

FIRST AID for your MODEL PLANE

Aeroplanes are fragile things, but they have to take hard knocks. Here's what to do when your machine gets damaged in a crash; remedies which you can apply for all the accidents a model plane is heir to.

HOWEVER carefully you handle your model plane, sooner or later it is likely to require a little first aid. Mistakes in adjustment account for quite a number of crashes, but even the best-behaved model, since it has no pilot on board to choose a good landing place, will sometimes finish in a tree or charge a fence! The result may be a broken propeller, or, if you are more fortunate, just a torn wing.

These mishaps need not hold up your flying for very long, because nowadays you can easily obtain



Fig. 1

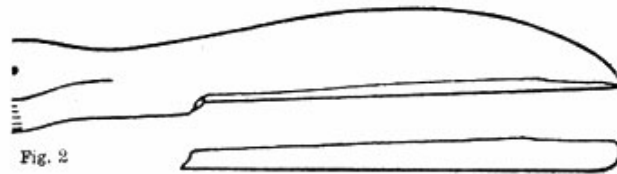


Fig. 2

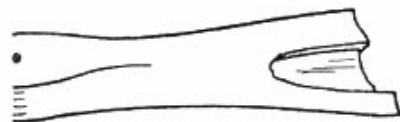


Fig. 3

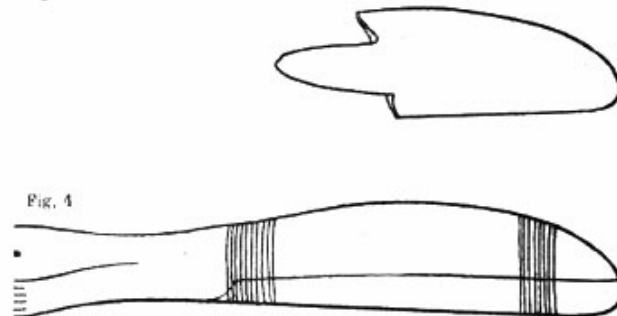
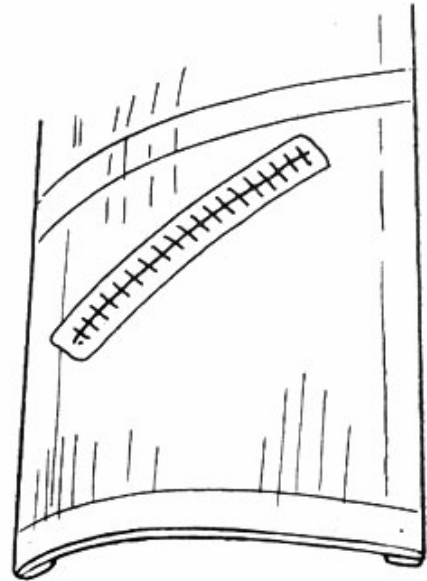


Fig. 4

Figs. 1 to 4 (reading from top to bottom).— Propeller casualties of various types. The repairs pictured above and described in col. 2 show how to deal with them.

Fig. 5.—A rip in the wing fabric need not put the plane out of action. A careful job of sewing and patching soon mends matters.



spare parts, and there is very little chance of damage so serious that you cannot carry out the repairs yourself.

The propeller, being right in front of the plane, generally fares worst in a crash, especially if it happens to be revolving at the time. A split blade can be put right quite simply. Just squeeze a little liquid glue into the crack and bind the damaged blade with thread until the glue is quite dry. Should a small piece get chipped off the end of one blade, cut a similar piece from the opposite tip, so that the propeller still runs smoothly and gives full power.

A bad crash will sometimes snap one blade clean off. If the break is across the blade, as at Fig. 1, there is nothing for it but to get a new propeller. Fortunately, the blade sometimes splits along its length, as at Fig. 2, or snaps across, leaving a large piece of either the front or the rear surface still firm, Fig. 3. It is then possible to repair it.

Clean off any mud, glue the edges of the broken parts, and bind them together with strong thread. Sometimes the pull of the thread will gradually slide the broken piece out of place. If this happens, you must hold the parts together until the glue begins to dry, and then bind with thread. Sitting holding a broken propeller may be poor fun, but it's cheaper than a new propeller!

When the glue is quite dry, cut away the thread and bind one or both ends of the blade as neatly as you can with thread well glued, Fig. 4. It is best to

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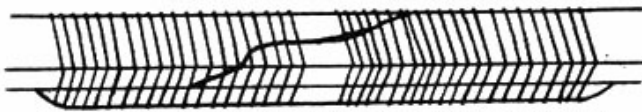


Fig. 6.—Even a broken wing spar is repairable by means of a splint and thread binding, as shown.

bind the opposite blade, too, so that the propeller still balances.

"Forewarned is forearmed," says the old proverb. If you are not sure of your own skill, or if you have to fly in a small field with a good many trees, you may like to specially strengthen your propeller before trouble comes. Glue a piece of jap silk right across the flat side of each blade, squeezing out all the surplus glue until the silk lies flat. When dry, cut away the silk, leaving about $\frac{1}{8}$ in. overlap all round the blades. Turn this over the edges and glue to the front or curved side of the blades.

You can get a fine smooth surface, which helps the propeller to run smoothly, by painting over the silk. Use the paint sparingly, or the extra weight will prevent the propeller turning as rapidly as it should. The little tins of cellulose paint which can now be bought quite cheaply are best for the purpose.

Bent propeller shafts cost little to replace, but if you are handy with a pair of pliers you may prefer to make your own from a length of steel wire. The usual thickness is 18 gauge. Soft wire is quite useless.

Next to the propeller, the part most likely to suffer damage is the wing. A tear in the silk covering can be put right by carefully sewing the edges together with cotton, to take up any slackness, and then sticking a small piece of silk over the stitches on the upper surface of the wing, as at Fig. 5.

When either the front or rear spar of the wing is cracked or broken, you must put it in a splint, just like a broken leg. Fig. 6 shows how this is done. Cut a piece of wood (birch, if you can get it), $\frac{3}{16}$ or $\frac{1}{4}$ in. wide, $\frac{1}{16}$ ins. thick, and about 2 ins. long. Smooth its edges with glasspaper, glue, and bind it to the broken spar with strong thread. Use a needle and sew round, passing the needle *over* the spar but *beneath* the silk covering. Then rub some glue into the thread.

A cracked or broken rib can be repaired in a similar way, as at Fig. 7. Steam a piece of birch or other wood to the correct curve or "camber," glue it *beneath* the break in the rib, and sew round with thread. Pass the needle over the rib, but beneath the

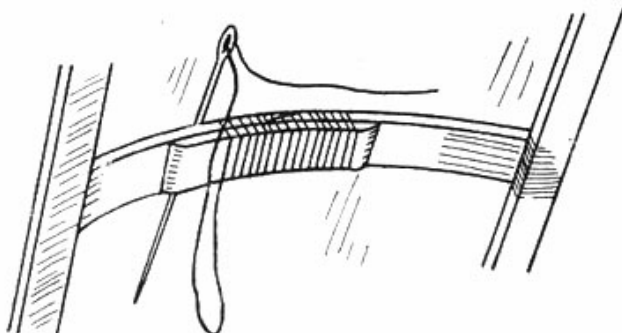


Fig. 7.—A broken rib may be repaired in the same way as a spar, but using a needle to carry the thread between rib and wing-covering.

silk covering, instead of sewing through the silk. Finish by gluing the thread to keep it in position.

When an end-rib needs repair, you can get at it better if you peel the silk back a little way. This is easily done if you place the wing tip in the steam from a kettle. Be careful, though, to pull the silk quite tight when you stick it into place again, or that side of the wing will lose some of its lifting power and cause the plane to turn when in flight.

As the glue dries, pull the silk tighter from time to time. When it is as tight as it should be, there is quite a strain on that end-rib, so if it breaks again it is really best to make and fit a new one.

Always save any models which become too badly damaged to fly properly, and then you will have a handy collection of spare parts to use for repairs. New oiled silk and pieces of wood of the correct width and thickness can be bought at model aircraft shops.

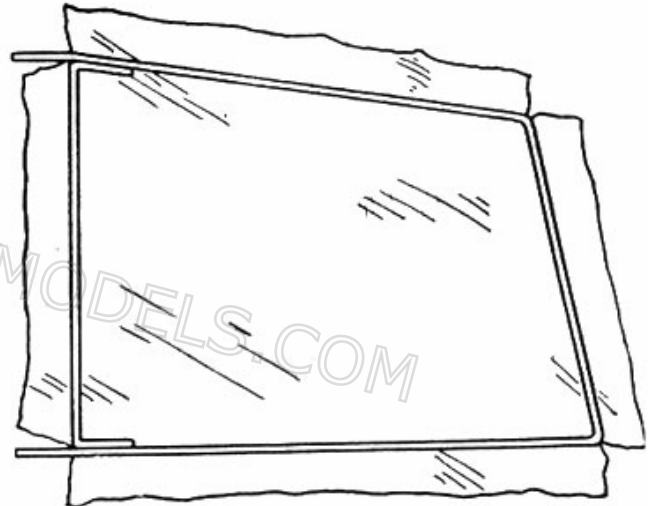


Fig. 8.—Re-covering a rudder-fin with a new piece of silk. Make allowance for the overlap, and cut the corners as shown. Continue as in Fig. 9.

When a wing spar breaks in the centre, just where it joins the motor spar, repairing is difficult. Placing the front spar in a splint at that point means doing the same to the rear spar—otherwise the wing will not be kept at the correct angle on the motor spar. This usually makes the spars too fat, and the fixing clips then have to be forced over the centre fixing rib, which soon breaks it. So it is really best, with a break of this kind, to get a new wing.

A wooden tail plane can be repaired in a similar way to the wing. With a break in the centre, you may be able to unfasten the silk covering and slip in a new front or rear spar. Take care that the new one is exactly the same length, width and thickness as the damaged one. A tail plane is less likely to get broken than a wing, but the end ribs sometimes work loose. If that happens to your plane, unfasten the silk at the corners, scrape the ends of the ribs clean, glue them back in place, and bind with cotton or thin thread.

The rudder-fin hardly ever gets damaged, except for tears. Sew these carefully with cotton, gluing

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the stitches on each side, and then glue a small piece of silk over them on one side. If the tear is very bad, it is best to cut all the silk off and cover the fin with a new piece. Cut it the shape of the fin, but $\frac{1}{4}$ in. larger all round. Cut the corners, as shown at Fig. 8. Turn the silk over one edge of the fin and pin it. Then stretch to the opposite side and pin, then pin the third side and lastly the fourth. Fig. 9 will make this clear.

Pull the silk tight enough to prevent it sagging, but not too tightly, or you will bend the wire frame and cause the silk to wrinkle. Spend a little time, if necessary, taking out pins and refixing them to get the silk even. Then take a needle and cotton and sew round the wire frame, taking out one pin at a time as you work round. When you have finished glue the stitches on each side.

It takes a very bad crash indeed to break the motor spar, but if it does happen I would advise you to get a new one rather than waste time trying to mend it. However carefully you repair it, the terrific strain of the fully wound rubber skein will probably prove too much for it. Even if it does not break, it will be likely to bend, and so upset the adjustment of the tail, and cause a bad crash.

The under-carriage gets a good deal of hard work, and you will often have to straighten the wire struts. The only other trouble is when hard wear or crashes cause the wheels to break away from their centres. This means a new under-carriage.

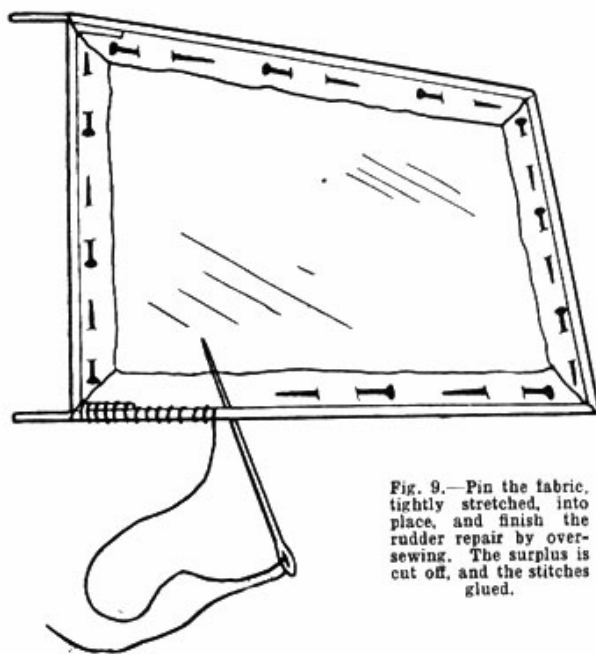


Fig. 9.—Pin the fabric, tightly stretched, into place, and finish the rudder repair by over-sewing. The surplus is cut off, and the stitches glued.

If your plane starts behaving badly in spite of being correctly adjusted, look it over very carefully for cracks, which allow the wing or tail to move in the air. When you have repaired them, make sure that you have kept the correct shape before you fly the plane again.

and now

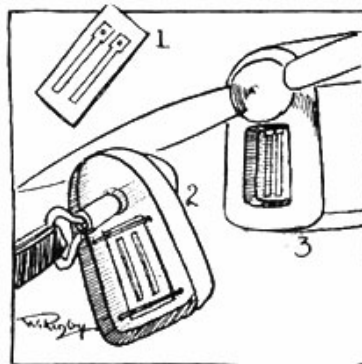
A HUMMING PLANE!

This model plane refinement, added to your machine with little extra trouble, will give a touch of extra realism.

ONE thing is usually missing when a model aeroplane is in flight. It may look exactly like the plane from which it is copied—but it glides along too quietly. There is no drone of engines to complete the illusion.

That is where you can find a new use for an old mouth-organ. A section from it, containing two or three of the brass reeds which vibrate as you blow, may be fixed to your model plane in such a way that, when it flies through the air, a very realistic hum will be heard.

The notes are fitted in the nose of the plane, as shown in the diagrams. Fig. 1 shows a piece



of brass plate with two reeds. Fig. 2 shows the rear side of the nose and the method of fixing the reeds by means of two pieces of thin wire bent at the ends and hammered into the wood. The reeds themselves face outwards towards the propeller.

An alternative method is to use small wire pins at each corner, or you can drill four holes in the corners of the plate and fix it with small screws.

Fig. 3 shows the small aperture cut away from the front of the nose, and looking like an air-cooling vent. The air passes right through and sets the reeds vibrating. Be careful in fixing that you do not damage them in any way. Neither must you fix them so that anything interferes with their vibration.

The reeds you choose from the mouth-organ depend entirely on the speed of the plane. On very fast models, reeds of high pitch will sound easily, and their high notes will impart a realistic high-speed hum. On all other models the low-pitched reeds must be used.

