type of pitch indicator should be developed. It has happened a number of times that experienced instrument pilots have been unable to prevent their plane from falling into a steep dive resulting in airspeeds sufficient to cause structural failure in the plane. I can assure you that such an accident cannot be attributed entirely to inexperience, for you must realize that, by inclining the nose downward only a few degrees, a sailplane may pick up tremendous speed.

The plane may be placed in this nose-down position suddenly, due to a turbulent air condition, and the first indication the pilot will have of it is thru his airspeed indicator and the sound of the air passing around his cockpit.

Pilots have found it extremely simple to fly blind for a long period of time so long as they confine their turns and banks to the usual airplane blind flying maneuvers. However, the temptation to cut down the turning radius to stay within the confines of a strong thermal current frequently leads to difficulties. A thorough knowledge of the limitations of his blind flying instruments and the proper use of his variometer may be included as part of the sailplane pilot's soaring technique. There are undoubtedly many other individual experiences and observations that go to make up each pilot's personal technique. Each one consequently develops his own little bag of tricks that he may frequently bring to use. To give you some idea of the sort of things that individual pilots may employ as a part of their personal technique, I will mention a few of my own observations and experiences.

I have experienced many times the phenomenon of entering a weak thermal close to the ground while flying my plane at high speed. In nearly all such cases, I find that on passing thru the current its velocity is insufficient to completely check the descent of my plane. However, by cutting sharply back to the approximate center of this area, and by executing a very steep abrupt spiral, the current frequently develops into a much stronger one capable of carrying the plane up at a rate of from 3 to 5 meters per second.*

Several years ago I made a flight from Elmira to Watkins Glen and return in a sailplane of intermediate performance, and during the flight I was as low as 500 feet above the ground about a half-dozen times. In each case, by executing the above maneuver, I was able to climb to an altitude of something over 3,000 feet.

Under other atmospheric conditions, I have attempted the same thing and have met with no success. However, I believe I have learned to recognize or "feel" the conditions under which this maneuver can be used to advantage and have come to use it as a part of my soaring technique on days when conditions are suitable.

I have made other observations relative to thermals which I am sure many others have made. Toward the middle of the day, when thermal activity is approaching its peak, the currents are, generally speaking, small and spaced relatively close together; whereas, later in the day, I have learned to expect the currents to become larger and farther apart and generally more powerful.

Frequently, I have recorded rates of ascent in such thermals as high as 8 meters per second and have, in one case, recorded a climb of 10 meters per second.

I have further come to expect these later afternoon thermals to reach much higher altitudes than those earlier in the day, since I have been successful in reaching my greatest altitudes under such conditions.

It has become my personal understanding of these afternoon conditions that some of them may develop into full-fledged thunder storms, and that thru observing the terrain and noting the size and velocity of the current, it is possible to forecast whether or not such a thermal will lead to the development of a thunder storm.

With the exchange of ideas and the observation of different techniques used by the different pilots, an entirely new general technique has been forming.

In 1933, a plane entering any thermal might be observed to make slow, wide, flat turns. Today, it may be observed that in most cases a plane on entering a thermal will immediately pull into a tight, steep, turn. The pilot has learned that under most good thermal conditions, the current has a small center rising more rapidly than the rest of the current, and has consequently learned to handle his plane to take the most advantage of it.

It may also be observed that planes will frequently start circling in thermals much closer to the ground than has been customary in past years.

These, however, are the only two examples I can give of where an improved general technique has made itself apparent. We have too few accepted rules governing our sport, and in my opinion, until a truly scientific study is made of the subject, there will always be a broad difference of opinion between pilots and a wide variation in their flying technique.

It is indeed regrettable to find at this stage of soaring development in the United States that some sailplane designers and builders still find it necessary to look to Europe for up-to-date statistics and information relative to sailplane design and construction, and pilots still look abroad for information on soaring meteorology, while this country probably has not only some of the finest aeronautical engineers in the world, but also offers weather conditions and terrain as suitable or, in my opinion, even more suitable for soaring than can be

*Read the series "On Soaring Flight" by E. C. Huffaker, starting with May-June, 1942, issue of "Soaring."