

## THE STORY OF FAIRCHILD AERIAL SURVEYS, INC.

*Leon T. Eliel*

**G**REAT OAKS from little acorns grow.

In 1919 a young man by the name of Sherman Mills Fairchild planted a seed which has developed into one of the most amazing and variegated institutions of this generation. The seed was an aerial camera, the brainchild of young Fairchild, made largely with his own hands and nurtured through an under-privileged babyhood and youth by Fairchild's patience, imagination, and dogged determination to succeed in spite of every obstacle. Today from that seed Fairchild, the Luther Burbank of Aviation, is producing a galaxy of products ranging all the way from plastic airplanes to optics and from airplane engines to aerial surveys. Today, a million feet of floor space will scarcely house this vital flow of activity which fairly bursts its bonds in every quarter.

The story of Fairchild Aerial Surveys, Inc. is not of interest because of the rather insignificant part it today plays in the entire Fairchild picture. It is, however, of interest to Photogrammetrists because for many years it was the culture in which the greater Fairchild ideas germinated, and because by its long history it has played a fundamental part in the development of photogrammetry as practiced today in the United States.

In 1919 Sherman Fairchild built his camera featuring the between-the-lens shutter, the detachable magazine, and other heresies which found a slow and reluctant acceptance on the part of the people of that day. They did not believe that such a camera could have any merit. The between-the-lens shutter obviously was a slower shutter than the preferred focal plane type and was it not true that airplanes moving at a very fast rate of speed needed a fast shutter? Furthermore they argued, why would anyone be interested in a detachable film magazine when the existing cameras provided for interchangeable plate magazines with twenty plates at a loading and some roll film cameras even provided for as many as 100 exposures at one loading. Mr. Fairchild found it difficult to convince anyone that airplanes were going to fly higher and faster, that cameras were going to be used for mapping vast projects where hundreds and hundred of pictures would be taken at a single flight, and that they were going to ultimately be used for engineering purposes rather than merely as pictures and that therefore the between-the-lens shutter was not only justified but imperative.

It soon became apparent that idle conversation was not going to convince anyone on this subject; therefore, Mr. Fairchild with his typical direct methods decided the only way to prove that his camera was good, was to show its effectiveness by results. Thus, in the early twenties, Mr. Fairchild embarked on the business of aerial photography and making aerial maps. By 1924 this side line had become enough of a business so that it was necessary to incorporate the company in its present name.

By this time Fairchild Aerial Surveys, Inc. had become very active in introducing the use of aerial photography for City Planning, Tax Appraisal work, Transmission Line Location, and many similar and allied subjects. Its earliest years were guided by a General Manager, now well-known in Washington circles, Captain A. E. Nesbitt.

From 1925 onward, the destinies of the company were placed in the hands of an aggressive, progressive, never say die sort of a fighter, named E. R. Polley, who to the present day has remained the company's senior officer and principal



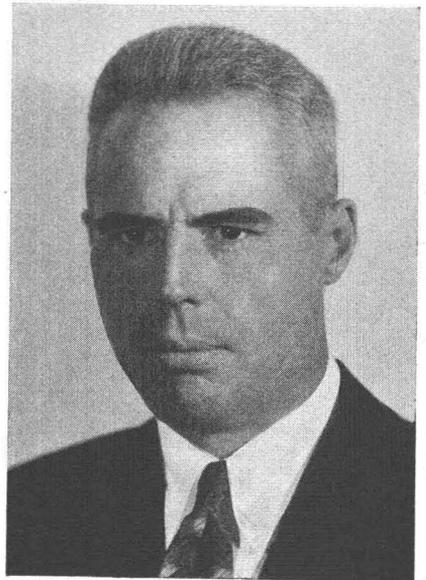
SHERMAN M. FAIRCILD

by this early group in 1924. The map was made with an instrument known as a parallaxer, similar in principle to the stereocomparagraph of today. This same group made many contributions to the art of map making which today are accepted as standard. To one of these early pioneers, Mr. H. Newell Guernsey, can be credited the development of the technique of blending, whereby mosaic maps emerged from a patchwork quilt effect to the smooth looking maps with perfect continuity of detail with which we are today familiar. In the course of perfecting his photographic operations, Mr. Guernsey also developed, about 1922, the modulating contact printer which has been in use by the Fairchild organization ever since. This printer consisted of a cluster of lights, each bulb of which could be controlled as to its intensity in order to get the proper distribution of illumination over difficult aerial negatives. In the same early vintage, credit should be given to Mr. W. L. Frankenfield, still with Fairchild, for valuable contributions to mosaic map compilation and for many of the early ideas now incorporated in the standard index map.

From these beginnings Fairchild Aerial Surveys has continued to make all sorts of photogrammetric maps, aerial maps, and airviews up to the present day. In the latter department, Mr. Robert A. Smith is practically a tradition, having received his initial aerial photographic experience as a Captain in World War I. Mr. Smith has been with the Fairchild organization since its inception and has

motivating force. During the middle twenties prosperous subsidiary companies were operated in both Canada and Mexico while branch laboratories were established in Dallas and Los Angeles, the latter having ultimately become the head office of the organization.

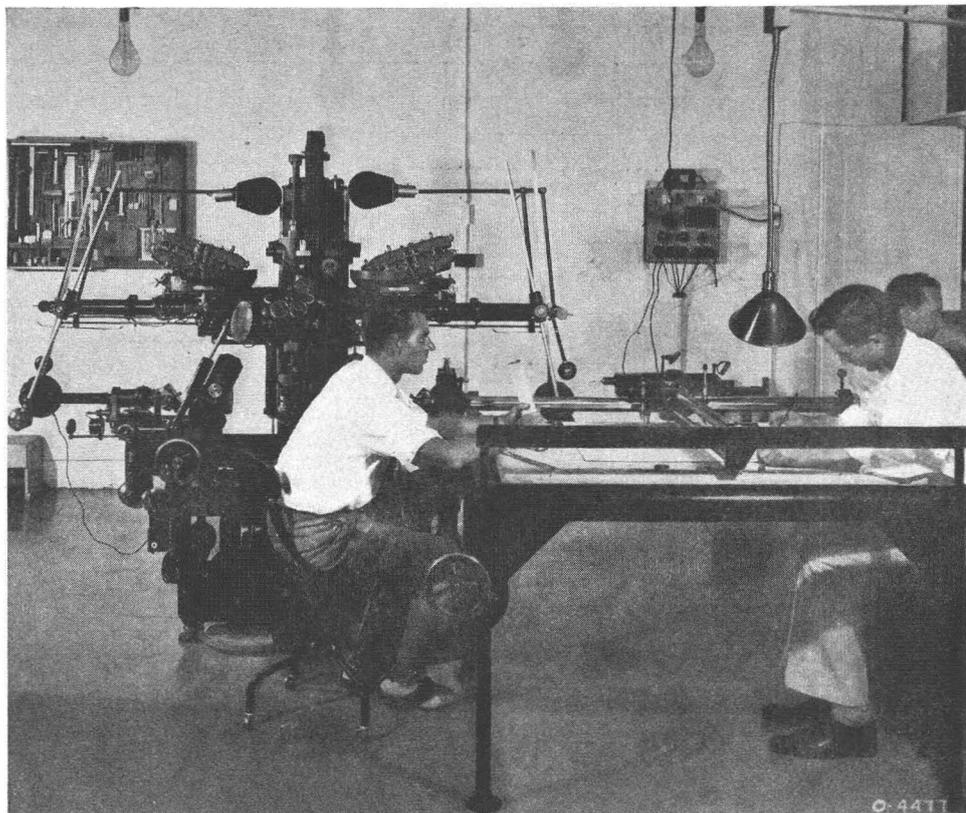
The part played by Fairchild Aerial Surveys, Inc. in introducing photogrammetry to the United States dates back to 1924. In this sense we are differentiating between the words photogrammetry and aerial photography because aerial photography, of course, goes back well before this date. In 1924 two small struggling firms were competing in Los Angeles. These were named Pioneer Aerial Engineering Company and The Photomap Company. They merged and joined the Fairchild organization a year later. One of the first topographical maps compiled entirely from aerial photographs in the history of the United States was made



E. R. POLLEY

managed the airview department for the past fifteen years. Today that department has on file probably the finest library of airviews in the world, numbering nearly one hundred thousand negatives.

For a number of years Fairchild had believed that there was a valuable application of aerial photography to petroleum geology. The story had been told to the chief geologist of oil companies the country over. In 1926 one geologist



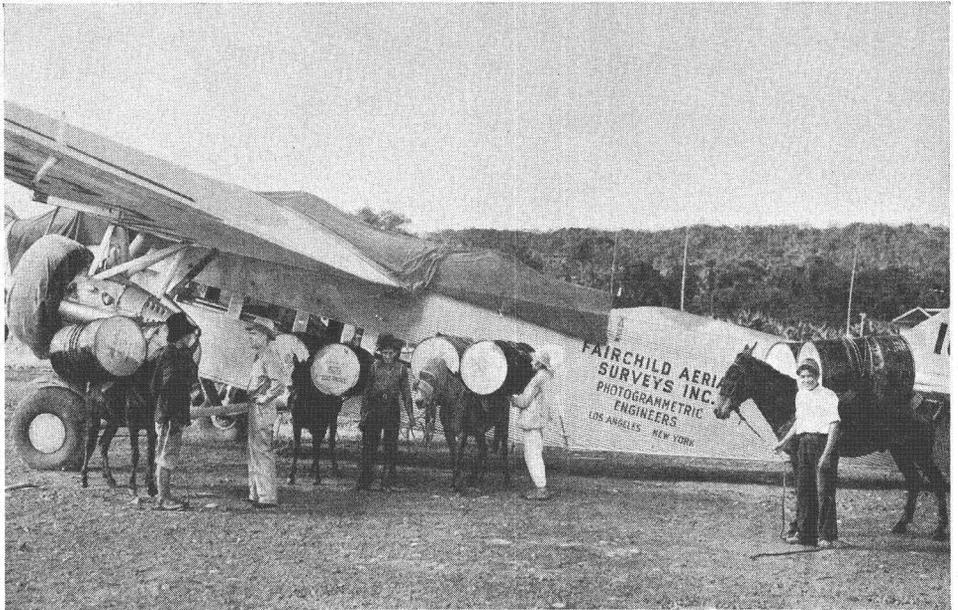
C. M. COTTRELL (left) AT THE STEREOPLANIGRAPH

finally was convinced of the desirability of aerial photography for this purpose and gave Fairchild a contract to map an area of two hundred square miles. This man was Wayne Loel and he succeeded so well in figuring out ways and means by which aerial photography helped him in his geological exploration that his enthusiasm was soon transmitted to the chief geologists of most of the major companies who from that time on accepted aerial photography as an almost indispensable tool in geological exploration. From that day to this Fairchild has been continuously engaged in making aerial surveys for geological purposes in most quarters of the earth. Many other companies have since grown up and thrived on this same type of business, both in the United States and in many foreign lands.

Information kept drifting into the United States as to the remarkable progress that had been made along photogrammetric lines in Europe. In 1927 Fairchild investigated these developments, and subsequently introduced into

the United States the first generally used piece of photogrammetric equipment, the aerocartograph, which was purchased through Fairchild by the United States Geological Survey.

In the meantime Fairchild's mosaic methods had been subject to a continuous evolution throughout the '20s. Accuracy was improved by the use of radial control and restitutional printing. Pyramiding was introduced to take care of the great differences of elevation in the western mountains. And finally, in 1935 while standing in the Fairchild plant watching the personnel struggling with



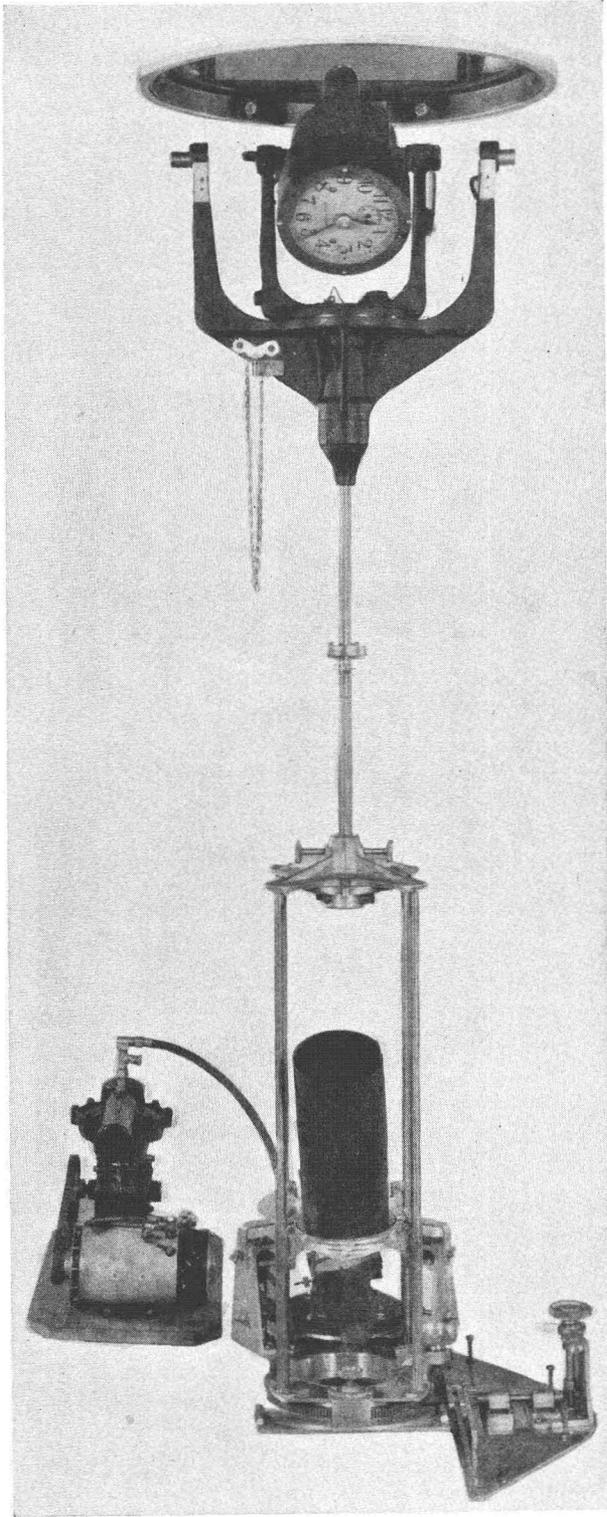
TYPICAL OF JUNGLE OPERATIONS, THE DRUMS ARE EMPTIES BEING RETURNED. MR. POLLEY SECOND FROM LEFT. THE OLD FORD AIRPLANE IS EVEN TODAY, PERHAPS, THE BEST SHIP FOR SUCH AN OPERATION.

the hand templet method, Mr. Charles W. Collier received the inspiration which resulted in the invention of the slotted templet method.

Fairchild immediately started using this method and perfecting and improving upon it. It was received in official circles with the greatest of scepticism and it was a matter of approximately two years thereafter before there was sufficient acceptance on the part of any other agency to cause experimentation to determine the adaptability of this method to Federal mapping problems. Today that method is used extensively under license by many commercial operators and by the Government of the United States in much of its map compilation work.

In 1933 Fairchild introduced into the United States the stereoplanigraph and the multiplex, devices so well known that no further comment is necessary. Today, under the able direction of Chief Engineer, C. M. Cottrell, the topographic department is breaking all records for production per machine hour.

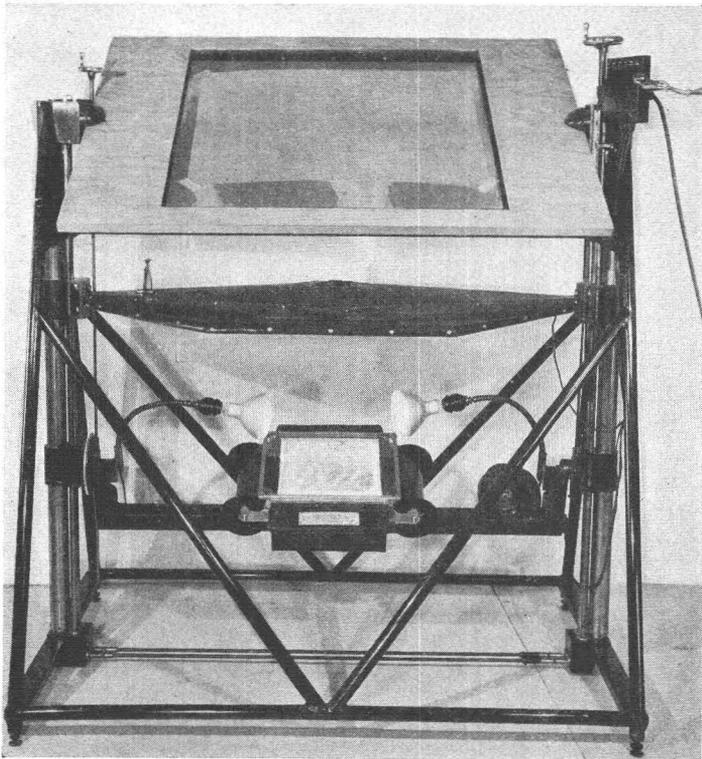
Over the years Fairchild has developed from time to time various other pieces of photogrammetric equipment including the nine lens camera, the



FAIRCHILD SOLAR NAVIGATOR



CONTACT PRINTER DEVELOPED BY FAIRCHILD AERIAL SURVEYS FROM TWENTY YEARS' EXPERIENCE WITH THAT TYPE OF EQUIPMENT.



SINGLE LENS PROJECTOR. PLANIMETRIC MAPS CAN BE COMPILED FROM EITHER FILM OR PRINTS.



FAIRCHILD RATIO CAMERA NEGATIVE HOLDER  
 1. Tilt axis scale. 2. Tilt actuating lever.

tandem nine lens camera, the four couple transformer, the Solar Navigator, and many others of highly specialized application.

Today, under war conditions, Fairchild Aerial Surveys is engaged practically one hundred percent on this type of activity. It is participating in the domestic mapping program and at the same time is acting as consultant to a number of foreign Governments, aiding them in establishing their aerial photographic military departments and assisting in training their personnel.

While 1942 finds Fairchild Aerial Surveys, Inc. the runt of Sherman Fairchild's brainchildren, judged by the usual superlatives, it has always been the

testing ground from which the great camera, airplane and engine companies have sprung. The company is dedicated to contributing its utmost to the war effort and, as in the past, pledges its future to a continuation of its policy of progress, invention and the improvement of photogrammetric quality.

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