the well-known work of Osborne Reynolds, Prandtl and Lorenz, and also an extremely interesting account of measurements of the gravitation constant made in seas between Java and Holland from a submarine, by Dr. Vening Meinesz (v. NATURE, May 3, p. 641).

An important part of the proceedings dealt with stress distribution of materials in the plastic state, to which Dr. Hencky, of Delft, contributed a theoretical discussion, while Prof. Prandtl gave a valuable summary of the work in this field associated with his name and the Göttingen school. The English contributions in this branch were also of importance, as Mr. Southwell gave an account of his recent work on the stability of plates under shear stress, Mr. Griffiths described his well-known theory of rupture by the aid of some interesting experiments on quartz fibres, while Prof. Haigh also contributed an interesting account of his theory of rupture by fatigue.

Closely related to this group there were papers by Dr. Masing on season cracking and volume changes due to internal stress, Dr. Nadai on slip bands in plastic material, Dr. Schmid on recent researches on single metallic crystals, and the theory of deformation structure by Dr. Weissenberg.

In the elastic field, Dr. Wyse contributed a valuable survey of the stress distribution in hook-shaped bodies based on strain measurements of a most exhaustive kind and giving results which, if necessary, could be readily confirmed by photo-elastic measurements, in which latter subject Prof. Coker contributed a paper on his recent researches of the stress distribution in foundations of masonry structures,

incompletely braced frames, and the effects of planing, milling, and lathe tools on various materials. In this section there was also a discussion of the solution of boundary problems by the valuable method of Ritz.

The section on hydrodynamics and aerodynamics was very naturally largely taken up with aeroplane problems, to which Prof. Bjerknes contributed a notable paper relating to the forces which lift aeroplanes, while Prof. Witoszynski discussed the theory of circulation around them by some interesting applications of the complex variable.

A most interesting experimental lecture, by Prof. G. I. Taylor, on the hydrodynamics of rotating fluids, was especially remarkable for the effective experimental demonstration of the instability of motion produced between rotating cylinders, resulting in the formation of vortices separated by equidistant planes perpendicular to the common axis of the cylinders. Another paper, by Sir Napier Shaw, of interest in this field, related to the physical structure of the atmosphere treated from the dynamical point of view.

A visit to the Government Aeronautical Institution at Amsterdam was made by members of the Congress.

A very complete volume of abstracts of the papers, about seventy in number, was available, and it is proposed later to issue a volume giving a more extended account of the proceedings, while it is also hoped to arrange a further congress in 1926 either at Zurich or Rome.

E. G. C.

Water Power Resources of Canada.

By Dr. BRYSSON CUNNINGHAM.

THERE has recently been issued by the Water Power Branch of the Canadian Department of the Interior a report, dated February 1 last, which reviews the present position of water power development in the Dominion. During the year 1923 there was an increase of more than a quarter of a million horse-power, and the total hydraulic power installation of the country now aggregates the imposing total of 3,227,414 h.p. The known available water power from all sources is computed at 18,255,000 h.p. for conditions of ordinary minimum flow, and at 32,076,000 h.p. under a flow estimated for maximum development, *i.e.* a flow which can be depended upon for, at least, six months of the year. These estimates are of a conservative character; from observations of existing plant it is found that the average machine installation is 30 per cent. greater than the six-months' flow maximum power. Accordingly, it may be safely inferred that the present turbine installation of 3,227,414 h.p. represents only 8 per cent. of the recorded available water power resources.

An analysis of the foregoing figures shows them to be distributed as shown in the accompanying table.

Subdivided according to method of utilisation, it is of interest to note that the existing installations comprise:

2,411,701 h.p. in central stations for general distribution for all purposes. The average installation is of about 8550 h.p.

497,620 h.p. in pulp and paper mills. This is exclusive of 228,755 h.p. purchased by pulp and paper companies from central stations.

318,093 h.p. in industries other than central stations and pulp and paper mills.

The total installation for the Dominion averages 353 h.p. per thousand of population, Canada thus ranking, among the countries of the world, third to

Norway and Switzerland in the *per capita* utilisation of water power.

The report expresses the view that there is every reason to expect a continued and rapid development of water power. At the present time there are actually in process of construction, or in active prospect, hydro-electric plants aggregating 900,000 h.p.

Province.	Available 24-hour Power at 80 % Efficiency.		Turbine Installation.
	At Ordinary Min. Flow.	At Ordinary 6-months Flow.	
British Columbia .	1,931,142	5,103,460	355,517
Alberta . . .	475,281	1,137,505	33,067
Saskatchewan .	513,481	1,087,756	...
Manitoba . . .	3,270,491	5,769,444	162,025
Ontario . . .	4,950,300	6,808,190	1,445,480
Quebec . . .	6,915,244	11,640,052	1,116,398
New Brunswick .	50,406	120,807	44,539
Nova Scotia . .	20,751	128,264	54,950
Prince Edward Is.	3,000	5,270	2,239
Yukon and N.W. Territories . .	125,220	275,250	13,199
	18,255,316	32,075,998	3,227,414

On a moderate estimate, the effective working increase will be at the rate of one million h.p. every 5 years, so that by the year 1940 no less than 7 million h.p. should be developed. The cost of the existing installations represents a capital outlay of more than 687,000,000 dollars, which, in fifteen years' time on the same basis of increase, will reach 1,500,000,000 dollars. Hence the outstanding importance of an intelligent administrative policy to govern the exploitation of the valuable water power resources of the country.