

January, 1919

Volume XII, No. 1

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GRAPHIC ARTS BLDG., TORONTO, CANADA

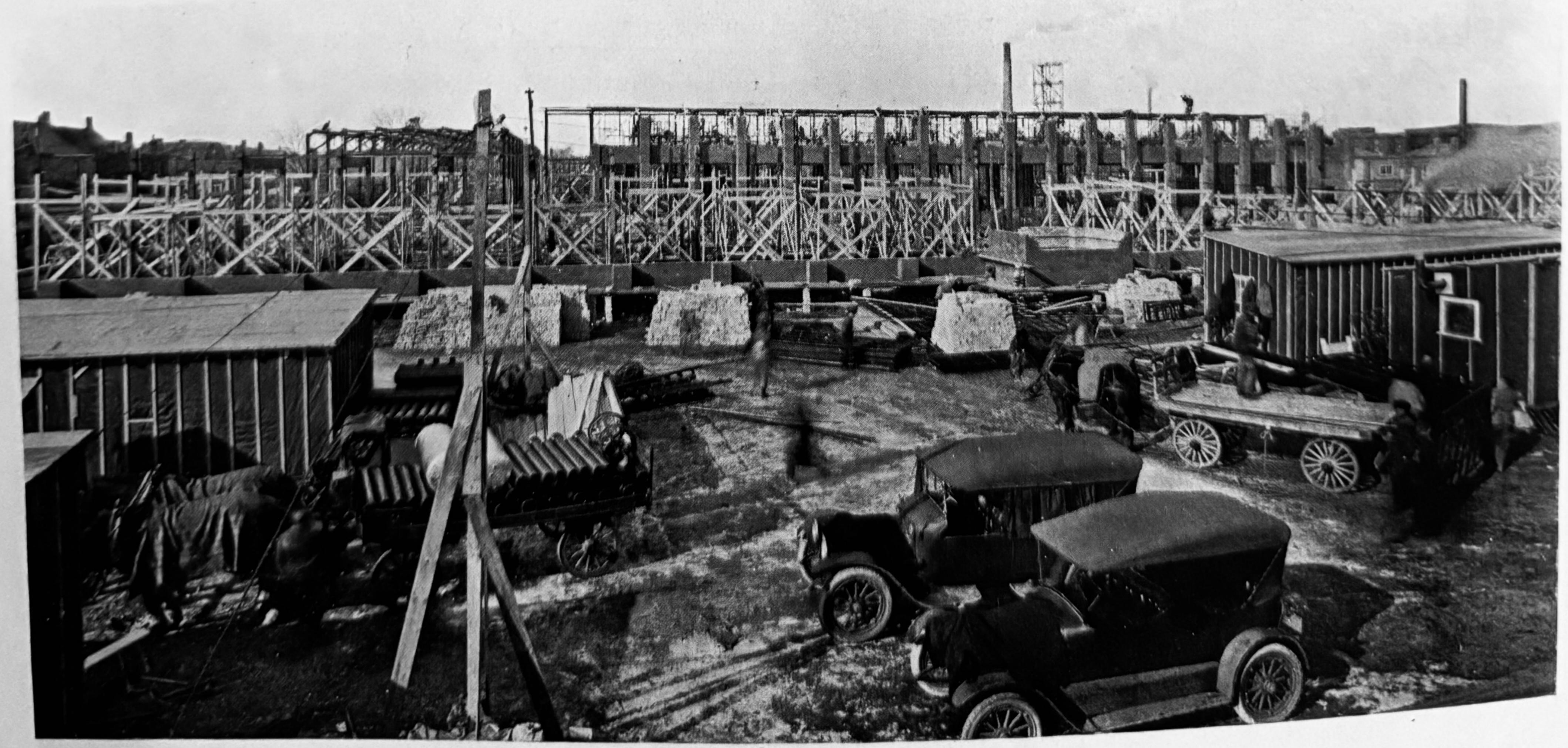
BRANCH OFFICES

MONTREAL

NEW YORK







PROGRESS VIEWS, FACTORY OF THE CANADIAN AEROPLANES LIMITED, TORONTO.

(1). Digging foundations February 1st, 1917. (2). First building operations, February 16th, 1917. (3). Metal Shop and Fuselage Buildings, March 1st, 1917.



METAL SHOP AND FUSELAGE BUILDING, MARCH 15TH, 1917.

# Canadian Aeroplanes Limited, Toronto

WHEN the British Government decided to train pilots in Canada about two years back, the question was how soon could arrangements be made to produce aeroplanes in this country, as machines could not be imported from England, and the United States had no equipment of this kind to spare.

Mr. F. W. Baillie, now Sir Frank Baillie, was asked to undertake the organization of this work, with results which are now pretty much a matter of history. As an instance of manufacturing enterprise and productive capacity, the factory of the Canadian Aeroplanes, Limited, stands as an important war-time achievement. As a building undertaking, it represents an accomplishment which for speed of construction and organizing ability and resourcefulness has never perhaps been exceeded anywhere.

Ten acres of buildings started and completed in sixty-six actual working days is the record established—a feat all the more remarkable when the adverse weather conditions under which the work was carried out is taken into consideration. The group altogether comprises a storage and office building, metal shop, woodworking mill, fuselage building, winged panel building, power house, boiler house, experimental building, wood drying house, garage, and timekeeper's office.

Before the work was started an investigation was made of all possible sites in the vicinity of Toronto suitable for the erection of such a plant. It was necessary to get a level property, if possible, which could be served by railway facilities and be well-placed as regards the labor market. Such a property, comprising



PROGRESS VIEWS, APRIL 19TH, 1917, SHOWING FUSELAGE AND WING BUILDINGS PRACTICALLY COMPLETED, WITH EXPERIMENTAL BUILDING TO RIGHT.





CANADIAN AEROPLANES LIMITED, TORONTO, VIEW ALONG PRIVATE THOROUGHFARE KNOWN AS BAILLIE AVENUE.

approximately ten acres, was found just north of Lappin avenue on Dufferin street. On February 1st, 1917, the same day the property was purchased, teams were put to work breaking up the frozen ground, and construction started on the erection of permanent buildings that would be suitable for general manufacturing purposes after the war.

Immediately on acquiring the site the architect was instructed to begin work on the plans according to requirements previously deter-

mined at a preliminary meeting held with Sir Frank Baillie and General Manager E. T. Musson and his staff. The general scheme of the building having been definitely decided on, a local contracting firm was engaged to do the work on a percentage basis. Temporary offices were immediately erected, and trench digging for the first buildings started on the date mentioned.

With the exception of the experimental building, wood-drying building and the timekeeper's house, the whole group was built of brick on concrete base, with steel column and trusses, metal sash throughout, mill

constructed floors and splined plank roofs.

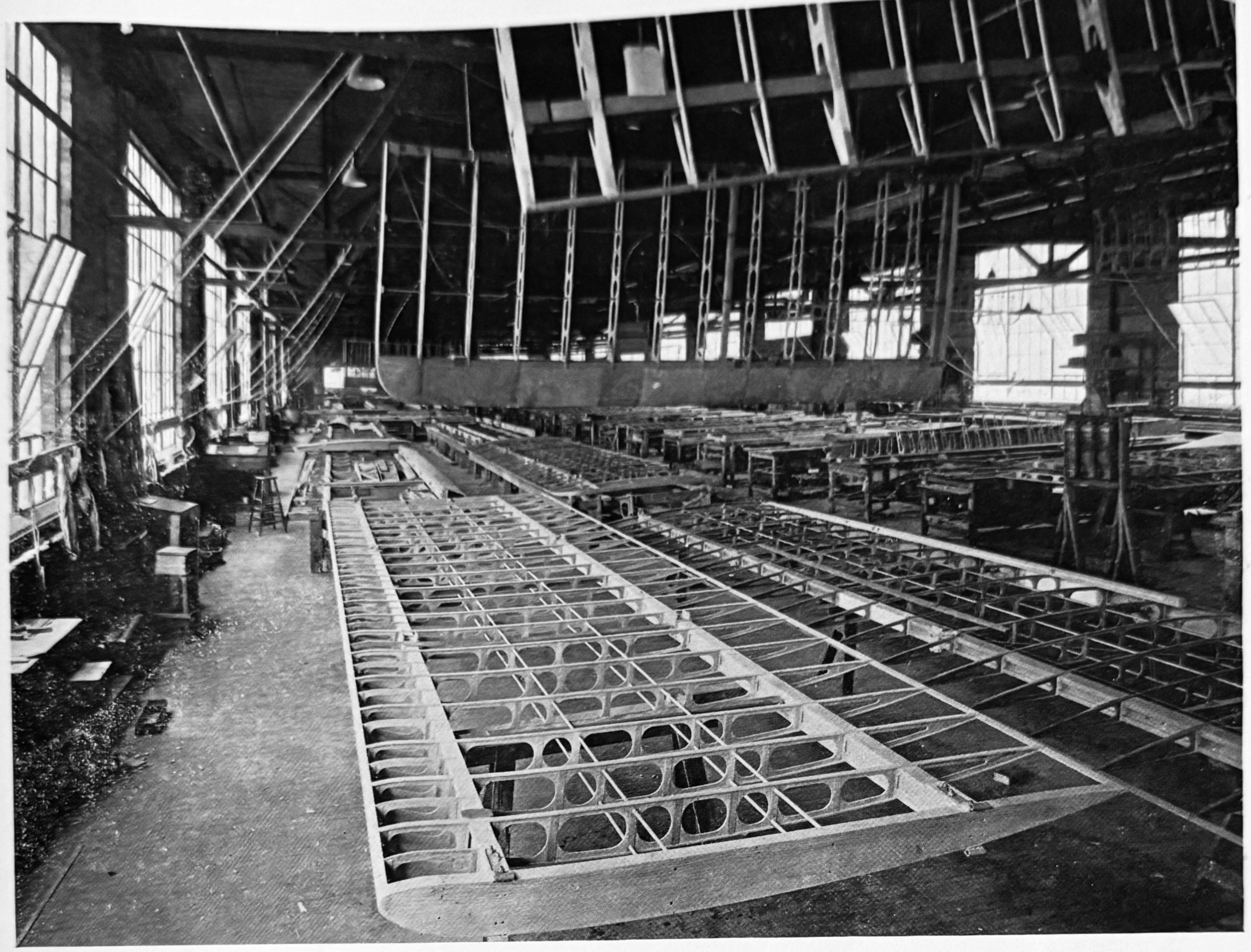
Some idea of the rapidity of construction can be gathered from the fact that the company was occupying some of these buildings inside of a month, while within forty-five days' time the manufacture of aeroplane parts was in progress to a considerable extent.

There was practically no overtime work on the job, and no work on Saturday afternoons, Sundays or at night, save in a few isolated cases, such as some rough labor work and some over-

time for painting at the very end. By May 7th, three months and a week after operations started, the buildings were completed, roadways and sidewalks laid, and the contractors' plant entirely removed from the premises. By deducting Sundays, Saturday afternoons, rainy days and days when it was too cold to work, the total number of full working days amounted to sixtysix. It is doubtful if such a record has been equalled by any similar war work on this continent. This result was obtained through the hearty co-operation of the owners, architects and contractors, and de-



METAL SHOP.



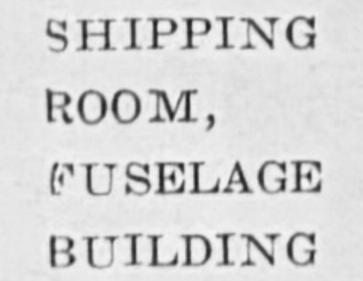
INTERIOR OF WING BUILDING, SHOWING PANELS READY FOR COVERING



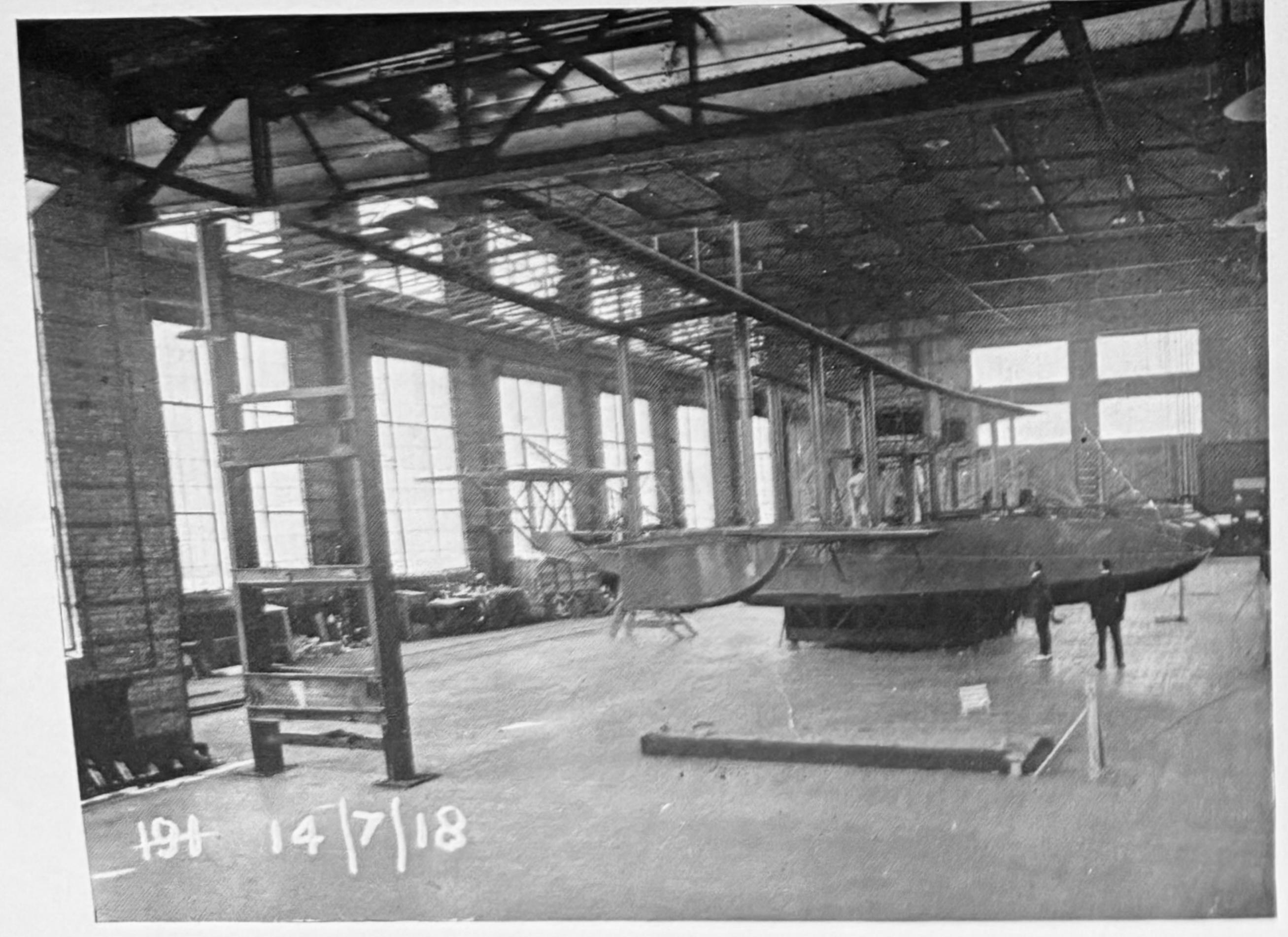
SHIPPING ROOM, FACTORY OF CANADIAN AEROPLANES LIMITED, TORONTO. JOHN M. LYLE, ARCHITECT.







VIEW SHOWING SECTION
OF TOOL ROOM



# Factory of Canadian Aeroplanes Limited

JOHN M. LYLE, ARCHITECT.

JACKSON-LEWIS COMPANY, CONTRACTORS.

FLYING BOAT NEARING COMPLETION. TOOL DE-PARTMENT METAL SHOP.



notes organizing methods and capabilities quite upsurpassed.

Before any contracts were let, an investigation was made by a Canadian inspection company as to the steel in hand at the time in Montreal, Winnipeg, Hamilton and Toronto, and the contract finally awarded to a local steel firm on the basis of a penalty and bonus system; the contractors to receive a bonus of \$100 per day on each building for every day under his schedule for delivery, and to be penalized an equal amount for every day behind such a schedule. Some idea of the speed in delivery and erection of the steel may be gathered from

the fact that on a schedule of delivery set for six weeks, the contractors were able to earn a bonus of six thousand dollars.

When it is borne in mind that, besides steel columns, beams, etc., there was a great deal of truss work—certain spans being 67½ ft. wide, and other 60 and 45 ft. wide—some idea may be gathered of the fabrication entailed thereby. The wing panel building, which has a

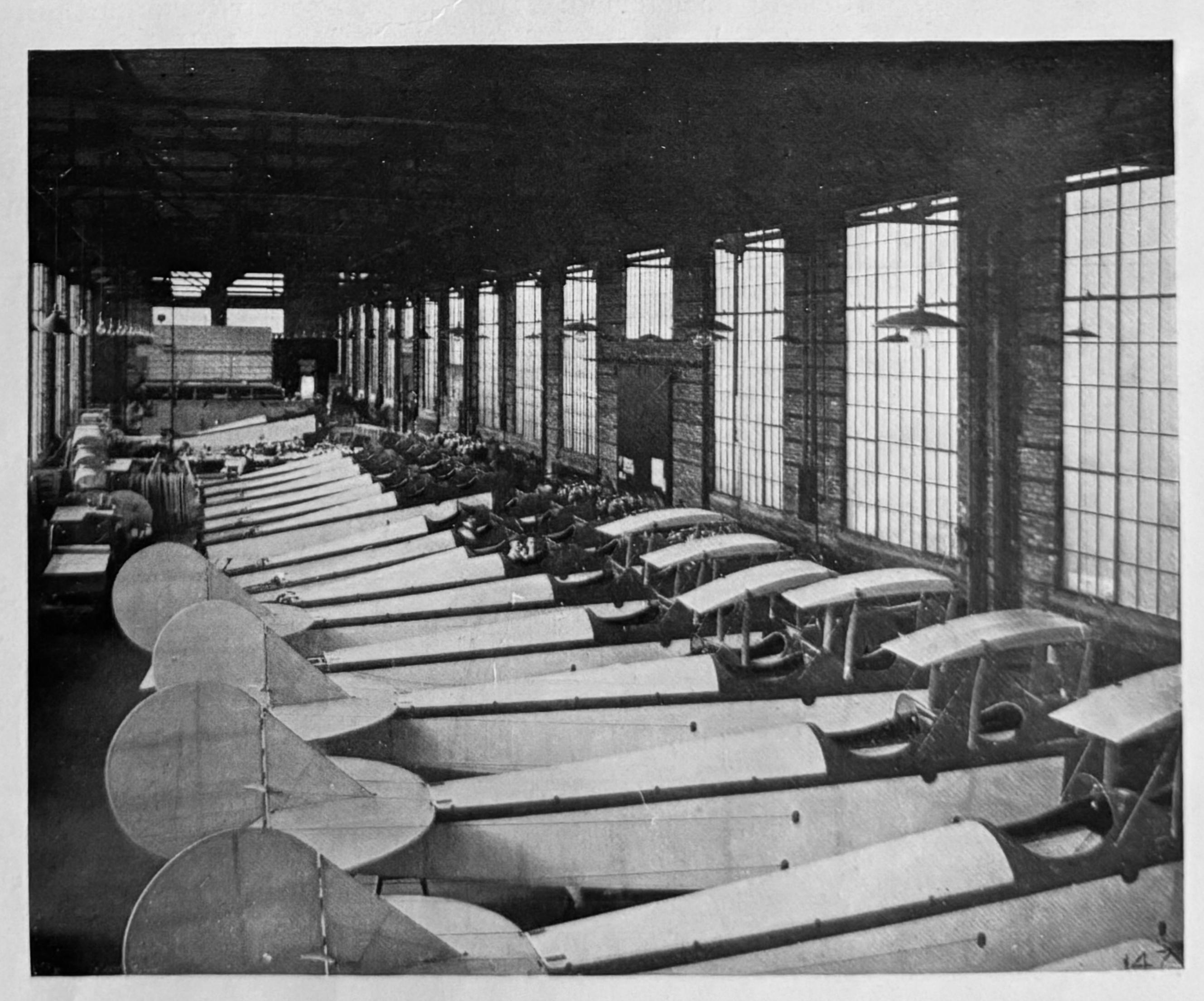
span of 60 ft., is 400 ft. long, while the fuselage building, which has a span of 45 ft. in one section and 67½ ft. in another, is over 500 ft. long.

In order to preclude the possibility of any delay of materials, orders were only given with the strict understanding that deliveries would be promptly made. A contract was made with a local brick company that they were to agree to take no other orders and to supply a continuous haulage of at least twenty teams per day. If, in addition, it was deemed necessary by the architect, they were to ship by rail. At one time bricks were being laid hot from the kilns.



WING BUILDING, FACTORY OF CANADIAN AEROPLANES LIMITED, TORONTO.

During the first two weeks very severe weather prevailed, the thermometer dropping to 15 to 18 degrees below zero. Special precautions were taken to protect the trenches from the frost, and also the concrete during erection. Later in the spring, owing to the rather wet character of the soil and the fact that snow and ice had accumulated inside the buildings, it was necessary to thaw out same



FUSELAGE BUILDING, SHOWING MACHINES READY FOR SHIPMENT.



CARAGE CANADIAN AEROPLANES, LIMITED, TORONTO. JOHN M. LYLE, ARCHITECT.

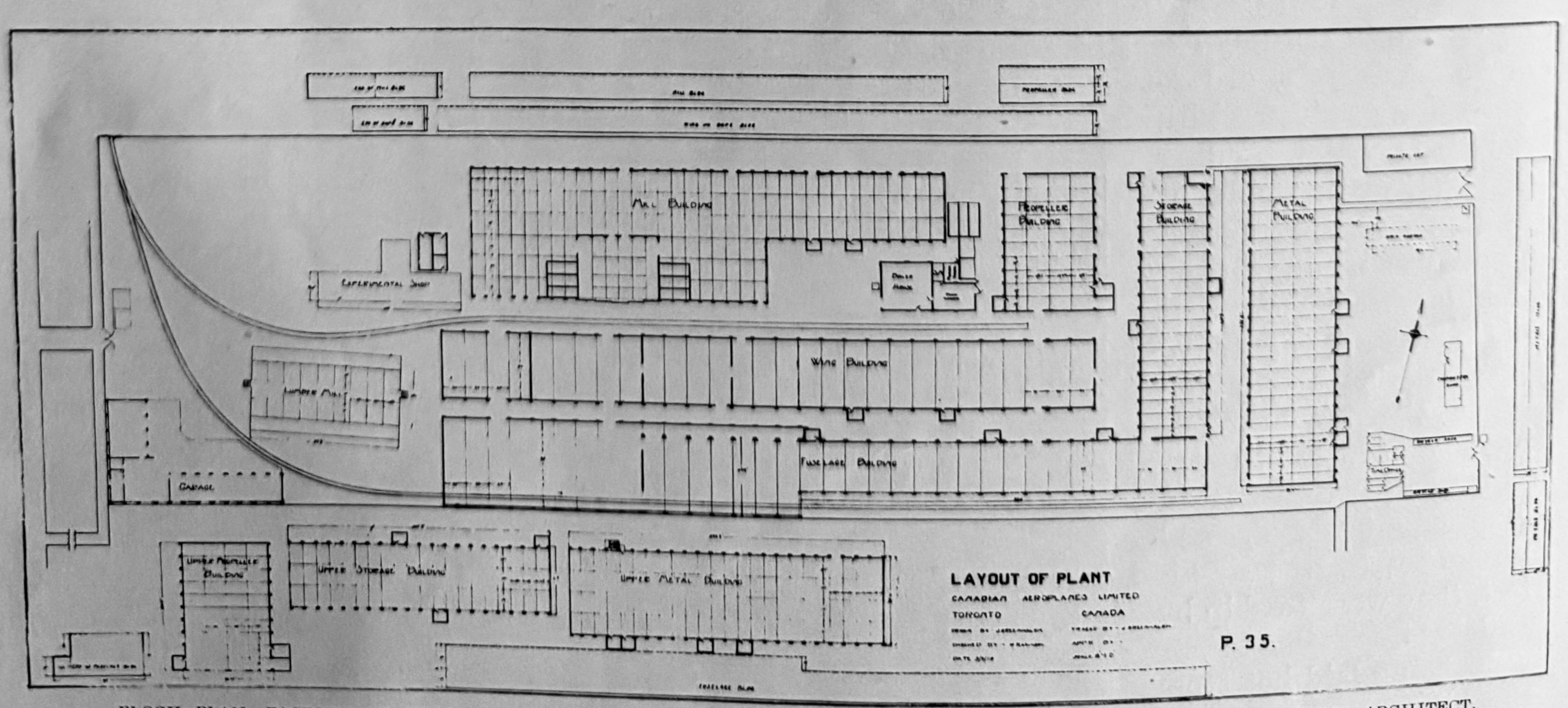
with auxiliary salamanders. A sea of mud was the natural result, and it was necessary to drain off the water from this mud and fill in with cinders. Steam rollers were put in to crush down this cinder-fill, and it was an interesting sight to see at one end of the building a sea of mud, in the middle a steam roller at work, and at the farther end a gang of men laying the work floors.

The buildings are heated by steam from a central plant, radiators being used instead of piping. This service work was put through in record time by a local heating firm, employed under the general contractors. Owing to the character of the work to be carried on in the plant, it was necessary to have specially well-lighted shops, and this has been obtained by the use of large areas of metal sash.

Special care was also given to the matter of routing materials in the process of manufacture

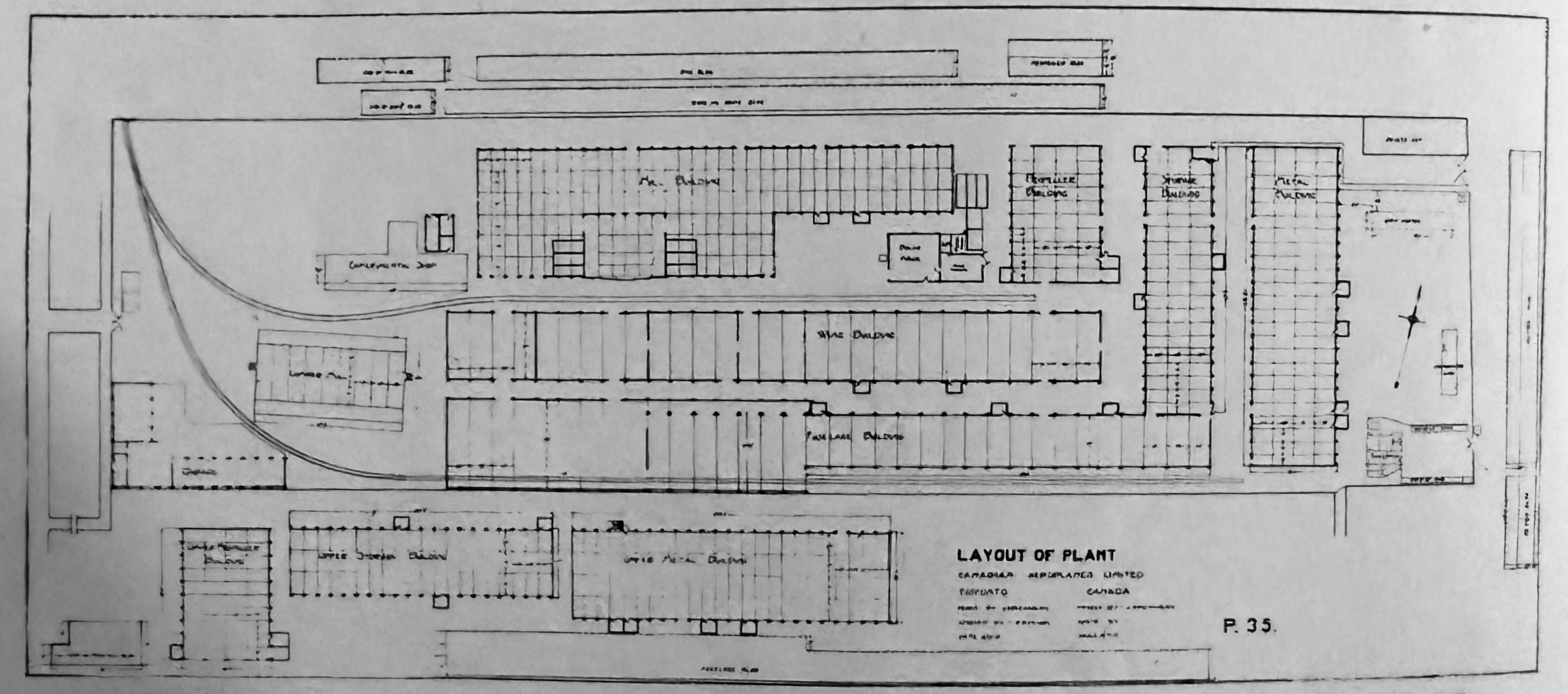
so as to successfully co-ordinate all branches of the work. With this in view, the buildings were planned with a central stock room, distributing the raw material stock on one side to the metal-working plant, and receiving it back again at the other end of this stock building, where it was joined with the finished millwood part received at the other side of the stock room, and distributed to the assembling departments. Material from the lumber yards, situated at the west end of the property, likewise progresses in one direction to the stock room. The final assembly, starting from the stock room end of the buildings, progresses toward the shipping department, down the two long buildings.

The following additions were made to the plant during the past year: Second storey on metal building; six dry kilns; nine bay extension to wing and dope building, 180 x 60 ft.; nine bay



BLOCK PLAN, FACTORY OF CANADIAN AEROPLANES LIMITED, TORONTO.

JOHN M. LYLE, ARCHITECT.



BLOCK PLAN, PACTORY OF CANADIAN AEROPLANES LIMITED, TORONTO.

JOHN M. LYLE, ARCHITECT.

extension to fuselage building, 180 x 80 ft., and a seven bay extension to fuselage building, 120 x 14 ft.

All details of construction are what might be termed standard; that is, all steel is of standard size and lengths. All partitions, etc., throughout the plants are in small units and standardized, so as to permit them being moved from place to place and put up again without cutting.

### Quantity Surveys for Buildings

Competitive methods are more vicious today than ever. The age of efficiency in which we are at present developed, is producing many fine high class specialists, but in reality the whole scheme is nothing but a most scientific method of price reduction. For instance, if through your efficiency man you can save a dollar a thousand in laying brick, what becomes of the dollar? The next job you figure you reduce that bid a dollar a thousand on brick and pass the result of your scientific organization work over your head back into the pockets of capital.

Out of all the chaos there finally comes a ray of light, more than a hope, a sure, time proven process that will eliminate the evils of the present day competitive menace.

This acknowledged remedy is known as the "Central Quality Survey" method. Under its guiding hand a full value and uniform competitive list of quantities can be established in any market; it gathers statistical information of inestimable value, to be in turn imparted to all. It covers costs, estimating, standardization, credits, insurance, and such legal matters as must necessarily come under its scope. It has full association powers and has proven to be a direct producer of profits for those who have had the perseverance to incorporate the work.

We all know each item on a plan represents a certain value, and every item omitted is an absolute loss. The items on a plan represent the material you will be obligated to buy, and the labor you must pay for in executing the work. Therefore, the interpretation of every plan must be as near perfect as possible, free from confusion, and the only way to stop confusion is to have a job listed by one man carefully and properly and all competitors accept this uniform and correct interpretation. fact, it is the most economic, most efficient, most properly applied principle ever submitted to the building interests.—C. É. Flamboe in a Builder's Bulletin of the Master Builders' Association of Wisconsin.

#### Commercial Restrictions Withdrawn

Important cable dispatches have been received by Mr. G. T. Milne and Mr. F. W. Field, the British Trade Commissioners at Montreal and Toronto respectively, from the Imperial Department of Overseas Trade in London pointing out that since the armistice was signed many restrictions on commerce have been withdrawn, while in the case of those which remain, licenses are being granted much more freely than previously. Particulars regarding these relaxations will be published weekly in the "Board of Trade Journal," the official organ of the Imperial Government for notices regarding trade.

Orders placed during the war period now have good prospects of being executed, and arrangements for new business should be made

without delay.

The following relaxations in particular

should be noted:-

1. Permits to manufacture and Priority Certificates in connection therewith are no longer necessary.

2. Firms are at liberty to accept civil or commercial orders for immediate execution, thus freeing the engineering industry among

others, for commercial work.

3. All the principal kinds of raw materials may now be used for the commercial manufacture of goods for export, but these raw materials themselves may not be exported in certain cases without licenses. Among those to which this condition applies are the following:—

Aluminum, Brass, Iron, Nickle, Steel, Antimony, Copper, Lead, Spelter or Zinc, Tin.

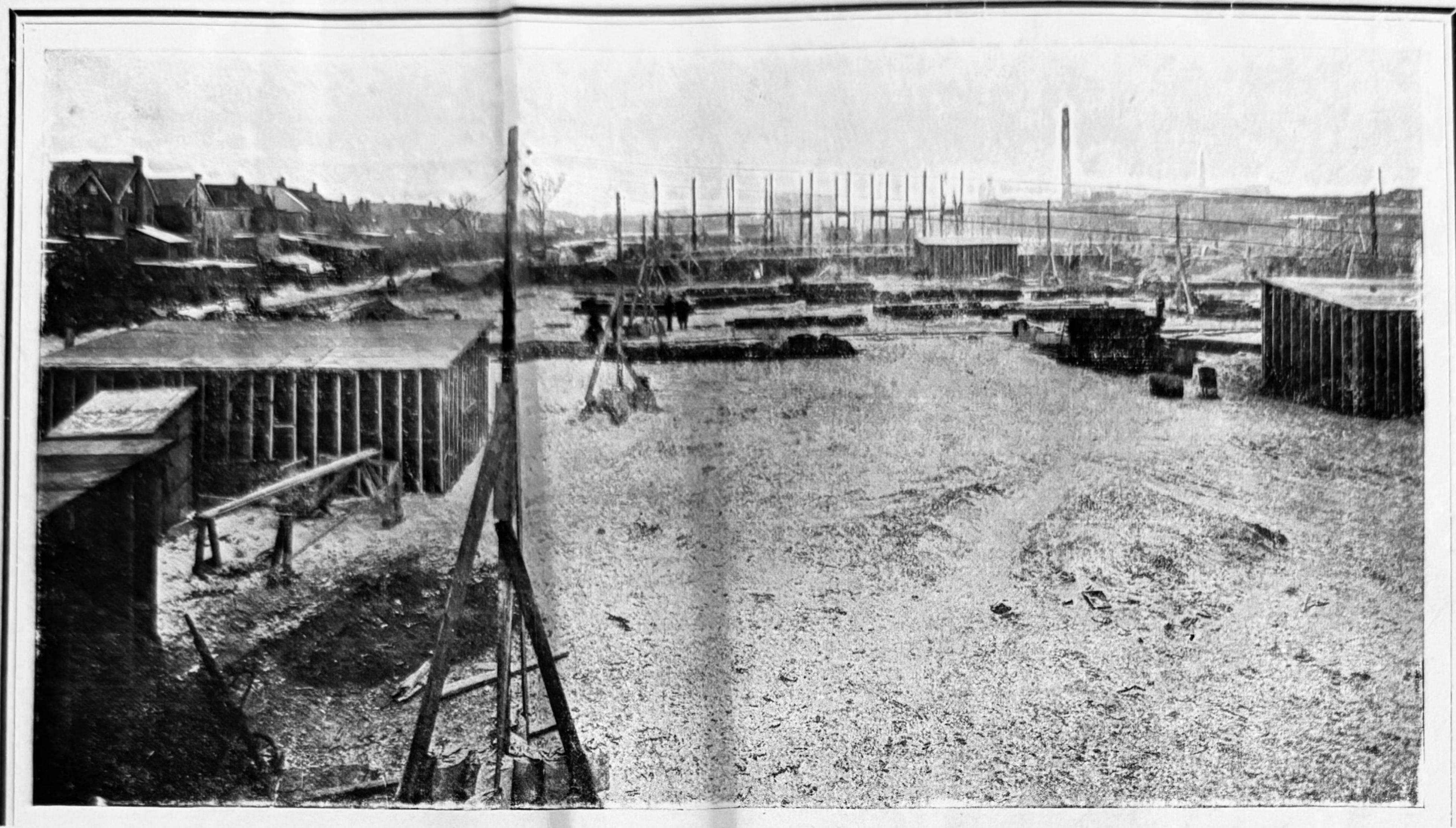
In general, restrictions on the export of manufactured goods have been removed, while they have been retained in the case of raw materials.

The following list indicates some of the most important items the export of which was formerly prohibited to all countries, but which ahe now permitted to be exported to any part of the

British Empire:-

Articles—manufactures of asbestos; belting, cotton—including belting impregnated with balata or rubber; copper—and manufactures of—except wire bars, plates, rods, sheets, stripe tubes; galvanized sheets—corrugated or flat; iron and steel rivets, nuts and screws; iron and steel wire cloth, linoleum, magnesite and magnesite bricks, nails, (wire), steel sheets, (black), tools, (small).

Certain factors will continue to hamper the export trade, notably (1) shortage of labour till the army is demobilized, (2) shortage of tonnage, (3) the need for reorganization of plant in certain industries before resuming normal work, but it is considered that the effect of these factors will diminish greatly in a few months.



Progress Photographs. Canadian Aeroplane Factory.

FEBRUARY 16th

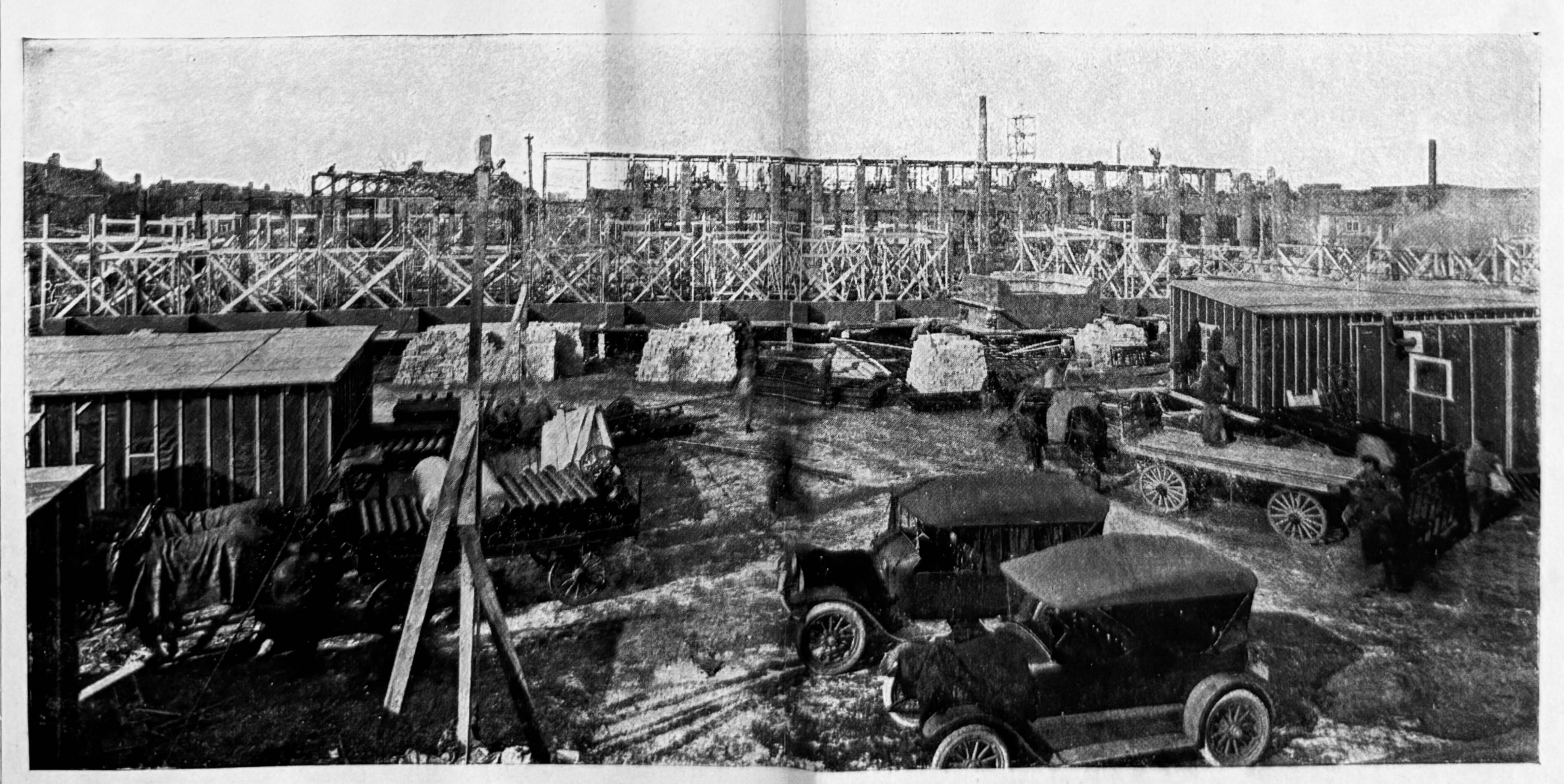
The Jackson-Lewis Co., Ltd. General Contractors.

# The JACKSON-LEWIS COMPANY, Limited

Contracting Engineers

Head Office: 76 Adelaide Street West, Toronto, Canada

#### EFFICIENCY - SPEED - ECONOMY



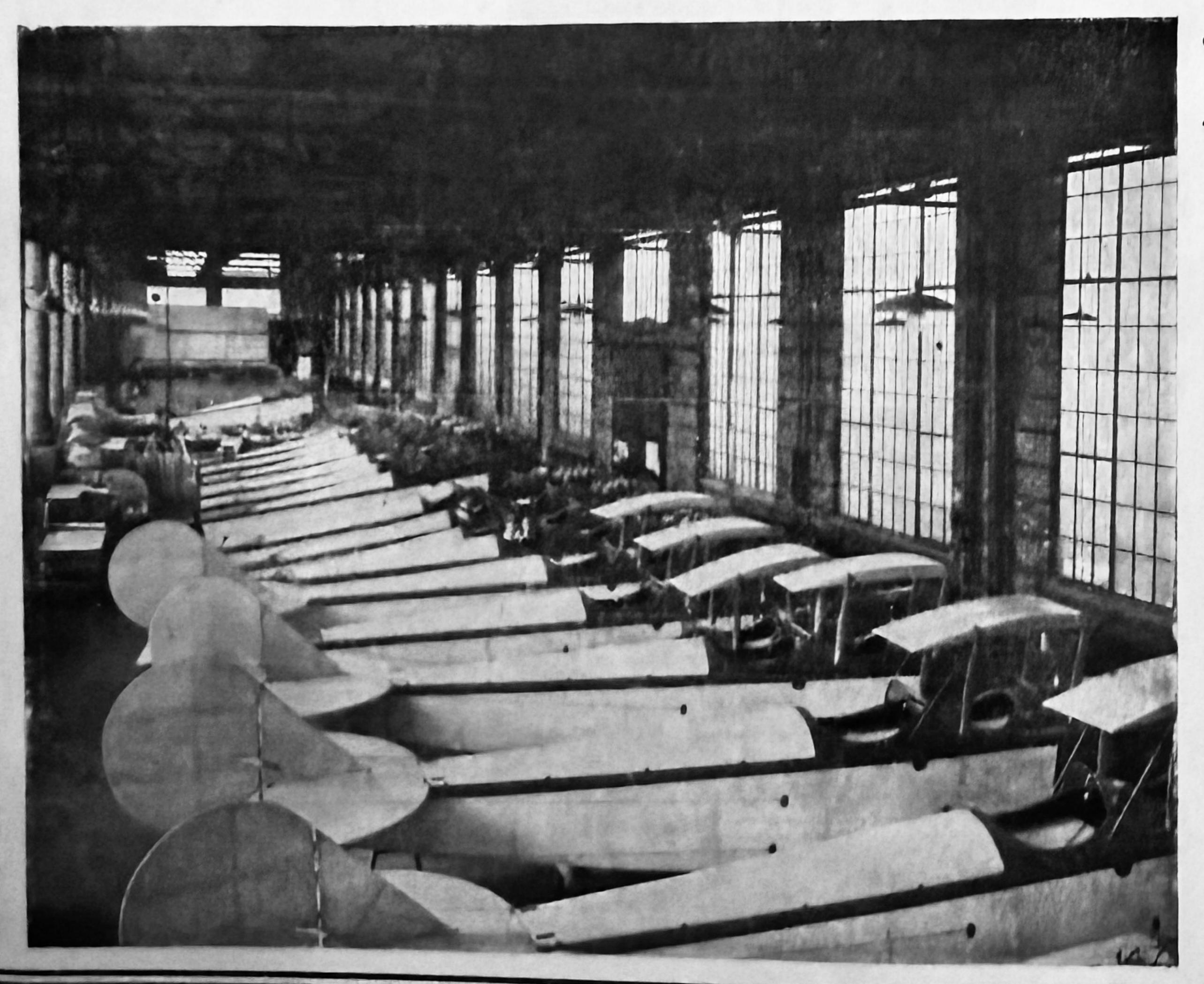
John M. Lyle, Architect.

FEBRUARY 28th

The Jackson-Lewis Co., Ltd. General Contractors.

This is the Fusilage Building of the CANADIAN AEROPLANES LIMITED, Toronto

One of 10 of their Buildings Equipped with FENESTRA STEEL SASH



# FENESTRA

SOLID STEEL WINDOWS

being firm and fireproof, give safety to large window areas, making more air and daylight a free asset.

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#### STEEL

AND

#### RADIATION

Limited

TORONTO

# GALVADUCT ===



SECTION OF CANADIAN AEROPLANE COMPANY'S GROUP OF TEN FACTORY BUILDINGS Bennett & Wright, Electrical Contractors. Hynes, Feldman & Watson, Architects.

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