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ARROW AIRCRAFT AND MOTORS CORPORATION

(Havelock P. O.)
Lincoln, Nebraska.

The Arrow Aircraft Corporation entered the aviation industry in 1925 as pioneers in the manufacture of three, four and five place biplanes. In October, 1928, it was succeeded by the present company, the Arrow Aircraft and Motors Corporation, which acquired all of its assets and thereafter acquired 99% + of the outstanding capital stock of the Patriot Manufacturing Company. The Patriot Manufacturing Company owned a manufacturing plant at Havelock, Nebraska, machinery, equipment, inventory and other assets used in connection with the manufacture of trucks and bodies. The plant and facilities of this company were thereupon made available for the manufacture and sale of Arrow airplanes on an extensive scale. Additional working capital to permit larger production was supplied.

The major inducement for the organization of Arrow Aircraft and Motors Corporation was the remarkable public interest in aviation that was aroused by the successful flight of Colonel Lindbergh across the Atlantic, his subsequent tour of the country in the interest of commercial flying, and the action of the Federal Government in more than doubling its mail transport appropriation in 1927. Previously test flights totalling more than 100,000 miles, including long distance flying, had given proof of the airplane's supremacy over other methods of transportation from the standpoint of elapsed time.

During the summer of 1928 an unheard of demand for planes made itself manifest. Factories for the fabrication of raw products and the making and assembling of airplanes and motors grew up almost over night. Hundreds of airports were built, scheduled airplanes were lighted, airplane schools were established, to which students flocked in large numbers. American finance having noted the accomplishments and remarkable growth, accepted it as a sound medium of investment.

Just as had been true in the automobile industry, there grew up in the aviation industry a demand for small and comparatively inexpensive machines beyond any production ability then available to supply. The new corporation undertook to meet the situation. It purchased the necessary additional factory equipment; organized a craftsmen's school and incorporated a school for the training of students and customers and acquired an airport near the factory and operated the same in the name of Arrow Airports, Inc., a wholly-owned subsidiary of the Arrow Aircraft and Motors Corporation. Additional experts were employed and sales systems set up.

Fire and the depression combined to sidetrack success. Production was begun early in 1929, at a time when 271 orders were on the books for 1929 delivery. The LeBlond company, with whom a contract had been made to supply motor units, delayed delivery so that by the end of May but 38 finished planes had been shipped, with 100 others in process of construction. When this was remedied production rose in June to four complete ships a day, but a fire at the LeBlond motor factory shut

off that supply for an indefinite period. The Viele motor was next considered, but the Bureau of Air Commerce disapproved it for use in the Arrow type of plane, and the Kinner motor, which later was adopted, forced a re-engineering and rebuilding program.

The increased costs that resulted compelled an advance in price of the finished product, the Arrow Sport airplane, from \$2356 to \$3652, and this higher price, coupled with delay in deliveries, was followed by wholesale cancellations after 68 planes had been turned out.

During 1929 the company collected \$166,291.25 for planes sold, and the deficit of \$70,651 represented circumstances over which the company had had no control. In addition to the cost of the delivered machines, the operating costs for the year had to carry not only the administrative and general expense overhead, but a charge of \$31,000 representing unproductive labor for the entire hundred planes. The sales likewise had to absorb in the one year the sales expense necessary to acquire the contracts, as well as advertising and demonstrating expenses incurred in backing up the distributors' organization, which ordinarily would have been spread over several years.

By 1930 the market had become distressed, and it was necessary to sell planes made in the latter part of 1929 at a loss of \$15,220 on total sales of \$61,825, to which was added a loss of \$2,867 from repossessed planes. In addition there were selling and administrative expenses that ran the loss total to \$67,000, of which \$50,000 was incurred because of the belief shared by the company officials,

with industrial heads generally, that depressed conditions would not long continue. This sum was expended not only for the benefit of the company, but of the distributors who had invested large sums in equipment, airplanes and sales programs, all necessary to maintain our position in the field of aviation.

The Arrow Sport airplane manufactured and sold by the Arrow Aircraft and Motors Corporation in the years 1929 and 1930 was a sturdy, reliable and safe ship. This statement of fact can easily be verified, and ^{the majority} ~~many~~ of the ships manufactured by the company and sold in those years are still in service. ~~The ship had an unusual stability in the air, took off at relatively low speeds with absolute safety and was able to land in a small landing space.~~ The Arrow Sport plane was a product of quality and so ^{recognized} ~~considered~~ ~~in the sections of the country where it was known and used.~~ The company did not experience ~~structural failures in connection with its product and many of the former owners of these ships are undoubtedly in the market for other airplane products of the company.~~ During these two years the company's planes were sold at important aviation centers from New York to California as well as ~~some~~ foreign sales, and enjoyed a record of having produced a worthy airplane.

The succeeding years of 1931, 1932 and 1933 were purely years of readjustment, during which a complete markdown was taken on all work in progress, and full depreciation on equipment and buildings. Expenses were the fixed burdens of Insurance, maintenance, repairs, taxes and watchman. The year 1934 was almost entirely one of

market survey and development.

The one fact that is most impressive as of today is that the aviation industry ^{is rapidly} ~~has~~ ^{into} fully established itself in a highly competitive field, and that the principal task ahead has been to develop more efficient methods of operation. This means lessened cost. From 12 cents a passenger mile cost in 1929 to 5 cents in 1931 was one achievement along this line in the transport field. Still lower costs are necessary if civil aviation other than transport is to be rescued from the inactivities forced by four years of depression. It is at this point that the Arrow Aircraft and Motors Corporation plans to re-enter the picture. After two years of investigation and hundreds of hours of motor tests the corporation has fully developed for aviation purposes the Ford V-8 motor, through the employment of a conversion that, although simple in design, represents a distinct engineering triumph. This converted motor has also passed all tests required by the Bureau of Air Commerce.

In addition to this, the corporation has designed, built and completely tested a low winged monoplane which, with the standard Ford V-8 motor installation, forms the answer to the ^{demand of} ~~plans~~ of airplane engineers and designers for a plane that can be operated in safety, with low motor costs, low operating expense and small upkeep.

This new plane not only meets the present day demand for a private, sport and training machine, but it opens the way along with returning business conditions, for a tremendous development in a field not now occupied. The name of Ford upon an airplane motor is notice to the buyer that he is getting the same high and dependable

type of equipment that has given the Ford so prominent a place in the automobile field as well as assurance that the same low operating costs and upkeep expense will be experienced, possible only through the world wide distribution of Ford motor parts and their low unit costs.

Markets for Airplanes of the Corporation

An intensive survey of the market, which has included interviews with a large number of airport managers, pilots, agencies and sales directors, justifies the belief that 300 of these low-priced planes can be sold during the current business year. The company is desirous of starting this production at once, and is arranging its schedule on the basis of a production of 600 in 1936 and 900 for 1937. To enable it to start production, it will be necessary for the Arrow Aircraft and Motors Corporation to have additional working capital of \$200,000. To make it possible, the bondholders to the extent of \$104,000. have agreed to take a second position with their claims.

There are four promising marketing fields--(1) the private flyer, (2) the schools of instruction, (3) Ford dealers organizations and (4) the foreign trade.

(1) As to the field of private flyers:

Our survey indicates that the principal buying will be in the field of the private flyer. Government records show that today there are 13,905 active pilots' licenses and 12,917 students' licenses

active, with approximately only 7,000 planes available. Many of these will want and need planes. Of the 5 million young men in the United States between the ages of 18 and 23, at least 50,000 are interested in aviation. Half of these 50,000 young men have or can acquire sufficient capital to learn to fly, if tuition is low, in an airplane that they can later purchase and can afford to fly for the purpose of building up sufficient hours to warrant their employment as accredited pilots. Sales possibilities suggest that 5 per cent, or a fourth of 1 per cent of the total possible prospects, will buy Arrow planes in 1935, which means 1250 orders.

(2) As to the field of Schools of Instruction:

Reliable information is that 2,000 planes may be placed at once in schools if an economically-operated plane can be acquired so as to warrant low rates being offered for instruction, and since there are practically no competitors in this field where the demand is for sturdy, economical, training ships that can take all hard knocks, a 5 per cent share, or 100 ships, may reasonably be expected.

(3) As to the field of Ford Dealers' Organization:

Information received from a part of the nearly 7,000 accredited Ford dealers in the United States justifies the belief that at least 375 Arrow F V-8's can be placed with them for demonstration and advertising purposes in connection with Ford V-8 cars.

(4) As to foreign markets:

Due to the accessibility of motor repair parts and the previous demands for Arrow airplanes in foreign markets, company

officials are confident that more than 200 orders for export can be secured in the year.

(5) As to other markets:

A fifth field of absorption which will have a definite bearing on quantity production and sales of this type of airplane, is that in which pilots are trained for national defense, as the national guard and naval and army reserves.

A profitable outlet for converted motors alone is certain to develop. In fact a number of independent manufacturers, familiar with what the Arrow corporation has been doing along experimental lines, have indicated a desire to buy these units, and they have been backed up by a request of our company to make such sales by officials of the Bureau of Air Commerce. The Corporation is willing to make such unit sales of converted Ford V-8 motors since it will benefit generally from the fact that the more planes into which this motor unit goes, the more men will be trained and the more air-minded youths will become interested, all forming future prospects. If such motor unit sales become numerous, the cost of building the completed plane could be reduced as the ratio of profit on the units is larger than on the finished ship.

Plans are being formulated at the present time to license certain other aviation companies and parties interested, in the establishment of assembly factories on the west coast, the south, northeast, and the southwest of the United States, as well as certain foreign countries. Deliveries will be handled from the Arrow Aircraft and Motors Corporation factory for the middle-west. All conversion parts will be manufactured at the Arrow Aircraft and Motors Corporation plant and

forwarded to the various assembly plants for application to the Ford motor. The majority of these plants will manufacture the Arrow F V-8 under the engineering supervision and the A.T.C. of the Arrow Aircraft and Motors Corporation.

The Arrow Aircraft and Motors Corporation in applying for this loan is not only placing itself in a position to employ several hundred men in its own factory, but are completing plans which when effected will create employment in many localities throughout the United States, rather than a large concentration at one point, all of which will make possible the re-employment of labor and further the progress of this country in aviation.

We are attaching hereto photographs of the plant, the airplanes manufactured by the company in 1929 and 1930, the latest product developed for use with the Ford V-8 motor, and certain financial statements and schedules of the Corporation, in support of its application for a loan of \$300,000 to be secured by a First Mortgage upon its plant, airport and equipment.

Very respectfully submitted,

ARROW AIRCRAFT AND MOTORS CORPORATION

By _____