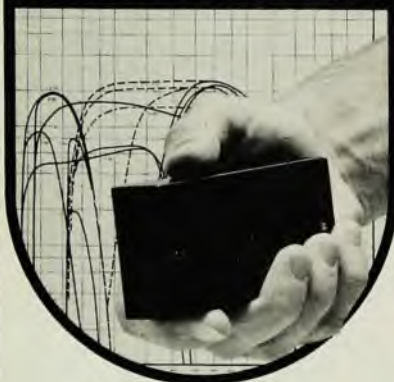


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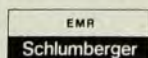
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we hear that

J. Charles Tracy has become assistant head of the physics department at the General Motors Research Laboratories in Warren, Michigan.

Among the 21 newly elected fellows to the American Institute of Aeronautics and Astronautics are: **Theodor Benecke** (German Aerospace Industries), **Martin H. Bloom** (Polytechnic Institute of New York), **John F. Clark** (NASA), **Arthur C.**

Clarke (Author), **Coleman DuP. Donaldson** (Aeronautical Research Associates), **Leonard Jaffe** (NASA), **Charles W. Matthews** (NASA), **Harry Petschek** (Avco Everett Research Laboratory), **Benjamin Pinkel** (Rand Corp) and **Eli Resholko** (Case Western Reserve University).

Ralph S. Cooper, formerly assistant laser division leader at the University of California's Los Alamos Scientific Laboratories, has joined the radiation physics division of Physics International Co as deputy director.

obituaries

Rudolph L. Minkowski

Rudolph Minkowski, an internationally recognized astronomer in the areas of planetary nebulae, supernovae, and extragalactic radio sources, died 4 January at the age of 81. Minkowski was born in Strasbourg and received his PhD in physics at Breslau in 1921. In 1935 he left a professorship at the University of Hamburg to take a position at Mt Wilson Observatory, where for twenty-five years his curiosity in investigating new phenomena was matched only by his thoroughness in the application of basic techniques.

One of his earliest interests was the study of supernovae in external galaxies and supernovae remnants in our own. His spectroscopic observations led to the designation of Type I and Type II supernovae in 1941. His fundamental study of the Crab Nebula in 1942 led to the correct identification of the central star of the supernovae remnant. This result was verified recently with the optical identification of the 33 m sec radio pulsar as the same superdense star which had been discussed by Minkowski.

Minkowski also produced a series of papers on the galactic distribution, radial velocities, evolution and physical characteristics of planetary nebulae. His extensive objective prism surveys for hydrogen-alpha emission sources increased the number of emission nebulae known in the Galaxy. He also studied the peculiar hot stars at the centers of planetary nebulae.

In the early 1950's Minkowski and Baade successfully identified a number of newly discovered radio sources and recognized four types of objects: supernova remnants, galactic nebulosities with very large internal random velocities, peculiar extragalactic objects and normal galaxies. This work led to a detailed discussion of the roles of radiative and collisional excitation in the production of observed spectral properties of such sources. He continued to



MINKOWSKI

play a major role in optical identification of radio sources for many years.

Minkowski's later interests turned to external galaxies and clusters of galaxies, including studies of their velocity dispersions. He discovered the largest redshift ($z = 0.48$) for a normal galaxy in 1960. This record redshift remained the last firm point in our knowledge of the expansion of the universe until 1975. Minkowski became an authority on extragalactic research and contributed many invited discourses and reviews on the subject.

His greatest public service to astronomy was the supervision of the National Geographic Society-Palomar Observatory Sky Survey (1954). The survey resulted in a valuable set of photographs that has been made available in reproduction to all of the world's astronomers and is a major part of every astronomical library.

Minkowski was elected to the National Academy of Sciences in 1957 and retired from the Mt Wilson and Palomar

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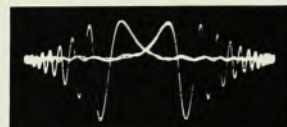
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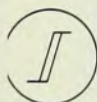
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obituaries

Observatories in 1960. In 1961 he began a second career as a research astronomer with the Radio Astronomy Laboratory of the University of California at Berkeley. In 1961 he was awarded the Bruce Medal of the Astronomical Society of the Pacific. In 1965 he retired again at the mandatory age of 70. Minkowski continued as astronomer emeritus in the astronomy department until his death. In 1968 he received an honorary doctorate from the University of California in recognition of his outstanding career.

In the scientific community Minkowski stands out as a scholar of high international reputation and prestige. Among those fortunate to have known him as an associate, he will always be remembered as an exciting stimulus to staff and students, an invaluable source of knowledge and experience, and an open and helpful critic of ideas and projects.

LEONARD V. KUHI

University of California, Berkeley

Sir Charles Seymour Wright

Sir Charles Wright died 1 November at his home in Victoria, British Columbia. He was born in Toronto and educated in physics at the University of Toronto and Cambridge University. In addition to his scientific achievements during both World Wars, Wright accompanied Scott on the ill-fated Antarctic polar expedition of 1911-1913: Wright, the last to see Scott alive at the head of the Beardmore Glacier, subsequently led the party to the camp of those who reached the pole.

Soon after returning from the Antarctic, Wright became involved in the First World War and applied the principles of physics to military problems. As an officer of the Royal Engineers, he devised a system of command in trench warfare by using the then infant wireless. Later Wright worked on magnetic methods of submarine detection.

Wright joined the scientific research department of the British Admiralty after the war. He served until 1947, his last assignment being chief of the Royal Navy Scientific Service. His achievements in radar and related fields brought him a host of honors, including a knighthood in 1947. Retiring from the Royal Navy Scientific Service, Wright continued to serve as advisor to the Admiral in the British Joint Service Mission to Washington until 1951, when he received the Medal of Freedom.

Wright served three years as director of the marine physical laboratory of the Scripps Institution of Oceanography,