

design of the full-sized aeroplane. The humblest schoolboy may discover some radical improvement, and even the despised paper glider may be the indirect means of advancing the science of aviation. Actual gliding is infinitely more practical than model aeroplane flying, and the apotheosis is reached if one is fortunate enough to become the possessor of a real aeroplane.

Then there is the educational aspect. It has been pointed out that no handicraft is so inclusive of the various arts and sciences as the making of model aeroplanes. The brain, the hand, the eye, are all called into requisition, and mechanics, physics, and mathematics each have to give their quota. Scale drawing is a *sine qua non*, and let it be understood that as in regard to the sporting aspect, there is something more—the spirit of patriotism. The Federation seeks to secure the establishment of aero clubs in every school in the country, to organise inter-school competitions, and to offer valuable prizes for scale-drawings, scale-models, inventive ideas, essays, and scientific research generally. But, above all, it aims at educating the rising generation to a sense of the immense importance of air-power.

I will now deal with some of the objections to the school aero club movement. In the first place, parents seem to consider that if their sons are allowed to make models they will certainly want to become pilots and consequently get killed! Possibly one per cent. of the members of the Federation may become pilots, but it does not at all follow that they will break their necks. People have been

known to sustain fatal injuries in football and cricket matches, and I have even heard of promising youths whose careers were brought to an untimely close by the comparatively safe recreations of boating, fishing and bathing. Another objection to the school aero club movement is voiced by a correspondent, who writes as follows:—“Ninety per cent. of the schoolboys of to-day will, in a few years, be engaged in commerce; why then harp upon war possibilities which will not occur in the trades that they are certain to enter?” Is not the writer aware of the fact that the commercial supremacy of Britain is dependent largely upon her position as the Greatest of the Powers? She holds this at present by virtue of her command of the seas, she will soon have to hold it by virtue of her command of the air! If Britain ceases to be a Great Power—as she will certainly do if her people disregard the possibilities of aviation—I am inclined to think that the major part of her commerce will find its way across the North Sea to the shores of an alien nation more liberal in her views towards a new science than we have been. I am no lover of war—it is a hateful thing at the best—but my ardent advocacy of the school aero club movement has always been prompted by a realisation of the fate of our country, commerce included, if she falls behind in the race for air-supremacy.

In the future the aeroplane will certainly be employed in commerce to an extent that nobody can grasp to-day, but it is indeed a suicidal policy to close our eyes to the terrible possibilities of its use in warfare.

## SOME NOTES ON FABRIC VARNISH.

IT is really strange that no one in England has yet invented a really satisfactory fabric varnish, for there would no doubt be a considerable market for a preparation that would render ordinary cotton material air proof, damp proof, and impervious to the rotting effect of the castor oil that habitually soaks those surfaces in the wake of the engine exhaust, that would reduce the skin friction of the fabric and have the effect of shrinking, and so tightening it when applied after the fabric is in position.

Quite noticeable was the difference in the condition of the fabric on the wings of “Beaumont’s” and Vedrines’ machines after their 1,000-mile arduous journey round Britain. On the wings of “Beaumont’s” monoplane the fabric had become stretched and baggy, so much so in fact that many would have deemed it inadvisable to have used the wings again before they had either been recovered or the fabric reapplied.

Although Blériot uses undoubtedly one of the best of rubberised fabrics, this sagging can only be accounted for by the assertion that rubber, although excellent in some respects, is by no means the best proofing agent it is possible to use, as it is as susceptible, and probably more so, to extremes of atmospheric temperature and humidity as is the fabric itself.

Again, it is universally known that oil and grease have a deleterious effect on rubber, and one would have thought that for this reason, if for no other, constructors and others interested would have sought out a means of further protecting the fabric on those surfaces, to the rear of a machine, that are constantly receiving a shower of finely divided oil.

Vedrines’ wings were, on the other hand, in as good condition as the day they were made. The high-toned drum-like sound, when the fabric was snapped with the finger, indicated that all the adverse conditions of sun, wind and rain had not altered its character in the slightest. The tail planes too, although covered with a film of oil were, none the less, tightly stretched and by merely wiping them with a petrol-soaked rag all traces of castor oil could be effectively removed.

The varnish that is used to treat the Morane wings is colourless and transparent, and is applied after the fabric is stretched over the wing skeleton. Its application, in addition to shrinking the fabric, has the effect of embedding the rough weft and warp of the material, thus presenting a perfectly smooth surface, and consequently diminishing skin friction. The base of the varnish is singularly like celluloid as far as outward appearance is concerned, but it is hardly likely to be of this inflammable material.

It has occurred to the writer that in more than a few instances the *cabré* flying of a much used Farman could be traced to the oil-saturated condition of the tail planes. Would it not be a much better plan in such a case to treat the tail fabric so that the oil could be easily removed instead of adopting the usual expedient of increasing its angle of incidence, and so diminishing its efficiency?

Both the Nieuport and the Deperdussin firms in the manufacture of their machines treat not only the supporting surfaces, but also the covered-in fuselages, with a preparation that is marketed in France under the style of “Emaillite,” which is in effect similar to the Morane composition, with the exception that instead of being colourless it is of a brownish tint.

### Patents.

In a little book entitled “All about Patents,” Mr. Clarence W. Crossley sets forth in the following concise manner a definition of things that are patentable. We commend this little book, which only costs 9d., to our readers, many of whom it may save much disappointment and no little cash by a careful perusal of its pages.

What may be patented:—

a. An improvement in a machine, article, or process, or in a part of a machine, article, or process, by addition to, omission from, re-arrangement, or modification.

b. The application of an old machine, article, or process to a new use; but only if there is invention in the new application, and it is such as would not, as a matter of course, occur to a user of the old machine, article, or process.

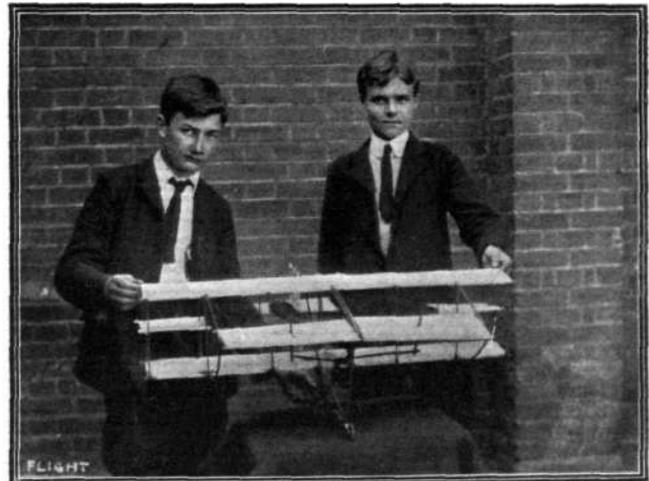
c. A practical way of carrying into effect a discovery or principle, so as to produce something new, tangible, and useful, whether the means employed be new or old, or partly new and partly old.

d. A combination of old, new, or old and new parts, producing a new and useful result.

e. New, or partly new, means or processes for producing an old or new object or result.

f. New, useful, and ingenious applications to a useful purpose of things or processes not before applied to that purpose.

g. New and useful processes employing known or new means, or a combination of those means.



Model aeroplane, made by Masters Refoy and Turnbull, of Salesian School, Farnborough—the only tool employed being an ordinary pocket-knife. We understand that this model has been declared by Mr. Cody to be a perfect miniature of his type of machine. It also has the merit of flying well.