

addressed scientific gatherings, visited important centres of research, renewed his personal contacts, and discussed subjects of common interest with such eminent scientists as Prof. Devaux, Sir Charles Darwin and Prof. Charles Mennebeck.

At Washington he visited the departments of the National Bureau of Standards and met several heads of the Bureau. He actively participated at the General Assembly of the International Union of Crystallography at Harvard University and gave a lecture on the theory of the vibration spectra of crystals.

In New York he met Dr. Winston E. Kock and witnessed several experiments such as "focussing of short electric waves by

metallic lenses." demonstration of the "visible speech apparatus" developed by the Bell Telephone Company and also the New Invention of the transistor intended to replace the thermionic valves in wireless. He also studied the collections of crystalline minerals in the American Museum of Natural History and saw the remarkable effects exhibited by the luminescent minerals at Franklin and New Jersey. The itinerary included a visit to the Brooklyn Polytechnic Institute where he met Prof. Hermann Mark and Prof. Fanktchen.

During his stay in the U.S.A., Sir C. V. Raman contributed a monograph on "Diamond" for publication in the Encyclopedia of Commercial Technology published by Inter-Science Publishers.

MODERN TRENDS IN SYSTEMATICS*

SYSTEMATICS is that ground-discipline of Biology which concerns itself firstly, with the orderly arrangement of the living world into a convenient and, as far as possible, natural system of hierarchical categories such as orders, families, genera, and so forth; secondly, with the distinguishing of one form or species from another, in the gamut of millions of species, both living and extinct; and thirdly, with the elucidation of the mechanisms by which these distinctions arise in nature. Systematics is sometimes also called 'Taxonomy', a term which merely means the disposition of things in a rational and lawful manner.

It was recognized early in the history of science that the lowest easily recognizable systematic unit is the species. And the problem that framed itself in the minds of scientists was how to name these millions of living species so as to avoid confusion when mentioning one or the other. This knotty problem was solved in the middle of the 18th century through the genius of the Swedish botanist, Carl Linnaeus, who invented the 'binominal' system of nomenclature. According to it, each species is written with two names—the first the generic, and the second the specific—in much the same way as our own surnames and 'christian' names respectively, with this important difference that our names refer to individuals and not to the species. Thus, the tiger is named *Felis tigris*, the leopard *Felis pardus*, and

the jungle cat *Felis chaus*—*Felis* being the generic name for all these members of the cat-family Felidae. Man's name is *Homo sapiens*. By international agreement, the following procedures find universal acceptance: (i) Within the same genus, one specific name can be employed for one species only, the name proposed earliest being the one accepted (rule of priority), so that one specific name can refer to one species and one only. (ii) The 10th edition of Linnaeus's *Systema Naturae*, published in 1758, is taken as the starting point for names of animals. (iii) The specific and generic names are latinised, and are written in the Roman script.

Later, when it was found that 'species' are not fixed but evolving, and that it is possible to recognize systematic units lower than the species, systematics was gradually transformed from a static into a dynamic discipline. The present Address deals principally with the modern dynamic trends of development during the last 30 years. The chief achievements of this period consist briefly of the following: Firstly, a large number of intraspecific systematic categories have been recognized, such as subspecies, races, forms, varieties, pure lines, and so forth. Secondly, it is now clear that species are generally made up of a number of these lower groups or

* Abstract of the Presidential Address delivered by Major Dr. M. L. Roonwal, to the Section of Zoology & Entomology, Indian Science Congress, Allahabad, January 1949.