The series of articles reviewing various aspects of the physics of plasmas which appear in the following pages is based on papers given at a special symposium held as part of the spring meeting of the New York State Section of the American Physical Society on April 13 and 14, 1962. The introductory remarks below are those of the Section's chairman, D. R. Morey.

PLASMA PHYSICS SYMPOSIUM

PROPERTIES of a plasma are described by parameters such as degree of ionization, conductivity, shielding length, and plasma frequency, as was learned by the more than 200 participants at the Symposium on Plasma Physics which was organized by the New York State Section of the American Physical Society and held last spring in Tarrytown, N. Y. The meeting itself, in terms of properties, turned out to have sparkle, interaction, idea frequency, and question-answer density.

The event was another in the Section's series of symposia on single topics, in which the treatment is that of a broad and rigorous survey, including enough background material so that the nonspecialist may be led a good distance into new ground. This type of presentation, while extremely valuable to the listener, is difficult to prepare and execute well, and calls for careful selection of outstanding speakers and for special preparation by the speakers themselves. Much of the credit for the success of the meeting belongs to Program Chairman K. H. Moore of Rensselaer Polytechnic Institute, who, with considerable assistance from R. L. Garman of General Precision and W. V. Smith of IBM, fashioned an excellent symposium. A vote of thanks goes to Ralph Bacon and David Balber, both of General Precision, for collecting and arranging the series of papers for publication in *Physics Today*, and to Art Brundage, also of General Precision, who was responsible for the recording of the speeches on tape, a function which was essential in the over-all program.

While primary attention was directed toward the main program of papers on plasma physics, the meeting also included a special program put on separately for forty high-school physics teachers from schools in the Tarrytown area. This special program was frankly intended as an experiment, and was in keeping with the New York State Section's policy of developing and trying new approaches and ideas. This particular experiment, which turned out to be a happy success, consisted, first, of a review of plasma physics prepared for the audience of teachers by S. J. Buchsbaum and, second, of a question-and-answer period with W. P. Allis and E. A. Frieman fielding the questions. (These three gentlemen did double duty, for they appeared as invited speakers on the main program as well.) The high-school teachers thoroughly enjoyed being able to get basic explanations at first hand from these noted authorities.

The teachers were also guests of the Section at the cocktail hour (generously provided by General Precision), and at the banquet and the evening lecture, a splendidly illustrated talk by Robert A. Frosch, director of the Hudson Laboratories of Columbia University, whose topic was "A Physicist Looks at Oceanography". The spark plugs who arranged the special program for the high-school teachers were K. H. Moore of Rensselaer and George Hazzard of General Electric, the latter acting in his capacity as a regional counselor taking part in the Regional Counselor Program currently being conducted by the American Institute of Physics and the American Association of Physics Teachers.

As the meetings of the New York State Section move from place to place, the members have an opportunity to become acquainted with the diverse work going on in this state so richly endowed with fine laboratories. Thus, the sessions were started with brief but interesting summaries of activities at the Philips Laboratories, General Precision, IBM, and the General Foods Research Center.

At the banquet, A. F. Turner, the Section's secretary-treasurer, pointed out that the limited dues resources of the Section are hardly capable of meeting the expenses of the progressive sort of meetings being put on, and he expressed the thanks of the Section to General Precision, IBM, Philips Laboratories, and Union Carbide for their assistance in various phases of the meeting. The General Precision Equipment Corporation served as the host and inviting institution for

the Tarrytown symposium, but behind this corporate name there stood two special friends of the Section whose work and interest were the essential ingredients of success. We refer to our good friends Ray Garman and Blair Foulds.

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a chronology of PLASMA PHYSICS *(as proposed by W. P. Allis)*

Qualitative Observations

1733	duFay	Proposes two-fluid theory
1747	Franklin	Proposes single-fluid theory
1831/35	Faraday	Observes structure in glow discharges
1869	Hittorf	Experimental researches on glow discharges
1879	Crookes	Observes cathode rays
1891	Thomson	Produces a ring discharge
1897	J. J. Thomson	Measures e/m and "discovers" the electron

Free Paths and Collisions

1903	Townsend	Studies "sparking" and measures the coefficient
1903	Townsend	Publishes "Conduction of Electricity through Gases"
1903	Langevin	Develops theory of recombination of ions
1905	Langevin	Develops theory of mobility of ions
1905	Lorentz	Applies Boltzmann theory to a "Lorentz" gas
1908	Rutherford and Geiger	Make an α-ray counting tube
1908	Townsend	Designs apparatus for measuring D/μ
1913	Townsend	Applies magnetic deflection to measure both D and μ
1913	Franck and Hertz	Inelastic impact experiment to observe energy levels

Space Charge

1913	Langmuir	Space-charge equation
1920	Saha	Thermal-ionization equilibrium
1923	Debye and Hückel	Coulomb shielding of ions
1924	Langmuir and Mott–Smith	Theory of collectors
1925	Langmuir	Langmuir's paradox
1928	Langmuir and Tonks	Electron and ion oscillations
1928	Geiger–Müller	Self-quenching counters
1929	Langmuir and Tonks	Defines "plasma"
1930	Druyvesteyn	Electron-energy distribution

Plasmas in Cosmic Magnetic Sounds

1932	Cowling	Conductivity in a magnetic field
1934	Bennett	Self-focusing streams
1937	Ferraro	Frozen-in magnetic fields
1937	Alfvén	Galactic magnetic fields
1938	Vlasov	Plasma electron waves
1940	Chapman and Bartch	Geomagnetism
1942	Alfvén	Uses MHD waves to explain sunspots
1945	Cowling	Resistivity of a completely ionized gas
1946	Elsasser	Studies the self-dynamo problem
1948	Bailey	Beam—plasma instability
1950	deHoffman and Teller	Magnetohydrodynamic shock
1951	Cousins and Ware	High-current toroidal discharge
1954	Kruskal and Schwarzschild	Instabilities of plasma columns