

most massive compact galaxies, in some of which according to theory up to several hundred supernovae per year may be expected. The spectrum of the first variable compact galaxy, [R.A.  $0^{\text{h}}39^{\text{m}}5$  Decl.  $+40^{\circ}03'$  (1950)] discovered by Zwicky in February 1965 and showing random variations of two magnitudes since 1936 is therefore now being scanned.

Many light curves of supernovae have been established during the past three years and many spectra have been obtained. From an improved redshift-magnitude relation for supernovae a probable value of  $150 \text{ km s}^{-1}$  per million parsecs for the Lundmark-Hubble constant is derived.

With the discovery of the pulsar in the Crab Nebula, Zwicky's 1933 hypothesis of some supernovae being caused through the collapse into neutron stars seems to have found its confirmation.

No cosmic rays, radio waves or X-rays have as yet been observed coming from recently observed supernovae, as theory would predict.

No tenable interpretation of the spectra of supernovae of the types I and IV has yet been proposed.

#### WORKING GROUP ON GALAXY PHOTOMETRY

(by G. de Vaucouleurs)

1. A tabular presentation has been adopted and the report does not cover work in the U.S.S.R. During the report period Circular No. 6 (Report on Prague Meeting) and a Technical Supplement, No. 6a, were distributed. Work on standard luminosity profiles for a few well-observed galaxies (NGC3115, 3379, 4486) progressed more slowly than expected, but provisional results will be available for presentation at the 1970 meeting.

2. On the observational side the major event to report is the publication of an *Atlas de Galaxies Australes* by J. L. Sersic; it gives photographs, descriptions and detailed surface photometry of 50 southern galaxies observed with the 150-cm reflector of Cordoba Observatory. Another important contribution is the dissertation of H. D. Ables on "Optical Study of Nearby Galaxies" of interest to radio astronomy. The isophotometric atlas of 70-80 galaxies and *UBV* catalogue of 500 galaxies observed by G. and A. de Vaucouleurs at Mt. Stromlo and McDonald Observatories and by H. D. Ables at Flagstaff, F. Bertola at Asiago and other collaborators is being prepared for publication in 1970-71.

On the technical side the rapid development of automatic digital methods for data recording and processing should lead to a great acceleration in the production of precise isophote maps, but most commercial instruments are still deficient with respect to mechanical precision, optical design (stray light, beam definition) and electrical stability.

On the theoretical side I. R. King (Berkeley) is continuing his work on the structure and dynamics of elliptical galaxies, and lenticular and spiral galaxies have been analyzed by K. C. Freeman in Australia and by J. and N. Heidmann in France; all these studies demonstrate again the basic importance of precise and detailed surface photometry for an understanding of the structure and evolution of galaxies.

Table. Summary of galaxy photometry 1967-70

Authors	Subject	Type*	References
H. J. Rood <i>et al.</i>	Coma cluster (315 gal.)	pg, pv	C, pg 29-1943, 30-625, 30-4381
N. B. Richter	730 compact gal. to $m = 18.5(V)$		A, pg <i>Mitt. Taut.</i> , No. 37
S. van den Bergh and R. D. McClure	32 field E. gal. ( <i>UBV</i> )		B, pe 30-14593
S. van den Bergh and R. D. McClure	56 gal., 5 spectral indices (0.35-0.45 $\mu$ )		B, pe 30-6302
A. Sandage <i>et al.</i>	Center M31 ( <i>UBVRIHKL</i> ), M32, M81, NGC7331 ( <i>UBV</i> )		A, pe <i>Ap. J.</i> , <b>157</b> , 55
G. Paal	> 1000 gal. in rich clusters		D, pg Unpubl.
P. W. Hodge <i>et al.</i>	NGC4449 + others		C, pg 30-612
R. H. Miller <i>et al.</i>	NGC3115		C, pg, pe 30-2628
S. D'Odorico	NGC1156		C, pg Unpubl.
C. W. Fraser	50 gal., Virgo cluster		C, pg Unpubl.
H. D. Ables	NGC1569, 6946; IC342, 356, 1613; A1009		C, pg, pe Unpubl.
H. Oleak <i>et al.</i>	M87		C, pg, pe 30-2631
H. Oleak <i>et al.</i>	Virgo cluster		A, pg, pe Unpubl.
M. Motylinska	Cluster Abell 1781		A, pg 30-14597
W. G. Tifft	64 gal., 4 colors		A, pe <i>A. J.</i> , <b>74</b> , 354
I. R. King	Ellipticals		C, D, pg Unpubl.
J. L. S�ersic and	50 southern gal.		C, pg <i>Atlas de Galaxies Australes</i> , C�ordoba.
H. Dottori and	6 peculiar gal.		C, pg <i>Bol. Inst. math. astr. y fis.</i> , <b>3</b> , No. 2.
E. Aguero	Southern gal. in field + Virgo cluster		C, pg Unpubl.
H. M. Johnson	H $\beta$ photom. of 13 near gal.		B, pe Unpubl.
A. Elvius	M82		E, pe <i>Lowell Obs. Bull.</i> , <b>7</b> , 117
G. de Vaucouleurs <i>et al.</i>	M87 jet and corona		C, pg, pe 30-4403; <i>Ap. J. Letters</i> , <b>4</b> , 17
G. de Vaucouleurs <i>et al.</i>	Fornax		C, pe 30-4401
G. de Vaucouleurs <i>et al.</i>	50 gal., 10 bands (0.34-0.55 $\mu$ )		B, pe Unpubl.
T. Borchkadze	7 gal., in 2 groups, <i>UBV</i>		C, pg Unpubl.
W. Zonn	Out-of-focus photom.		F, pg 29-1948

\* *Type.* - A = general broad-band photom., etc., magnitudes and/or colors; B = intermediate band photom., energy distribution, spectral indices, line-strengths; C = detailed surface photom., isophotom., drift curves; D = photometric diameters and other special studies; E = polarization; F = theoretical.