation were successful
March 7, 1970 Total Solar Eclipse Miahuatlan Mexico	M.K.V.Bappu 	Direct high resolution photography of the corona and coronal spectroscopy at 30Å/mm covering the spectral region 3300 to 8800Å	Detection of cooler gas in hot million degrees corona inferred from the presence of hydrogen, helium coronal region.
Feb 16, 1980 Total Solar Eclipse 1.Jawalgera 2. Hosur  Bappu at Jawalgera Camp	M.K.V.Bappu  White light photograph taken at Hosur Camp	Spectroscopy with high dispersion multislit spectrograph Rapid sequence photography close to solar limb using the tower spectrograph Paschen-Runge monochromator for limb darkening measurements Photography in hydrogen emission White light Photography in polarized light of corona	The high resolution multislit spectra obtained showed that solar corona is remarkably quiet and it corotates with photospheric layers. Detailed information on temperature motions and the structure of solar corona were obtained. It was found that collisional excitation dominates up to 1.3 solar radii and beyond 1.3 R radiative excitation dominates.

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