



**INSTALLATION OF CAMERA TYPE F.8 IN WAPITI AEROPLANE.**

AIR MINISTRY.  
DIRECTORATE OF TECHNICAL  
DEVELOPMENT.  
Dec. 1932 AIR DIAGRAM NO. 1021

The Westland "Wapiti" has widely been used by the R.A.F. for photographic duties in many parts of the Empire. (Crown Copyright Reserved)

**(3) Drawing Office Work**

Each draughtsman will require a topographical stereoscope (Barr and Stroud, see illustration). A problem of vital importance is the correct interpretation of the detail on the photographs, the collection of all kinds of information usefully shown on a map and the marking of names. All data of this kind should be collected by the ground party and recorded in the photograph album. To mark the names on the map, a special instrument, the photonymograph (Barr and Stroud), has been devised, by means of which the names are photographed in any desired type. This is many times faster than hand lettering of similar quality.

**Future Developments**

For many purposes of administration and for flying, a map on a scale not larger than 1/250,000 is required. In the normal way, however, we are forced to take our photographs at more than ten times this scale, and the cost of flying per map sheet becomes prohibitive. A reduction of focal length merely reduces the scale of the photograph without reducing the flying. Since the limit in this respect has now been reached for a single lens, the solution is a multi-lens camera producing a photograph equivalent to having been taken with a wide-angled single lens. Messrs. Barr & Stroud are now undertaking the construction of a nine-lens camera of this kind. Flying at 15,000 ft. above the ground, it will produce a photograph at a scale of 1/60,000 covering an area of about 100 square miles. Flying costs are therefore reduced to one-quarter, and only one-sixteenth of the number of photographs have to be handled and plotted. It is expected that by means of this camera, large areas of 1/250,000 maps may be produced which would not otherwise be possible.

**Imperial Survey Organisation**

Having briefly reviewed the technique of air survey, we can appreciate the contribution it offers to survey problems in the British Empire. The question arises as to what form of administration can best carry out the aims of a given policy.

Experience has shown that a private company operating by contract is not a suitable organisation, and that its deficiencies are only increased by a multiplicity of such companies. The difficulty lies not so much in organisation of the company itself as in the intermittence of demand. Allowance must be made for preserving the personnel and equipment over the stagnant periods and costs are therefore higher than they need be.

The only sound organisation would seem to be one on Imperial lines. The drawing and map reproduction department should be centralised, where the most skilled draughtsmen and most up-to-date equipment would always be available. The photography necessary to keep such an establishment fully employed could be carried out by a few specially-constructed aircraft which could be flown to different parts of the Empire to make the fullest use of favourable weather conditions. The ground survey could be carried out by permanently enlisted personnel whose work would alternate between

survey operations in the field and supervision at the central office. In view of the enthusiasm of the surveyor for his work, any organisation which offered him a life interest in survey and removed the fear of unemployment would be highly efficient.

The cost of survey by such an organisation is difficult to estimate, since no data exist into which various irrelevant but inseparable factors do not enter. There is no doubt, though, that the cost would be comparable to that of ordinary ground survey, probably slightly cheaper, and that when completed considerably more would have been achieved for the money. For instance, the photographs would form a basis for geological, ecological, forestry surveys, etc., and a series of maps for different development purposes could all be produced at the same time. Experience has shown that the value of air photographs in this connection is unique, since they provide accurate information which often could not be obtained in any other way.

Thus far is clear, and it seems almost incredible that efforts to initiate such a scheme should not be actively sponsored. The conventional excuse is that "financial conditions do not permit"—which leads to an examination of the conditions of finance. It is obvious that if there is a human need, and there are at the same time the personnel, technique, and potential equipment necessary to supply that need, there exists a state of real credit. The function of the financial system is then to set on foot the financial credit necessary to bring vitality to this real credit. If it fails to do so, it fails to carry out the only function for which it may rightly be said to exist, and should be replaced by some system less definitely anti-social. The failure of the present system is by no means due to any difficulty in devising a better one, but lies in the vested interests of its upholders. It is useless, therefore, to devise schemes for Imperial well-being without at the same time undertaking a study of the root stimuli of our existing economic system. When British people jump to the fact that real wealth is a function of the brains and energy of men and women, and has little or nothing to do with the fictitious figures so dear to the hearts of financiers, then, and only then, shall we be enabled to carry on with schemes of practical development in the Empire, and in that distant millennium it is quite certain that air survey will play its part.

**Discussion**

MR. H. E. WIMPERIS (Director of Scientific Research) was in the chair for the lecture, and in opening the discussion he recalled a very interesting coloured map which was to be seen in the office of the Air Survey Committee at the War Office. This showed that only a very small portion of the world was at present fully surveyed. He hoped that this map would gradually become more highly coloured as the survey work progressed. Referring also to Mr. Hotine, who preceded Mr. Salt, he drew attention