HELI-PAD

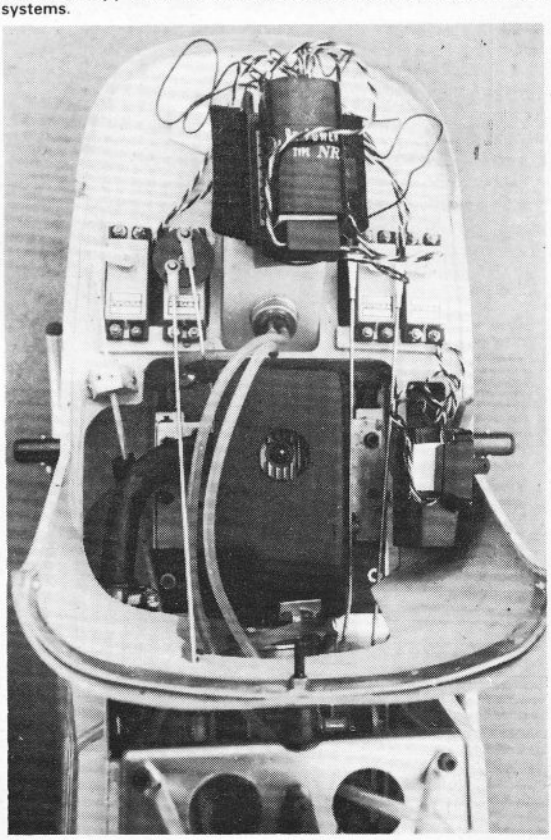
by JOHN HEATON

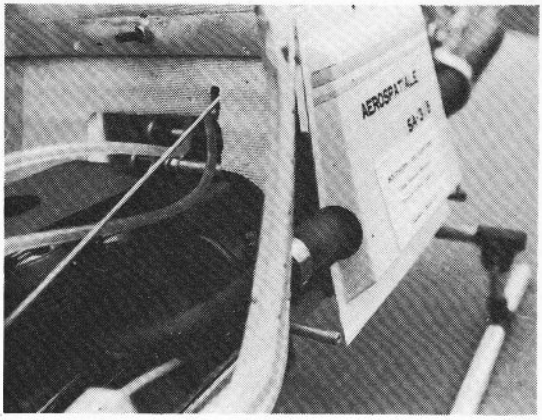
AS I mentioned last month, my **Heli-pad** articles will consist of specific items of interest for the helicopter enthusiast. The subject of this month's column is the **Hirobo** *Lama* to which I have incorporated a few modifications of personal preference. I hope that some of you may be interested in my ideas! I will not dwell on "bolt A to B" type instructions as I think the photographs will answer most questions.

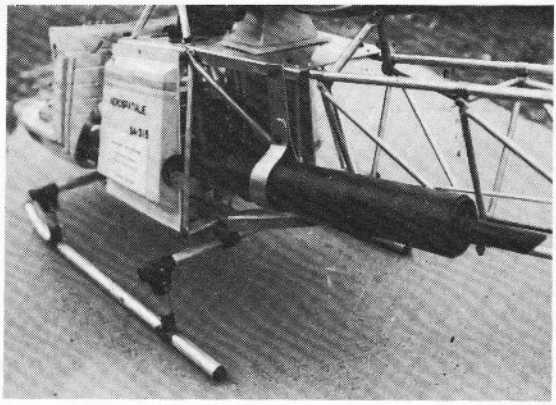
Careful gearbox assembly is important if one is to have a leak proof unit. I have found that even if one is very careful when epoxying the two halves together it is still possible for oil to seep out between the shafts and the bearings. To prevent this, I always remove the sealed bearings and **Loctite** these to the shafts. Actually I use a superglue type adhesive, as, although **Loctite** is made for the job, cyanoacrylate is adequate and I always have a large bottle to hand! I prefer to use quick

Below; close-up of the *Lama* rotor-head with connecting links to swash-plate.

Below; canopy cover removed to show fuel tank and radio control systems.







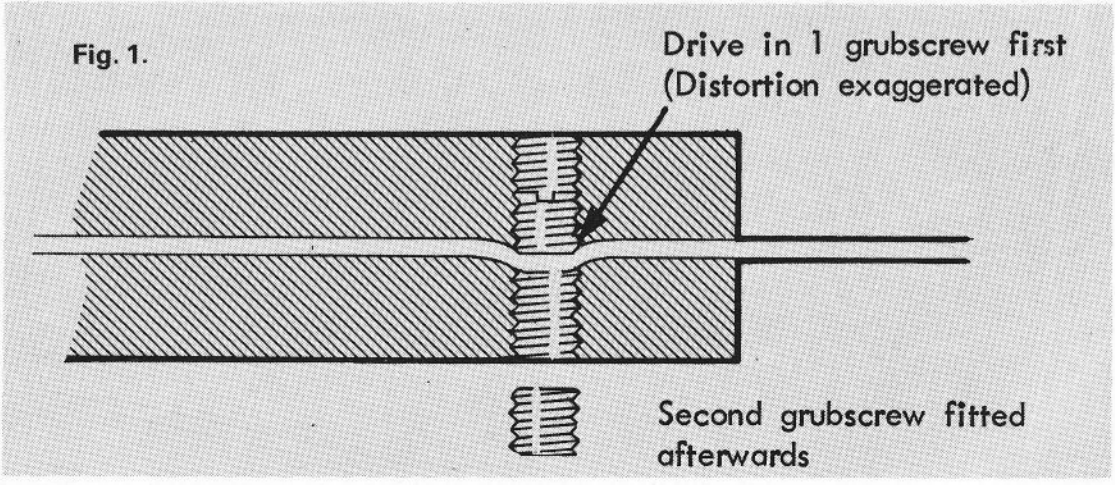
Above and above left; two views of the tuned pipe system fitted to John's Lama.

setting epoxy adhesives to seal the two halves together. These are in general not quite as strong as the 24hr varieties and it is easier to prise the halves apart should you need to look inside at a later date. (Do not forget to rub each mating surface down, using wet and dry paper backed by a piece of glass, until even).

Another important stage is in fitting the engine. The main object is to position the engine on its mountings to produce a nice line up with the clutch bell; any misalignment will cause vibration and possible clutch damage. One must, at this stage, decide what silencing system to use as the canopy must be cut to give clearance. The engine chosen should be of the Schnuerle ported variety; the ones I have used in the *Lama* include **HGK 45, OS 45** and **OS 50.** With these I have used standard aero silencers (purpose made **Hirobo** ones which deflect the gases downwards) and tuned pipe systems. Using a 45 size motor the *Lama* only just has adequate power. A little more power is available if the motor is fitted with the **Hirobo** silencer, which is slightly less restrictive due to its dual outlets. Plenty of power is produced with the tuned pipe. I use a **Graupner 40** pipe system which fits both HGK or OS engines. If using 50 size Schnuerle ported engines one has power aplenty with either system. I have seen models fitted with .61 size motors but I personally feel all that power is unnecessary. My own choice from experience is a .45 size with a tuned pipe, this gives a quiet, sweet run, with ample power. One point I will raise whilst on the subject of engines is the satisfaction I get from the modern fuels which only contain a small proportion of synthetic oil. I know engines can be damaged by a hard lean run on these fuels but anyone comparing the advantages (smooth running, better tickover, easier starting and, best of all, little goo on the model) would not go back to the old type at any price. On the subject of exhaust goo, do not deflect the exhaust with more than an inch or so of silicone tube as this will rob it of too much power.

The engine has to be fed with fuel, which is fairly straightforward on a helicopter, as one is not concerned with unfair demands i.e. expecting the engine to suck fuel in a vertical climb as an aerobatic fixed wing model has to. Due to the fairly mundane demands I don't fit a pressure system on the basis that if you don't need it, why fit it. The system I favour is the 'constant head' or 'chicken hopper' type tank which prevents rich running when full and leaning off as it empties!

The main and tail rotors of the *Lama* go together fairly well: one area, however, which can give newcomers problems is the piano wire drive shaft. This is secured at each end by grub screws which, if loose, will allow the system to slip. Loss of tail rotor drive is

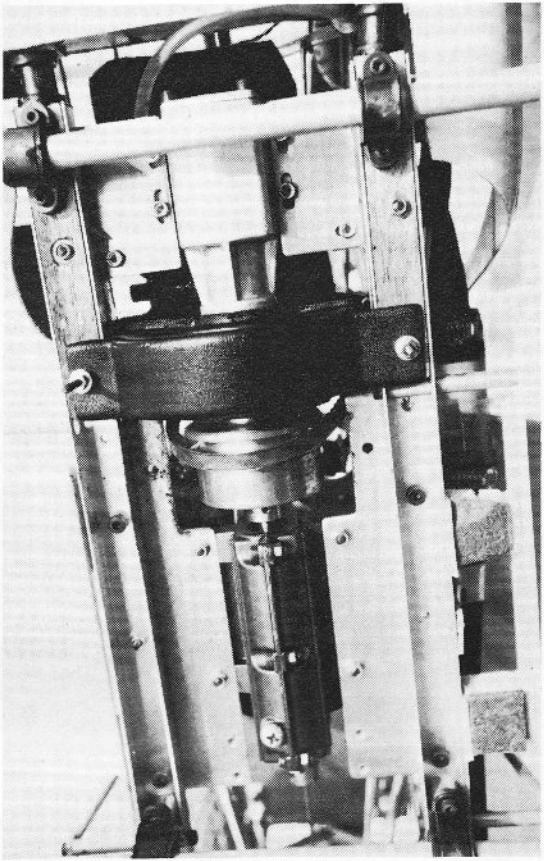


something we can do without! The method I use, which almost guarantees a positive drive, is to drive in just one of the two grubscrews first (Fig. 1.) This will 'kink' the wire inside the joint before the second 'screw is tightened up. It is important, after kinking the wire, to ensure that the shaft still comes straight out of the coupling. Straighten it by hand if not. It is also important to ensure that any bends on the tail wire should be as gradual as possible and that the coupling and wire line up correctly.

Radio installation is a headache for many people. Main pointers are:— no bends in linkage except throttle, always use correct connections i.e. ball joints or quick links, no bent bits of wire on a helicopter please. Radio control sets must obviously be reliable and large servo output arms are an advantage.

One of the most interesting little mods I have made to my model is the mounting of the canopy with three damping rubbers. This completely isolates the radio, tank, and perspex from potentially damaging vibration. I do feel, however, that when one has isolated a substantial mass from the structure what is left is subject to more vibration than before, so keep a careful watch on engine transmissions and rear end components for any sign of loosening up. I do feel though that it is a favourable compromise. This wraps up a few interesting construction points.

Next month I will detail flying experiences and how I set up my models for complete engine-off autorotation. Meanwhile, remember that they fly perfectly adequately by just following the instructions!



Right; view from underneath of the 'works'. Note adjustable engine mounting, cooling fan cover and take-off point to tail rotor drive – quite a 'clean' assembly. The starter belt can also be seen at the rear of the fan housing.