REVOLVING BALLOON SHEDS.

A NEW TYPE OF AIRSHIP SHED THAT HAS SEVERAL ADVANTAGES.

A VITALLY important question in connection with aeronautics is the building of proper sheds for the protection of airships—particularly in the case of those of the rigid frame type.

Among various proposals for this purpose is that of the construction of a sort of gigantic drydock like that used for ocean steamers. But as this would have to be roofed for the necessary protection of the balloon against sun, rain, and snow, it offers no advantage beyond that of an ordinary covered shed.

The most practical, so far, is that of Count Zeppelin on Lake Constance, which is so anchored as to be turned in any direction, according to the quarter of the wind, thus avoiding the danger of injury to the balloon when about to enter or leave the shed.

This is undeniably an arrangement of great practical value, and it has been proposed to attain it at inland situations by means of mounting the shed in a huge turntable, moved mechanically. But the expense

in the wall of the basin are fixed guiding rollers, *r*, which prevent friction of the pontoon against it.

By means of a turning and guiding axis fixed exactly in the middle of the pontoon and basin, an exact central revolution of the shed is attained, which object is also assisted by the above-mentioned guiding pulleys. Because of the latter, this vertical guiding axis has, under unfavorable circumstances, merely to take up horizontal thrust, so that its dimensions are very small.

Another important point in the construction of balloon sheds is the contrivance for closing the doors. Simple leaves, or folding doors, turning on hinges are inconvenient and almost immovable in even a moderate wind. They constitute likewise a constant source of danger when the airship is entering or leaving the shed. Ordinary sliding doors extend too far, and their installation is too costly.

These difficulties are avoided in Herr Unger's plan.

tubes or steam plates heated with steam or hot water. Above these plates or pipes are placed perforated iron pans or racks, on which the rubber is placed. After the drying chamber is closed it is evacuated by means of an air pump, and the steam or hot water is turned on. The rubber is dried rapidly, even at a very moderate temperature, 94 deg. F., and the temperature of the mass remains low until almost complete desiccation has been obtained, and then rises slowly. The evaporated water drawn off by the pump is condensed in a surface condenser provided with means of observation. When no further moisture appears, the drying is finished. A drying chamber of medium size holds, for example, 650 pounds of sheet rubber, which is dried in two hours. The consumption of steam is very small. In general, 3 pounds of steam suffices to evaporate 2 pounds of water. This includes the steam employed in operating the air pump.

FIG. 1.

FIG. 3.

FIG. 2.

FIG. 4.

both of construction and operation would be forbid-
dingly formidable.

The following scheme, invented by Engineer Gustav Unger of Kamen, evades this difficulty, and solves the problem very neatly by erecting the shed in a circular pontoon, floating on the surface of the water in an artificial basin.

The accompanying diagrams show different views of such a shed, meant for the accommodation of two dirigible balloons of moderate size.

Fig. 1 shows a side view of the shed, with section through the ground.

Fig. 3 shows the ground plan, and Figs. 2 and 4 show different sections.

On a circular pontoon *d* rests a shed constructed of iron and extending equally on either side. The diameter of the pontoon corresponds to the width of the shed. The ends of the shed projecting beyond the pontoon are supported upon a circular track by means of rollers, so that, in case of unequal weighting of the shed, the latter would take up a part of the pressure, and at the same time prevent it from tilting out of its horizontal position.

By the regulation of the water level in the basin, the pressure on the rollers is regulated to a nicety, so that comparatively little power is needed to revolve the shed.

The doors form circular arches, *t*, which can be pushed into the sliding-pulley holders, *k*, which are likewise circular and are fastened firmly to the shed.

In the indicated position, *n* (Fig. 3), the doors are shoved at the side, so that the exit is entirely clear. Even in a strong wind the doors can be opened with ease and safety.

A patent for this construction has been already applied for, and it is herewith announced that the rollers may eventually be replaced by corresponding floats, which will rest on the surface of a circular trench.

The construction is of glass and corrugated iron, but the corrugated iron sheathing may be replaced by curved plates.

These, however, must be especially manufactured in a suitable size. Their use will sensibly diminish the weight of the structure, and also lend a more attractive aspect to the exterior of the imposing building.

Such balloon sheds are self-evidently particularly suitable also for flexible balloons. They will doubtless soon be erected in numbers in inland situations, especially since their cost is comparatively low with regard to that of buildings on solid foundations.—H. Kramer in *Illustrierte Aeronautische Mitteilungen*.

At a factory in Erfurt, Germany, India rubber is dried in a vacuum dryer which contains a number of

FLOWERS AND INSECTS TRANSFORMED INTO METAL.

By T. C. HUTCHINSON, D.D.S.

THE art of transforming flowers, leaves, insects, or the like, into metal, is a science which is new with this year's progress along the lines of invention, and bids fair to become very popular.

The writer conceived the idea of changing a flower or insect into metal from a little story told by an Irish dentist at a banquet table held during one of our district conventions, when he said, speaking in a jovial way of the possibilities of casting: "That he was going to quit dentistry and take up the manufacturing jeweler's business; that he was going to hire a lot of children to go into the woods to catch beetles, they to bring them to his factory, where he would stick a pin in them, invest them, and burn them out (no residue) and force metal in the form made vacant by the burning." This, in a nutshell, is my method of reproducing animal and vegetable matter in metal, differing only in that where flowers or leaves are to be cast, I use the stem of said flower or leaf as a sprue instead of a pin. While my friend little thought it possible to accomplish what he had said, yet it is true that the finest lines of the flower, viz., the ribs, stamen, and the hair-like parts of the moss rose, or the antennæ or legs of the butterfly, can be reproduced with this new method of casting with pressure.

I will in a few words tell what the dentist of to-day is doing along these lines, and from this you will readily call upon your imaginative powers the many places in which this casting with pressure will be useful to you in your work. The dentist prepares a cavity in a tooth that is to be filled, with no under-cuts; he then takes wax and fills said cavity, packs it full and trims off the surplus, so that it will be just as he wants his gold or silver filling to be; he then takes it out of the cavity, puts it on a sprue pin, and then places the pin in a crucible former, then puts a metal ring or flask over this and pours investment material, filling it up to the top of the ring. This investment material is composed of two parts silica and one part plaster of Paris. After this begins to set, the crucible former and pin are removed; this then leaves the investment with a concave surface with the sprue or hole reaching to the wax. The next procedure is to heat over a Bunsen burner slowly until the investment is freed of moisture, then the blow-pipe is used to hasten heating and to burn out the wax. When this is accomplished the metal nugget is placed in the crucible and melted to a white heat. The flask is brought in position under the metal disk of the casting machine, the latter is pressed downward upon the flask, and in so doing, automatically lets on the air, forcing the molten metal to place. This operation takes about 25 minutes. The size of the wax object to be reproduced makes little difference.

If it is possible for a dentist to accomplish this, it is possible to reproduce any form of wax, animal, or vegetable matter into metal. Wax burns out with the ordinary heat from a Bunsen, while the flower, or the like, requires a blast heat to burn up the ashes, etc. Inasmuch as vegetable and animal matter is largely composed of water, especially the former, evaporation from the heat removes the bulk of the invested flower, etc. There are many casting machines now used, having different methods of producing pressure, viz.: the air, steam, vacuum, and centrifugal force machines. I have used them all, and while any one of these will accomplish ordinary work, yet I favor the air machine for doing extensive work. The clover leaf, not much thicker than newspaper, requires more force to cast than a rose, etc. It is possible to braze one metal to another, viz., silver to gold, or *vice versa*.—Keystone.