HUDSON AND VENTURA (CONTINUED)

tional American toe-operated brakes, but in the earlier versions a Ford car-type hand brake, with simple ratchet gear, was moved in and out of the central control pedestal. Taxying in a cross-wind could be quite a sleight of hand feat—done best, perhaps, with the left hand on the throttles and the right hand on the lever. In theory, at least, differential rudder action could be obtained by applying the brake to the extent of a couple of notches, but, in fact, one seemed to find that the brakes were either on or off and it was necessary, for results, to "saw" away at the lever most of the time.

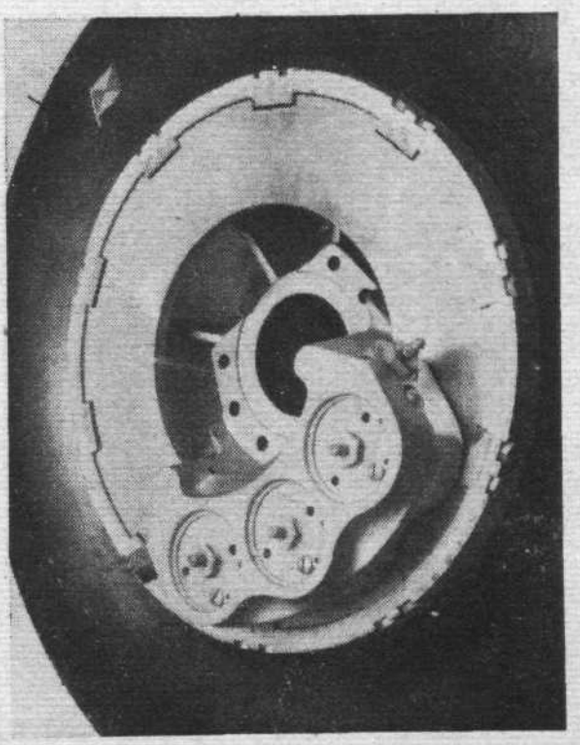
I hate to think of the risks which were taken in the earlier ferrying days when Hudsons were delivered by a crew of one—the pilot—and with the undercarriage recklessly retracted. Although hydraulic failure could hardly be expected, any necessary emergency operations would have been difficult if not impossible without the help of an assistant to operate the emergency hand pump. I cannot remember the exact details of the "drill" in the case of such failure, but I know that one lowered the flaps and flew at 80-90 knots. At the critical moment one would suddenly close the throttles, while holding the control column well forward, so that the deceleration would cause the undercarriage legs to swing towards the "down" position; at that critical moment, neither before nor after, the emergency pump was vigorously pumped to lock the legs home. Apparently, if this action was not carried through with proper accuracy, the legs were liable to jam themselves in an intermediate position.

By way of ending at the beginning, I wonder how many Hudson or Ventura pilots could guarantee to start the engines single-handed. It *could* be done, but the movements had to be planned as carefully as those of any Bidaux-organized factory operation. There were two buttons, one for the starter and one for the booster, with a tumbler switch to select the required engine. While depressing these, the doper had to be used, the wobble-pump below the throttles worked, and the cut-out released as soon as the engine fired. Then there was the job of keeping the cold motor going while still depressing the booster button. Quite an affair.

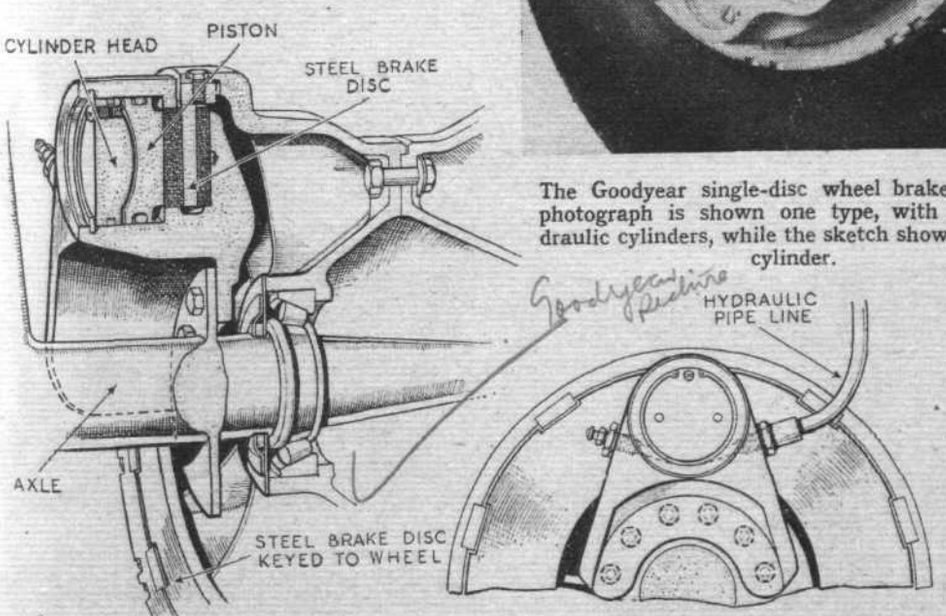
I tested my last Ventura three years ago, and memory is an unreliable guide—so I shall duly expect castigation from the real Hudson-Ventura experts. But, at least, my impressions may be entertaining.

A New Single-Plate Brake

THE GOODYEAR TYRE AND RUBBER CO. (GREAT BRITAIN), LTD., has just introduced a new single-disc wheel brake for aircraft. The brake comprises a single cast housing, slotted to receive a steel disc which is keyed to and rotates with the wheel. The housing contains brake lining segments, which bear against both sides of the disc when the brake is operated. The outboard portion of the housing contains the actuating mechanism of the brake (one or more cylinders in the case of hydraulic operation). Most wheels for this brake are of the split type incorporating inboard and outboard halves bolted together. The flange of the inboard half is extended slightly, and hardened steel drive-keys are installed to accommodate the slots of the rotating steel disc.



The Goodyear single-disc wheel brake. In the photograph is shown one type, with three hydraulic cylinders, while the sketch shows a single cylinder.



When the brake is applied, the outboard lining is moved against the face of the rotating disc. As the disc is free to align itself in the wheel, it moves inboard sufficiently to make contact with the inboard lining. As the brake pressure increases, the rotating disc is clamped more tightly between the linings, and its rotation is arrested by such clamping action in proportion to the hydraulic pressure applied. Braking torque is transmitted to the wheel through the disc-drive keys in the wheel drive flange.

Rapid heat dissipation is achieved by the rotating steel brake disc being mounted in the inboard side of the wheel in a vertical position and flush with the edge of the wheel drive flange. Since only a small portion of the disc is blanketed by the brake linings and brake unit, most of the disc is exposed to the flow of air past the wheel. But little heat is conducted into the wheel, and thus the likelihood of tyre and tube failure from brake heat is reduced.

One of the advantages of the single-disc brake is that it combines a great capacity for energy absorption with low weight for a given wheel size. Ease of maintenance is another. No lining clearance adjustments are required, since these are achieved automatically. Replacement of linings is very quick.