II. METEROLOGY AND AVIATION.

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The science and practice of meteorology is becoming of greater importance with the increase in air transportation. We might almost say that it is being changed from a two dimensional to a three dimensional science. The practice of meterology until man learned to fly, was confined entirely to the surface of the sea and land, a region with which every person is familiar. The aviator, however, works in an almost unknown region so far as local atmospheric phenomena are concerned and has often paid dearly for his lack of knowledge. One or two illustrations taken from the experiences of a flyer of my acquaintance may make this more clear.

Some years ago Mr. Haislip was stationed at Ft. Ringgold, near the Mexican border. The landing fie'd there was a small bare parade ground. In making a landing one very hot day he came in over the field at a height of about twenty feet with only sufficient speed to support the plane since the field was not large enough to give much of a landing run. As soon as he was over the field all support suddenly left the plane and it fell to the ground. As the ship was on an even keel at the time the on'y damage was to break the shock absorbers. At that time the cause of the accident was not understood. About a month later another flier with two passengers came in over the same field under the same conditions except that with three in the plane it was overloaded and instead of coming in squarely over the field he spiralled to lose elevation and came over the field with the plane slightly banked. As it entered the hot air it lost support and side slipped and crashed killing the two passengers and crippling the aviator. Evidently both these accidents were caused by the hot air being less dense than the cooler air over the green surface outside of the field and the effect was the same as though the plane had fallen into a hole. A similar lack of support has been experienced in a canyon on a hot day so that a plane not having much reserve power getting into a canyon under those conditions might not be able to rise over the edge.

With the wind blowing at right angles to a canyon a rarifying effect is said to be produced on the air of the canyon so a plane attempting to cross without much elevation is in danger of dipping down and not rising over the opposite rim.

On the windward side of an obstruction, as a range of high hills, an upward current is produced so that a p'ane may be carried upward a thousand feet or more depending on the velocity of the wind. On the leeward side there is a condition of turbulance of the air or even downward currents making it difficult for a plane to rise against the wind over such an obstruction.

These are a few of the new conditions encountered by flyers outside the experience of people who spend their life on the surface of the earth. During the early years of flying aviators have had to meet these new situations and learn to master them through experience, some of which has been very costly.

Since the life of an aviator as well as the safety of his ship and

passengers frequently depends on a correct interpretation of atmospheric conditions it would seem to be quite desirable that he be trained in both the theory and practice of meterology. He must not only understand the laws of the atmosphere but he must be weatherwise in the best modern sense. This means he must be able to take the forcast as issued by the Weather Bureau and by combining with it the readings of his barometer, thermometer, humidity apparatus, the force and direction of the wind and conditions of the clouds arrive at a conclusion as to what the conditions will be in his particular area for the next few hours. Contrary to popular opinion it is possible in this way to arrive at a local weather forcast which is very much better than that sent out by the Weather Bureau for the general area. In addition he should be able instantly to determine when and where there will be a local change in temperature, moisture, cloudiness, etc.

The examination for air pilot's license at present includes the subject of meterology but is rather simple being limited mostly to reading of weather maps, where and how to get information on the winds, and the appearance and elevation of the different kinds of clouds. No doubt with increase of passenger transportation by airplane a more comprehensive examination will be required.