Britian's secret defensive weapon, the detection and location of aircraft and ships by radio, was under active development for some years before the outbreak of war in September, 1939. It remained a closely quarded secret until, in June 1941. , its existence was announced to the world by the minister of state, Lord Beaverbrook.

The revelation was made largely in order to stimulate interest in the training of suitable technicians, of which many thousands were required for its installation, operation and maintenance. Simultaneously with this announcement came the announcement by Field Marshall Smuts, at the opening caremony of the Wolf Hillman Building at the University of the Witwatersrand, that radar research and development had been proceeding at the Bernard Price Institute ever since the outbreak of war.

The story of this development and the parts played by the people concerned in it, are unfolded in the photographs and cultings in these pages.

As the result of correspondence between the War Office, London, and the Military Adviser to the Union High Commissioner, arrangements were made to select a South African scientist to gather what information there was available and to initate a research programme in the Union.

The man selected for this purpose was Dr. B. J. F. Schonland, then Director of the Bernard Price Institute of Geophysical Research and Professor of Geophysics at the University of the Witwatersrand.



BRIGADIER B.J.F. SCHONLAND C.B.E. F.R.S.

In 1939, Brigadier Schonland travelled from Cape Town to Durban with Dr. Marsdan, who was on his way back to New Zealand, and obtained from him the first details of Radio Direction Finding (later known as Radar)

Brandage Papert Salidadore

L. INTEGRACTION.

1.1 The scope of the sark.

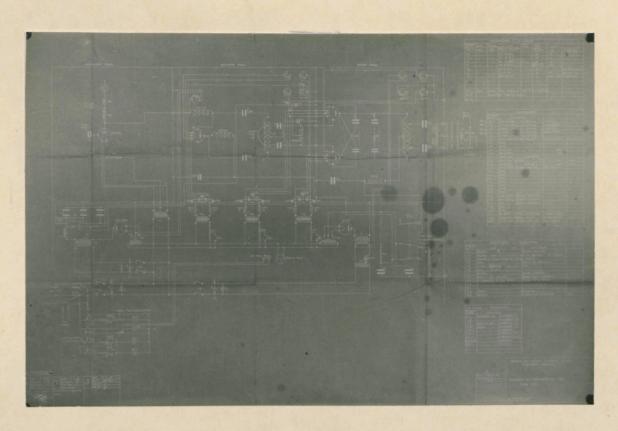
This booklet has been written to provide an exposition of the fundamentals of a special form of Radio Direction Finding as developed by the Bassley Research Station. This application has become known as R.R.P. No attempt has been unde to describe in full detail the apparatus used, but rather to indicate the requirements of each separate unit and, in the more important cases, to show the principles governing present practice.

las The Need for the Detection of Aircraft.

To mage war successfully it is necessary to have both offensive and defensive weapons. The present trend is to rely more and more on the bombing seroplane as the main offensive weapon, and, to a country like ingland, it is a vital necessity to provide an adequate defence against ottacking bombers. Much work has been done by the Air-Raid Precentions Department of the Home Office to mullify the effects of a reid by enemy bombers, but this is not sufficient. To defeat an enemy it is necessary to destroy has offensive weapons, and to destroy enemy bombers in the air the defence services of this country are equipped with fighter sireraft and endi-sireraft game. To destroy an enemy bomber in the mir, it is necessary to engage it. One method is to set up standing patrols of fighter sireraft to intercept attacking bombers, but even a little thought will show that this would be extremely westeful in mechines and personnel, and would tax the resources of this country. to the utmost. If means could be found to indicate the position of attacking sirereft, fighter sirereft could be allocated to destroy each raid, and an extremely efficient and economic defence system could be built up. This is the purpose for which B.D.P. has been developed. It should be suphseled that the need for the detection of aircraft lies not only in giving early warning of a boobing raid, but also in

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On their arrival in Durban, advantage was taken of the few days at their disposal to make photostat copies of a report issued by Dr. Marsden by the Research Station at Bawsdey, in the form of a booklet entitled "R.D.F. Manual", and dated February, 1939.



TYPICAL CIRCUIT DIAGRAM CONTAINED IN THE R.D.F. MANUAL.



DR. SCHONLAND (CENTRE) WITH DR. HODGES (LEFT) AND MR. PHILLIPS photographed at the time of the copying of the R.D.F. MANUAL in Durban.

The copying had to be carried out with the greatest secrecy and was made possible by the cooperation of two members of the staff of Howard College, Durban. These were Dr. Hodges, Professor of Physics and Mr. W. E. Phillips, Senior Lecturer, Department of Electrical Engineering.

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The original bound volume is stored at the Archives and Records office of the University of the Witwatersrand, Johannesburg, South Africa.