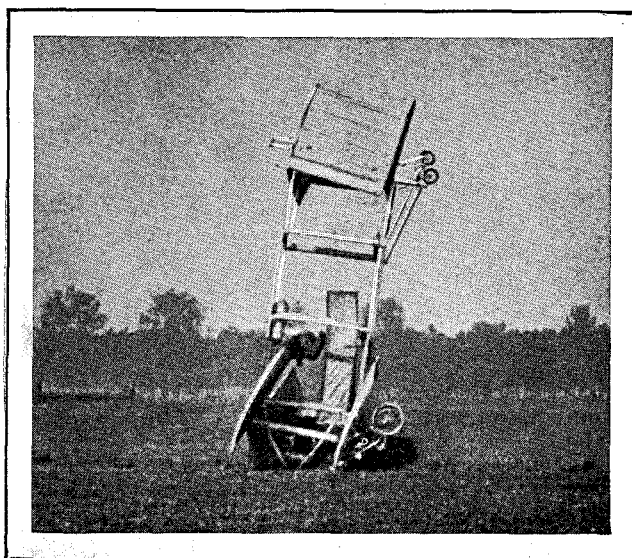


INSANITY IN THE ARMY

THAT an unbalanced mind is very common among French soldiers, is the conclusion reached by Drs. Antheaume and Mignot in a recent work entitled "Mental Disease in the French Army." In the American Army insanity is one of the less frequent disorders. We learn from the Surgeon-General's report that there were 1,083 cases in the United States Army in the years 1898-1907, or 1.73 per 1,000, and 98 cases in 1908, or 1.50 per 1,000. In the Philippines there were 13 cases in 1908, or 1.09 per 1,000—10 among the white troops and 3 among the colored. This contradicts the idea that insanity is more common among our soldiers in



THE BREGUET AEROPLANE ACCIDENT AT BETHANY, AUGUST 29, 1909.
Taken at the precise moment the biplane struck the earth. The aviator was thrown violently to the ground.

the Philippines than in the United States proper. Insanity in the Army is also less frequent than among the general population, according to the figures in the "Encyclopedia of Social Reform," which reports that in 1900 the insane in hospitals numbered 1.86 per 1,000 of the population. The authors of the French work show that, contrary to accepted opinion, mental diseases in the French Army are more frequent than French critics are willing to admit. Says a reviewer in *The Interstate Medical Journal* (St. Louis):

"The disturbances oftenest observed among foot-soldiers are psychoses synchronizing with attacks of mental exhaustion. The sudden change from comparative comfort to an existence imbued with all the rigors of military discipline, not to mention the exactions incident to enforced physical and mental exertion, entails something more than the ordinary soldier possesses, namely, the sort of adaptability one associates only with men who are habitually in possession of normal intellectuality. One can readily see that since the individuality of the ordinary soldier is none too strong, he will not be long in manifesting insanity, should there be a predisposition to cerebral disturbances; a deplorable condition that is brought on partly by the officers in charge of regiments, who seem to see in his lack of ability to submit to stringent military rules, only what is perverse in human nature that must be corrected by increased discipline. Thus stubbornness is held responsible for insubordination, disregard of military rules, and open rebellion, when alienation should be regarded as the prime cause."

This is particularly true, the writer tells us, in certain special corps—foreign legions, for instance—in which a number of soldiers are practically degenerates. General paralysis is said to occur as often as 63 times in every 100 cases of insanity among officers, and its great danger lies in the fact that it may remain unrecognized for some time. We read:

"To illustrate, a captain of artillery, who was held in thrall by delirious ideas which had not been remarked by his associates, hurled himself against a stone pier while galloping at the head of his battery, and on another occasion had the cannon mounted in

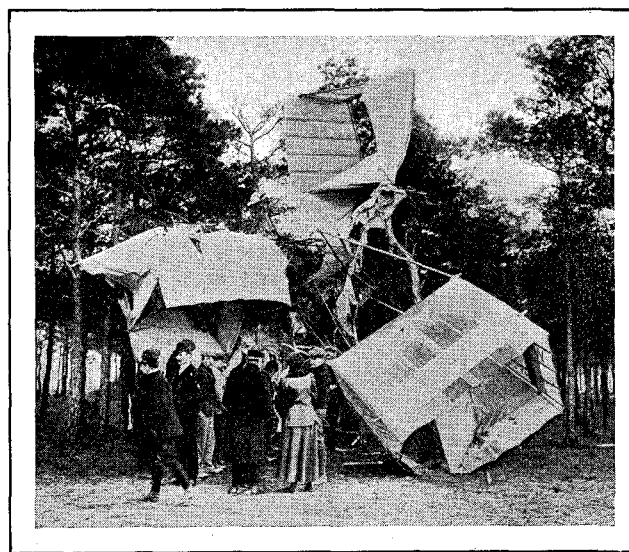
places so difficult of access, that it required considerable maneuvering, on the part of the gunners, to fire them. All of which shows, beyond a doubt, how important it is to eliminate from an army those who are mentally unbalanced, directly the first symptoms are noticed. To effect so drastic a measure a corps of expert alienists would be required, and that Drs. Antheaume and Mignot are in a position to know what remedy should be applied to present defects will not be doubted, when it is recalled that they are at the head of the state lunatic asylum at Charenton, which houses all the officers and soldiers afflicted with mental diseases."

AEROPLANE ACCIDENTS

AVIATION is decidedly one of the arts in which one must "learn by doing." And in "doing" lives are occasionally lost. Has anything been learned from these accidents? Were they an unavoidable feature of progress in aviation? These questions are discussed in *Engineering* (London, January 14). The writer notes that the latest fatal accident, the death of Delagrangé, is the only one, apparently, that has been distinctly due to a failure in the main structure of the machine. It seems to be generally assumed, the writer says, that the biplane is safer than the monoplane, yet the greater number of accidents have happened to the biplane. He goes on:

"Previous to the death of Delagrangé there had been four fatal accidents with modern flying-machines—viz., Lieutenant Selfridge was killed when making an ascent with Orville Wright on a Wright machine in America; Lefebvre lost control of his Wright machine, which therefore fell; Lieutenant Ferber had a fall in his Voisin machine, from which he died soon after; and Fernandez was killed when flying in a biplane of his own design.

"One at least of these—namely, Lieutenant Selfridge's death—appears to have been due to the failure of the machinery, a broken propeller having been the primary cause of the fall. It is also possible that Lefebvre's mishap was caused by the control-wire breaking, and the machine becoming unmanageable in consequence. It is, however, inevitable that in case of a fall the machine should be so damaged that it is impossible to tell what happened from the broken parts; and if the pilot is killed, it is difficult to ascertain how the accident took place. In the cases of Ferber and Fernandez there is no evidence that any part of the machine failed, and in the cases of Lieutenant Selfridge and Lefebvre the main framing did not fail. In the case of Delagrangé's accident, how-



AN AEROPLANE WHICH FELL IN A TREE.
The remains of De Baeder's machine.

ever, there seems good reason to suppose that the main framing forming one of the wings gave way altogether, the machine falling in consequence.

"Curiously enough, Santos Dumont had an accident the very next day from an almost exactly similar cause [but] . . . he did not lose his life."

Taking up next the relation of aeroplane construction to these

accidents, the writer says that the wing of an aeroplane is in its structure very much like the mast and rigging of a sailing-boat, the main spars taking the place of the mast, while the wire stays take that of the shrouds. A very important difference is that the mast of a boat usually has a forestay to take the longitudinal pressure when going head to wind, while the wing of an aeroplane often has no such provision. It is possible that this had something to do with the Delagrange accident. Says the writer:

"Whether the failure of the wing was actually from longitudinal stress or from the supporting wire breaking . . . will probably



HOW TO COME DOWN GRACEFULLY.

Geffroy's aeroplane, which fell from a height of 80 yards, turning over in the air, and landing almost uninjured on a grassy slope. The aviator was unhurt. At the Issy meet, February 17, 1909.

never be accurately known; but it is quite clear that the question of ample strength to resist longitudinal stresses should be very carefully considered, especially when putting more power into an existing machine.

"The question of the most suitable material and fastenings for the supporting wires is, moreover, a matter which requires very careful consideration. In the case of biplanes the wires are so numerous that the failure of one or even more may not endanger the whole structure, but those of the monoplane are so few that failure of even one wire may mean a broken wing. In this respect, as in others, the position is, in fact, exactly the same as the mast of a sailing-boat, and one would expect, therefore, that the same materials would be suitable. At present, however, the stays of the aeroplane wings are almost invariably solid steel wire or ribbon, while the shrouds of a sailing boat are invariably of stranded rope, solid wire not having been found satisfactory. There is no doubt that, weight for weight, the solid wire will carry a heavier strain than the stranded rope when tested in a machine, but it is found in practise that it is not so reliable. The stranded rope seldom breaks without warning, but several strands go before the whole gets unsafe. As the breakage of these is very easily seen, an unsafe rope can always be replaced before actual breakage; whereas in the case of the single wire there is nothing whatever to show whether it has deteriorated or not.

"It does not, of course, necessarily follow that what is most suitable for a boat is also the most suitable for an aeroplane, but as the conditions are so very similar, it seems very doubtful policy to use in an aeroplane what is not good enough for a boat, as the consequences of failure are so much more serious.

"Incidentally the Delagrange accident shows what may be the evil effects of striving after 'records.' What is wanted to make the aeroplane of practical use is that it should be reliable and safe. The tendency of record-breaking machines is the exact opposite of this, as the weights of all the essential parts must be cut down to the finest limits possible in order to provide enough engine-power, petrol, etc., for the record run. It is, in fact, generally found in engineering that the design and materials which will give the best results for a short time are essentially different from those which are the most reliable, and striving after records consists simply in neglecting reliability and safety to the utmost extent to which the pilots can be persuaded to risk their necks."

COLD-STORAGE SURGERY

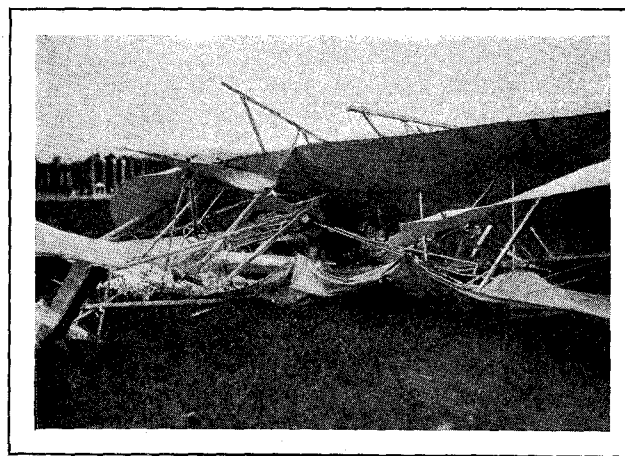
THAT the up-to-date surgeon may one day actually include in his equipment a refrigerator where various portions of bodily organs will be kept in cold storage ready to be spliced on where they are most needed is the rather startling suggestion made by Mr. R. Romme in *La Revue* (Paris, January 15). Recalling an earlier prediction of this kind, the writer asserts that it seems now to be in a fair way to be fulfilled. Dr. Carrel, whose success in the reparative surgery of the internal organs has already been noticed in these columns, has been experimenting on animals with material kept in cold storage as above suggested, and in many cases with complete success. The discussion is not only interesting in itself, but throws a side-light on the methods and merits of vivisection, which some regard as more cruel than useful, while others take the opposite view. Says Mr. Romme:

"No matter how inexpert he may be in anatomical matters, every one knows of the aorta from the aneurisms that sometimes develop there, whose rupture may cause sudden death. 'He succumbed to the rupture of an aneurism' is a phrase that is still often heard. Every one now knows that the aorta is a large artery, over an inch in diameter, which, issuing from the left ventricle, describes a curve and then descends along the vertebral column to the sacrum.

"It is comparatively easy to get at the aorta in the part situated in the abdominal cavity. If the surgery of the arteries were more advanced there would be no great difficulty, in case of an aneurism of the abdominal aorta, in opening the abdomen and uncovering the great artery and its aneurismal tumor. Dr. Carrel has performed several successful operations on the abdominal aorta of cats, removing a segment of the huge blood-vessel and replacing it with a similar segment taken from another animal or kept for some time in cold storage in a special liquid. . . .

"Greater difficulty, however, would be experienced in an operation on the thoracic aorta. To get at this part of the artery it would be necessary to open the chest and to move the lungs to one side. Now in case of a large opening of the thorax, the lungs collapse, the respiration ceases, and the animal dies of suffocation.

"This difficulty, however, no longer exists. Researches made recently have shown that respiration may be replaced for some time by simple ventilation of the lungs. To realize this it is sufficient to place in the trachea a tube of average caliber and to pass through it a current of air under slight pressure. In contact with this air, which distends the lungs, the blood throws off its carbonic acid and is charged with oxygen. Asphyxia is thus avoided, and the animal may continue to breathe and live for three or four hours.



WHERE LEFEBRE MET HIS DEATH.

"This is precisely the arrangement adopted by Carrel in his experiments on dogs. . . . He draws the conclusion that operations on the thoracic aorta are not necessarily dangerous. It is, however, another matter to go further and say that the surgical treatment of aneurisms of the aorta is an accomplished fact. For to operate on an aneurism surrounded with inflammatory adhesions and pathologic products is much more difficult than to treat a healthy aorta. We may hope, however, that the day when we shall know how to vanquish these difficulties is not far off and that in this