The microphones used were of the moving coil type and, with one exception, they were carefully hidden. The engineer responsible for the arrangements sat in the crypt operating the controls for the various microphones required for the different portions of the ceremony, ranging from the running commentary outside the Abbey to the actual service at the altar steps. The various circuits were faded in and out so smoothly that the impression conveyed to the listener was that only one microphone was being used, and that it was being transferred from point to point as required. Four special telephone circuits were established between the control room and Broadcasting House, and from the latter centre the programme was distributed through all the home and Empire broadcasting stations. The developments of broadcasting and communications technique during recent years were utilised in the above manner to make this wedding ceremony an outstanding event in history; for, as the Archbishop of Canterbury remarked in his address, never before has a marriage been attended by so vast a company of witnesses.

An Experimental Railway Journey at High Speed

ON November 30, the London and North Eastern Railway made an experimental run with a train from London to Leeds and back, to demonstrate what the possibilities were with steam as compared with oil. For the outward journey, the train was made up of locomotive No. 4472, a 'Flying Scotsman' engine, with a dynamometer car, a first-class corridor coach, a dining car and a brake van, while for the homeward journey two other corridor coaches were added, increasing the weight behind the engine from 145 tons to 205 tons. The train left King's Cross at 9.8 a.m. and arrived at Leeds at 11.39 a.m., the distance being 185·7 miles and the average speed being 73·4 miles per hour. The return journey was begun at 2.0 p.m. and ended at 4.37 p.m. During the return run, between Grantham and Peterborough, a maximum speed of 100 miles an hour was recorded, while during the climb from Tallington to Corby the speed was never less than 80 miles per hour. The experimental run was intended as a test of the steam locomotive burning coal on a service similar to that now run in foreign countries by trains with Diesel-engined locomotives. The most notable of these trains at the present moment is the *Flying Hamburger*, which covers the distance between Berlin and Hamburg daily at an average speed of 77 miles an hour. The line over which the *Flying Hamburger* travels is level and without curves, while the line between King's Cross and Leeds has gradients up to 1 in 100, and several speed restrictions. Such a passage as that made on November 30, of course, could not be made without a certain amount of dislocation to other traffic and it was expensive; but it showed that the potentialities of the steam locomotive for high-speed work have not been exhausted. It is noteworthy that the engine used is stated to have run some 44,000 miles since its last overhaul.

Launching of Long-Range Aeroplanes

INVESTIGATION into the possibilities of a new method of overcoming the difficulties of taking off with fuel sufficient for a long flight together with a reasonable amount of useful load, will shortly be carried out under the auspices of the Air Ministry and Imperial Airways by the use of a 'composite seaplane' now being built by Messrs. Short Brothers of Rochester. The machine is a flying boat, with sufficient initial climb to be able to take off the water easily with an exceptionally heavy load. The major portion of this load is a high-speed float seaplane, the design characteristics of which are those required for economical long-distance flight. It is carried practically on the wings of the flying boat, from which it can be released when sufficient speed and height are attained. The power of both of the machines is used for taking off. For this experiment a small single-engined seaplane will be used, which will probably not be seaworthy enough to weather rough water on the open seas if compelled to alight. It is, however, capable of flying to the Azores under normal conditions, and in the rarely favourable case of a continuous following wind, even to fly the whole of the direct crossing to America. The problem of securing exceptional range has hitherto been dealt with by refuelling in the air immediately after starting. The operating aircraft takes off with a small fuel load and is then filled from a 'tanker' machine, by means of a trailing hose picked up and connected while in flight. This system has been developed successfully by the R.A.F., but has never been used extensively for either military or commercial purposes.

Airship Developments in the United States

ACCORDING to Science Service, of Washington, D.C., one of the older U.S. naval Zeppelin airships, the *Los Angeles*, has been reconditioned and made fully airworthy for a series of experiments upon mooring. It will be maintained in ordinary flying condition and moored out of doors, in the usual way, for at least a complete year. Experience thus gained will help to settle a number of questions upon which it is impossible to theorise. These include estimation of the velocity and extent of winds and gusts, the behaviour of the airship when under the effects of these and other meteorological conditions, the best handling of the ship to counteract the adverse effects of such, taking on supplies, fuel, etc., development of the ideal mooring system, and methods of docking into a hangar. Such information should be obtained with greater expedition and safety, using a trained experimental staff in this way, than endeavouring to gain similar experience during the normal using of the airship in service.

Development of Cargo Vessels

The seventh Thomas Lowe Gray lecture to the Institution of Mechanical Engineers was delivered on November 30 by Mr. L. St. L. Pendred, who took for the title of his lecture "A Survey of Ships and Engines". Although, in the first part of his lecture,