

AIRCRAFT

News

FEBRUARY · 1950



THE NEW HYDRA-STATIC TWO LEADING SHOE AIRCRAFT BRAKE



THIS brake consists of two self-aligning shoes operated by two wheel cylinders spaced diametrically opposite.

Each wheel cylinder has two pistons of a different form: one having a slot at right angles to the axis of the bore, which operates the shoe when the brake is used in forward rotation, and the other with the slot inclined at an angle to the bore which forms the abutment for the other shoe in similar condition.

This inclined slot has a predetermined angle which allows the shoe to accurately align itself to the drum as well as forming the abutment. The total shoe reaction is transmitted via a shoulder on the piston to the cylinder body.

By this arrangement, two-leading shoe operation is obtained in either direction, and greater power for a given input and greater stability is obtained.

TYPICAL FIGURES

$5\frac{7}{8}'' \times 1\frac{1}{2}''$ Approximate maximum dynamic torque 2,950 lbs. inches, at 60 lbs. per sq. inch lining drag. Two $\frac{1}{2}$ ins. diameter cylinders.

$7'' \times 1\frac{1}{2}''$ Approximate maximum dynamic torque 4,200 lbs. inches, at 60 lbs. per sq. inch lining drag. Two $\frac{3}{4}$ ins. diameter cylinders.

Master cylinder for use with the above brakes is a $\frac{15}{32}$ ins. diameter x $1\frac{1}{2}$ ins. stroke design.

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The **BRITISH THOMSON-HOUSTON** Co., Ltd.
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FEBRUARY, 1950

Editorial

FOR SOME TWO OR THREE ISSUES now the problem in the Editorial Office has been "What do our readers throughout the world want to read in the *Aircraft News*?" Obviously, since the magazine emanates from the manufacturers of *Austers* you look primarily for news of the latest developments, etc. in connection with Auster aircraft. Accordingly we endeavour to make this our foremost consideration.

After this, we like to be able to help readers "to help themselves." In other words, if readers will contact us and ask us to include information on any specific subject, we shall do our utmost to oblige.

The world is always interested in hearing about sales conditions, methods and light aircraft activities, but, whilst we can generally give such information concerning Great Britain, we cannot easily do this for other countries unless we get co-operation from our friends in these countries.

So we earnestly appeal to everybody to forward us items of news as they arise. Photographs of personnel and our aircraft in local settings are always most welcome.

To date, the response has been very poor, consequently, we feel we are not utilising this magazine to its full advantage. So we trust that readers will give us any assistance possible, no matter how trivial it may appear.

• • •

We would like to point out that the Press is most welcome to utilise subject matter from the *Aircraft News* in whatever manner it may desire, with or without acknowledgement.



Latest from Stonington Island

AT THE TIME OF WRITING, two of the eleven scientists marooned on Stonington Island, South-west Graham Land, have been rescued. After preliminary reconnaissance flights by the *Auster*, the Canadian *Norseman* took off and, being unable to alight on the ice-obstructed water near the marooned base, came down some eight or nine miles away. Three of the party then rowed to this point, two of them climbed into the plane to be taken back to the rescuers' headquarters, and the third, with one member of the plane's crew, set out on the hazardous water route back to the base.

Those first taken off were specially requested to leave, since they have had periods of illness during their two to three years on the island.

It is now known that three more scientists were relieved by air, and the rescue ship *John Biscoe* has since managed to get through to take off the other members. We must, therefore, congratulate everybody concerned in the success which has so far resulted from the enterprise.

Our picture shows an AUSTER AUTOCRAT, fitted with skis, which was used to good effect on survey work in Graham Land a few years ago. It is shown here taking off from the

sea ice at Marguerite Bay, with, we are advised, Bernard Stonehouse in the foreground. Bernard had been ice-beleaguered at Stonington for three years until his recent rescue.

It is anticipated that photographs of the present rescue efforts may become available in mid-summer of this year.

Psychological Problems of Space Flight

IN THE JANUARY issue of the Journal of the British Interplanetary Society, Dr. E. T. O. Slater presents a contribution under the above heading.

He suggests that high-speed flying, and in particular the repeated experience of large accelerations, will change the temperament and personality of an air pilot.

Dr. Slater says that in the past "black-out" has been chiefly observed in turning movements, for example, in coming out of a dive, but he adds that it is now "making itself felt in simple acceleration along a straight path, as in a rapidly accelerating jet-propelled aircraft."

Black-out has been experienced in the past by pilots who have subjected their bodies to high acceleration by making small-radius turns at high speeds or by pulling out of dives at high speeds on a small radius. The effect of black-out is to draw a "curtain" across the eyes of the pilot, although he does not completely lose consciousness. Black-out effects, which are usually momentary, are the result of sustained high accelerations, and it has been shown that a person can accept an extremely high acceleration without blacking-out if it is of very short duration. In high-speed turns, an acceleration of about four times gravity is all that a pilot can sustain without blacking-out.

The wearing of "G" suits, which are pressurised and which grip the body of the pilot so that blood cannot flow away from the brain, enable higher speed accelerations to be sustained. But the suggestion that these accelerations affect the temperament and personality of the pilot is entirely new. Doctor Slater says he believes he is right saying that pilots who have been through a number of black-outs "begin to suffer mentally." He likens the effect to that seen in a patient after a head injury, or in an epileptic patient who has had many fits.

Two Thousand Years Ago

IN OUR September 1949 issue, we enlightened many of our readers as to the origination and meaning of the name *Auster*, pointing out that it means "gentle southern breeze." Following along the same theme we have just received a most interesting letter from M. Robert Lapalu, of Domaine de Ras-el-ain, Mateur, Tunisia.

He says (the following being a translation from French),

"I am sending you two photographs taken recently in the Roman ruins of Dougga, near Teboursouk, Tunisia. I have photographed a part of a big direction-indicating base ("table d'orientation") showing, on the paving stones of the Forum, near the temple of Jupiter, an engraving.....*Auster*, indicat-



ing *south*."

This is most interesting, and we reproduce one of the photographs here; the other photograph was somewhat similar. According to our reader's information, the engraving has been there for more than 2,000 years!

Thank you M. Lapalu for notifying us of the existence of this inscription. Perhaps other readers can supply equally interesting photographs or details. There must, for example, be many quotations which can be extracted from the older poems and writings, and which we shall be pleased to hear of.

DEEP IN DARKEST AFRICA, where airports had been built during the war as emergency landing fields, an army lieutenant, newly arrived, made friends with an aged native. Trying to give the negro a lesson in basic English, the officer pointed to another native and said, "Man," The African repeated after him, "Man." Pleased, the officer pointed to a tree and said, "Tree," "Tree," the native echoed. Then a plane flew overhead and the airman murmured, "I wonder what that is." The native looked into the sky and said, "I'm not sure, it looks like a Hurricane, but it might be a Spitfire."

The Autocar

PRELIMINARY DETAILS of this new four-seat Auster were first published in *Aircraft News* of September, 1949. Since that date, and following flight tests, various improvements have been made which have greatly enhanced the flying characteristics of the AUTOCAR. At the same time modifications have been incorporated to improve passengers' comfort.

The major external difference between the prototype and production AUTOCAR are in the fin and rudder and exhaust silencer. The area of the fin and rudder has been considerably increased and the rudder is now of the horn-balanced type. The nett result of this is that exemplary "feet-off" flying characteristics are obtained. Not only is the aircraft crisply stable directionally, giving a comfortable ride in rough air, but steep figures-of-eight can be undertaken without touching the rudder, and with a minimum of slip.

The silencer, a standard fitment to the AUTOCAR, has been completely re-designed. The original design resulted in a slight loss of engine power, but this has now been eliminated, without affecting the silencing in any way.

Inside the cabin the seating for the rear passengers has received considerable attention. The seat frame has been re-designed, and the back hinges forward to give quick and easy access to the personal luggage compartment at the rear. This new frame, together with air cushions which have been introduced, gives comfort equal to a good saloon motor-car. The air cushions are, incidentally, applicable to each of the four seats, and not merely confined to those in the rear of the cabin. They will also become available for other Austers in due course.

Another small, yet effective, change has taken place on the rear passengers' floor. The front of this is now shaped to provide a footrest so that passengers' relaxation is automatic.

Regarding equipment, a very neat arrangement has been established for a Plessey P.T.R.61 radio. This is a six-channel type on which the crystals can be changed in the air by a passenger, if the need arises. Installation of this set is a very simple matter, and since a mounting rack for a radio and accumulator is a standard fitment on all

production AUTOCARS, no difficulty will arise in installing the equipment retrospectively. Naturally, however, we prefer to fit the equipment at the time the aircraft is produced.

The photographs on the following pages show the AUTOCAR to advantage, particularly the re-designed external features. Copies of these photographs can be ordered in the usual standard sizes ($8\frac{1}{2}$ " by $6\frac{1}{2}$ " or larger) on application to the Editor. We have no prints available for immediate distribution, but on receipt of your enquiries we will assess the demand, notify you of the cost involved and take the necessary steps to supply the photographs.

For those who may be looking to the AUTOCAR for use as a light freighter in addition to the passenger version, it will be of considerable interest to note that we are now developing a hinged canopy to facilitate loading through the roof. The canopy hinges upwards, 90 deg. about the line of the rear spar of the wing, giving a space approximately 3 ft. (1 m.) x 3 ft. The canopy hinging is more rigid than might be expected, and embodies quick-release fittings to lock the canopy up or down.

The cost of this feature per aircraft will, of course, depend on the quantity we are required to produce. If, however, demands are favourable, it is anticipated that the cost will be approximately £40.

For freight transport duties the AUTOCAR has been approved for a load of 400 lbs. (181 kg.) on the rear cabin floors. This is the amount which can be disposed over the space available after removal of the rear seats. Additional freight can of course be carried in lieu of a front passenger if desired, which allows approximately an extra 170 lbs. (77 kg.).

Another item which is receiving attention is the footstep. We have now almost completed manufacture of a prototype flat, "whole-foot" type of step, which will greatly ease entry into the cabin. Although primarily being produced for the AUTOCAR this new step will also eventually be available for all other types of Auster. We will give final details at a later date, but if any owner feels interested in this subject, it would be useful for our Service Department to receive a communication to this effect. After all, the greater the production the lower will be the individual cost to everybody.

The

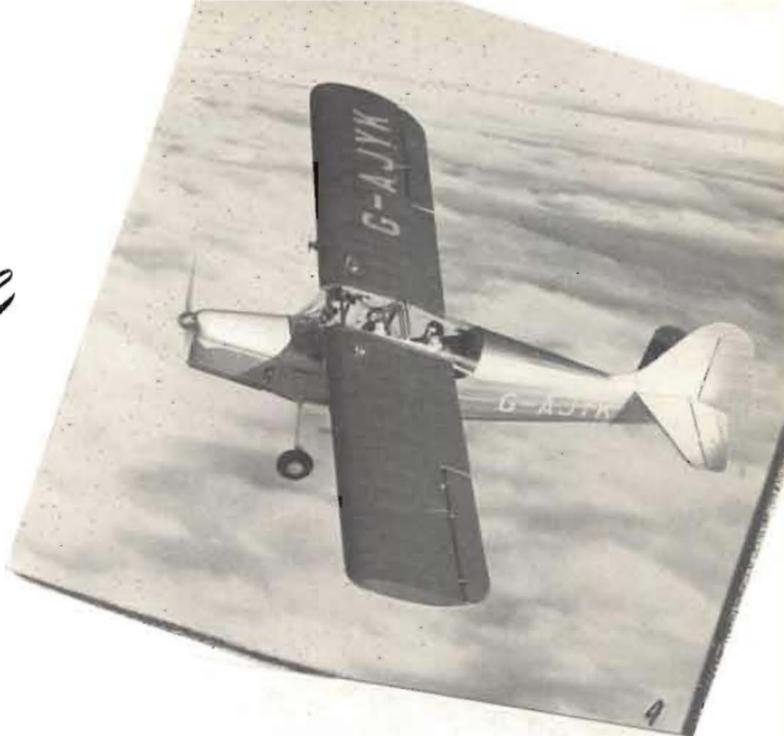
PHOTOGRAPH
BY CHARLES
PHOTOGRAPH
BY THE



Cluster Autocar

PHS 1,2 & 4
ES BROWN

PHS 3,5 & 6
"AEROPLANE"



In view of the aforementioned changes to the AUTOCAR, the performance figures originally published are somewhat amended. The approved figures under I.C.A.N. conditions at sea level, and with two different loads, are as follows:—

	1900 lbs. (860 kg.)	2400 lbs. (1090 kg.)
Take-off run (zero wind) hard surface	152 yds. (138 m.)	258 yds. (235 m.)
Take-off run (5 m.p.h. wind) hard surface	122 yds. (111 m.)	211 yds. (193 m.)
Total to 50 ft. (zero wind) hard surface	366 yds. (334 m.)	615 yds. (559 m.)
Total to 50 ft. (5 m.p.h. wind) hard surface	317 yds. (289 m.)	537 yds. (488 m.)
Extra take-off run on soft ground (no wind)	26 yds. (23 m.)	70 yds. (64 m.)
Landing run (zero wind)	148 yds. (135 m.)	199 yds. (181 m.)
Landing run (5 m.p.h. wind)	121 yds. (110 m.)	163 yds. (149 m.)
Total from 50 ft. (zero wind)	420 yds. (382 m.)	492 yds. (448 m.)
Total from 50 ft. (5 m.p.h. wind)	370 yds. (338 m.)	432 yds. (393 m.)
Cruising speed at 1000ft. at 2100 R.P.M.	102 m.p.h. (164 Km/h)	98 m.p.h. IAS (158 Km/h)
Max. level speed at 1000 ft.	120 m.p.h. (199 Km/h)	116 m.p.h. IAS (186 Km/h)
Initial rate of climb	740 ft./min. (225 m./min)	500 ft./min. (150 m./min.)
Service ceiling	17000 ft. (5180 m.)	11000 ft. (3350 m.)
Absolute ceiling	19000 ft. (5890 m.)	13000 ft. (3960 m.)
Stalling speed, flaps up	38 m.p.h. (61 Km./h.)	42 m.p.h. (67 Km./h.)
Stalling speed, flaps fully down	32 m.p.h. (51 Km./h.)	34 m.p.h. (54 Km./h.)

To sum up, the AUTOCAR, Britains' lowest-priced four-seater, with its well-known Gipsy Major I engine, of 130 h.p. and 1,500 hours overhaul life, is a very economical, comfortable and safe aircraft, which is a proposition to be reckoned with by any standards.

STRIPPED EASE

A YOUNG HOSTESS entered a lingerie shop and asked to be shown some silk pyjamas, and what colour was appropriate for a bride? "White is the preferred colour if it's your first marriage," answered the salesgirl. "If you've been married before, it's lavender." The customer hesitated, then said, "Well, you'd better give me some white ones with just a bit of trimming in lavender."

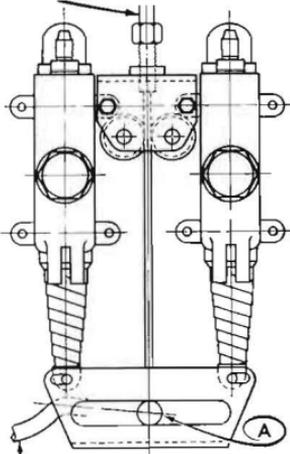
Brakes for Modern Aircraft

THOSE WHO FLY know of the vital importance of good braking as a factor in the safe handling and control of aircraft when landing and taking off, and also when manoeuvring on the ground.

A good braking system must be light in weight, responsive in action, and smooth and progressive in operation, both for differential and for straightforward braking. Moreover, it is important that maintenance shall involve a minimum outlay of time and expense.

Girling braking systems have been used and proven for many years on Austers and other light and medium aircraft.

CONTROL CABLE TO
PARKING
HANDBRAKE



CONTROL ROD FROM
RUDDER
BAR

In addition to cable-operated brakes the Firm has more recently introduced improved types with hydraulic operation.

In the Girling hydraulic system, two parallel master cylinders are used, differential braking being obtained by linkage to the rudder bar. The linkage is so arranged that when the hand control is in the off position, the brakes are entirely inoperative, whereas when the hand control is partially applied, movement of the rudder bar actuates one brake or the other to a controllable degree. Full application of the hand control applies both brakes and immobilises the rudder bar in its neutral position.

Fig. 1.
The arrangement of the master cylinders. Movement of the rudder bar moves the fulcrum pin "A" along the balance bar slot.

Girling hydraulic aircraft brakes operate on the "hydra-static" principle, wherein the brake shoes remain, when released, against the brake drum, but under no pressure.

This means that fluid displacement to apply brakes is reduced to a minimum, and in consequence the master cylinders may be small and light in weight. In the hydra-static principle, wear of the brake linings is taken up automatically

and very simply. Since the shoes remain close up to the drum it follows that as lining wear takes place the shoes, and their actuating pistons, move outwards. A port in the master cylinder, which opens to the reservoir when in the released position, enables more fluid to be taken into the system, so that as the capacity of the brake cylinders gradually increases with the outwards movement of the pistons there is an influx of fluid to keep them full.

In the latest Girling development—the hydraulic “Floating Shoe” brake, the above characteristics are retained, while the provision of two cylinders in each brake causes each shoe to operate from the toe, so that both shoes exert on the drum a full and equal degree of torque and consequent



Fig. 2.

The Girling hydra-static two-leading shoe floating shoe brake. The shoe springs seen in the illustration are balanced by compression springs between the pistons inside the cylinders.

retardation. Furthermore, the heel or abutment ends of the shoes, and the abutment slots in which they sit, are inclined at a carefully determined angle so that when in operation a floating action takes place which tends to a better distribution of load over the face of the brake shoe linings, with, consequently, improved progressiveness and greatly enhanced resistance to “fade.” The term “fade,” for those not familiar with it, indicates the falling-off in braking efficiency that occurs when excessively high temperatures (generally over localised portions of the linings) cause a drop in the coefficient of friction between linings and the drums.

It may be mentioned here that the master cylinders used with these brakes have a bore of only $1\frac{5}{32}$ -in. diameter with a stroke of $1\frac{1}{2}$ -in., this displacement being fully adequate to operate the brakes.

The features described above in fact fulfil the require-

ments enumerated at the beginning of this article. They represent the latest advances made by those entrusted with the provision of braking equipment for Auster Aircraft. Full details of the Girling range of products can be obtained by writing to the makers, whose address is given at the bottom of the advertisement on the inside front cover.



[Picture Post Library Photo.

From Hong Kong. Along with the 25,000 garrison of the Crown Colony are units of the R.A.F. This Auster Mk. 6 has the job of checking gun-sites and possible hostile approach routes.

A M E N

A HUNDRED HORSES underneath the cowl,
A tank of fuel, a quarter-inch, and thou
Beside me flying in the Autocrat.
Oh, Autocrat were Paradise enow.

From "Runway," the magazine of the United Services Flying Club.

Auster Personalities

No. 2 — DAVID EASTWOOD

DAVID EASTWOOD is the proprietor of Skyfreight Ltd., a Charter Company with headquarters at Rearsby Aerodrome. He is also Chief Flying Instructor of the Rearsby Flying School, and the Auster Flying Club, so that the days per year when Dave (as he is known locally) is not to be seen at Rearsby can almost be counted on the fingers of your hands.

Dave joined the R.A.F. in 1940, and received his training in Canada. On returning to the United Kingdom he became an instructor on Oxfords and served one year teaching ordinary flying, and one year teaching blind approach. After this the Pathfinder Force claimed him, and his course ended just as the European war ended. So, as Dave says, "That was that!"

His next move was to Ferry Command, which saw him back in Canada to bring Canadian-built aircraft to the United Kingdom and the Far East. He was stuck in Canada for six months "having the time of my life." His eventual return home was by B.O.A.C.—a very comfortable ride in spite of the fact that they were using what looked like the great-grandmother of all Liberators.

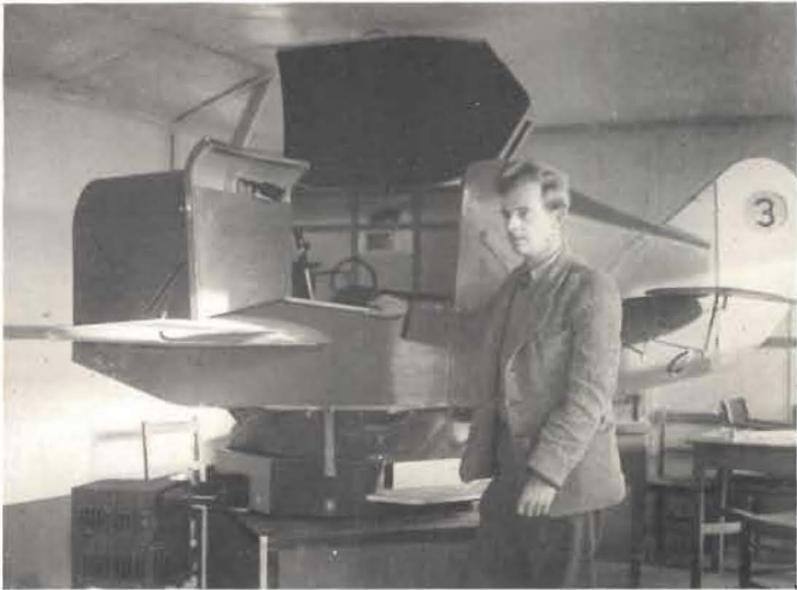
Dave then wangled on to an all-weather squadron carrying diplomatic mail and newspapers all over the Continent. This was good fun except that take-off time was due at the unearthly hour of 1-30 a.m.

Then came demob., and Dave appeared at Rearsby.

The incident which stands out most in Dave's mind was his very first trip as an instructor:—

"I took off and got hopelessly lost. After a while I saw an aerodrome, so went down and landed to find out where we were.

"The control tower (where I went to ask my whereabouts) was full of Staff Navigators, and when I bashfully asked where I was, I was told by a highly amused control officer that I was at the Empire Central Navigation School—the poshest Navigation School in the British Empire. I felt such a clot that I just said "Thank you" and went out again. When I got outside I realised that I *still* didn't know where



the Empire Central Navigation School was—so I had to crawl back in and ask again.”

At Rearsby Dave has proved extremely popular. His quiet, sincere, yet jovial manner has endeared him to many. I asked one of the local flying club members to describe Dave, and his reply was:— “If you can find a better instructor anywhere, I’m still not interested. He’s always calm, cool and collected, never gets flustered and has the patience of Job.” And that just about sums up Dave.

Although fully married to aircraft, I understand that Dave is going to take on further responsibilities during the coming summer, the lucky lady being Miss Sheila Denton, who is well-known locally as a member of our Flying School and Club.

He has done much to improve conditions in and around the Clubhouse since his appearance here, and is always looking for some new innovation. His latest acquirement, shown in the accompanying photograph, is a Link Trainer. This has just been installed and is available to anybody for tuition at a fee provisionally fixed at 10s. per hour. This

means that the Rearsby Flying School, and the Auster Flying Club are almost unique among British clubs in having Link Trainer facilities.

Finally, a few words which Dave has asked to be included:—

"I would like to express a personal vote of thanks to all members of Messrs. Auster Aircraft Ltd., for the way in which they are so unfailingly pleasant and helpful to me in the face of my many awkward (or at any rate peculiar) queries and the equally awkward jobs which I ask them to do for me from time to time."

To which we reply "It's a pleasure, Dave."

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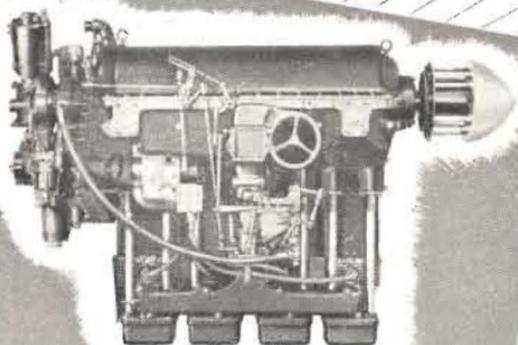
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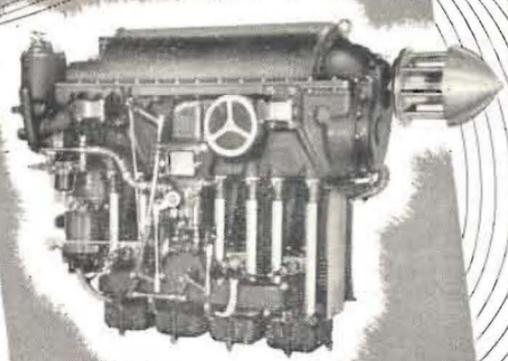
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