flow problems. The equations of continuity is reduced to the canonical form

$$\nabla^2\phi_1/\phi_1=\nabla^2\rho_1/\rho_1,\ \phi_1=\rho^{\frac{1}{2}}\phi,\ \rho_1=\rho^{\frac{1}{2}}$$

and it is shown how some problems of uniform compressible flow may be solved. The possibility of using the method for discussing the formation of shocks was indicated.

J. J. Stoker showed how a perburtation technique for non-linear problems applied to shallow water waves gave a number of interesting results including that of the solitary wave.

B. Jessen of Denmark gave some results of the theory of almost periodic functions He gave an account of Bohr's work and made out that any trigonometric polynominal of the form $\Sigma a_n e^{i\lambda_n t}$ possessed a mean motion. D. Gilbarg discussed methods in fluid dynamics with special reference to compressible flow. V. G. Szebehely showed that the classical formulation of the motion of a solid through an incompressible liquid was not suitable for free surface and impact problems. Starting with Bernoulli's equation he showed how a set of integral transformations gave the necessary results A. R Mitchell gave elementary solutions of shear flow through circular, elliptic and parabolic cylinders.

D. Van Danstzig gave an account of the mathematical problems raised by the floods of 1953, which affected about one-third of Holland. They were of three types—hydrodynamical, statistical and economictrical. Of these the last two were found to be of an elementary type. The hydrodynamical problems presented some interesting features The area affected was idealized into an infinite medium of uniform depth internally bounded by a rectangle with three sides fixed The reduced equations of motion were solved with the help of Laplace's transform

K. Chandrashekharan spoke on localization and uniqueness theorems in Fourier analysis of more than one variable. He showed that results obtained by analogy from one to higher dimensions need not always be correct. Thus arose the need of closely examining all extensions of one-dimensional Fourier series results to multi-dimensional analysis which is used in eigenfunction expansions of solutions of the wave equation. He pointed out a number of unsolved problems.

M. L. Cartwright dealt with non-linear vibrational equations of the type

$$\ddot{x}-k(1+\alpha x-x^2)\dot{x}+x=pk\cos lt$$

where k is small and α may be small or great. If α is small it is found that the results are unaffected, otherwise there is a marked difference.

S. Goldstein spoke on some methods of approximation in fluid dynamics. He pointed out that for higher approximations we should consider the fluid as a whole and not simply the boundary layer. He discussed the case of parabolic cylinder in detail and doubted if the irrotational and the boundary layer solutions could be patched together to give one solution. In this connection mention may be made of the synthetic method for flow problems which gives a continuous pattern for the whole fluid, including the boundary layer. This is being developed at the Indian Institute of Technology by B R. Seth and his co-workers.

A large number of other papers on algebra, theory of numbers, analysis, geometry and topology, probability and statistics, mathematical physics and applied mathematics, logic and foundations, philosophy, history and educations were also read

On the closing day, September 9, A. N. Kolmogorov of Russia spoke on general theories of dynamical systems and classical mechanics. The Congress ended after deciding that the Eleventh Congress of Mathematicians be held in 1958 in Edinburgh in the month of August.

B. R. SETH.

RECESSION OF STARS

REPORTING on studies made on the recession of stars over the past 20 years, Dr Allan R. Sandage, of the Mount Wilson and Mount Palomar Obsevatories, observes that the observations made by himself, Dr M L. Humason, of Mount Wilson and Mount Palomar, and Dr. N. N Mayall, of the Lick Observatory of the University of California have gone as far as the Hydra Cluster, roughly 333 million parsecs. The speed of the recession is 180 kilometres for each million parsecs, a parsec being 3·3 light years.

The Hydra Cluster was found to be receding from the earth at one-fifth the speed of light. This system is the farthest in space so far measured, but there is hope that existing equipment will make it possible to extend the measurements to objects receding at one-third the speed of light, or distances of 550 million parsecs.