HISTORY OF THE J.P.FRIEZ & SONS CO.

A Thesis Prepared for the

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by

George R. Phipps

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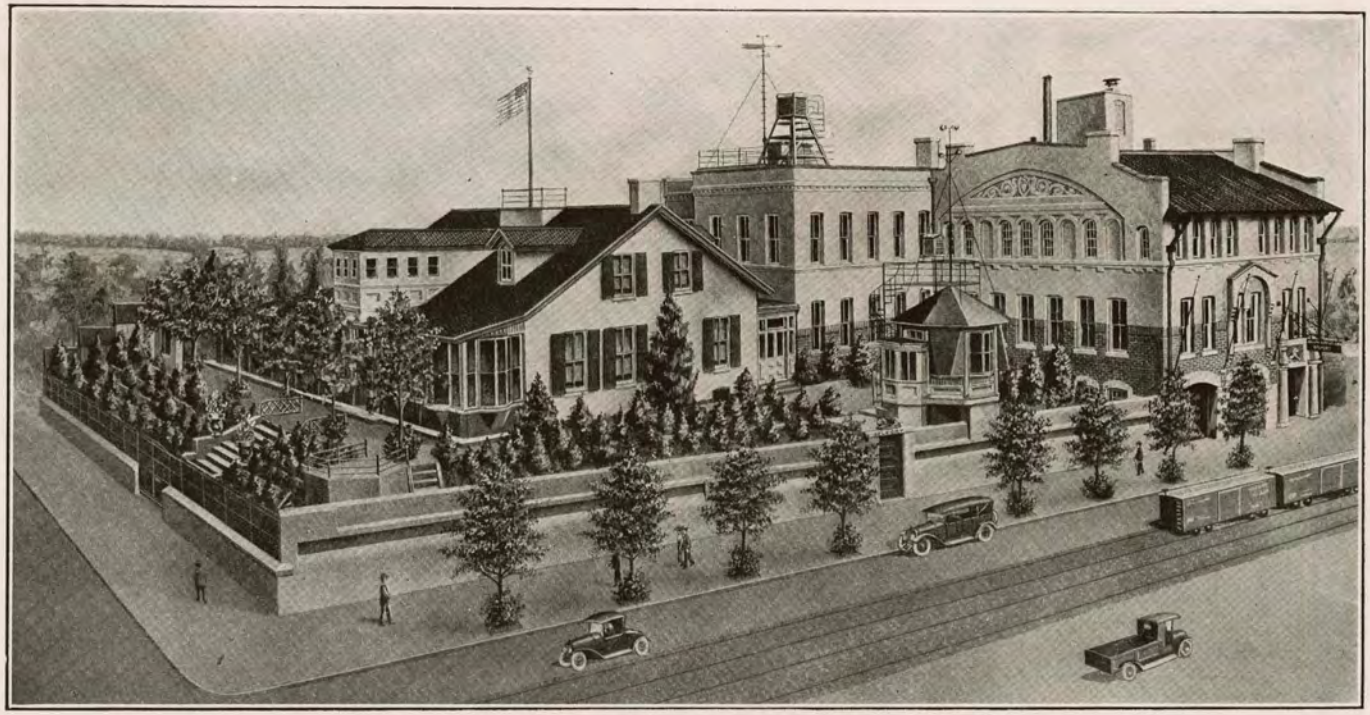
In 1876 the Ottmar Mergenthaler Co., manufacturers of linotype machines and precision instruments of all kinds, moved their offices and factories from Baltimore, Maryland, to New York City, New York, and specialized in the manufacture of linotype machines.

Julian P. Friez, then superintendent of their factories, took over the scientific and precision instrument branch of their work. He established his own factory on the corner of German and Grant Streets, Baltimore, Maryland, under the name of Julian P. Friez & Sons, Manufacturers of Weather Instruments.

The Friez Co., from the first, has been unique in that, unlike the other factories of today which employ automatic machines and strive for mass production, they still do all of their work by hand. They believe, (and the reputation that their instruments bear seems to carry out their supposition) that hand made instruments are more accurate than those which are machine made. They receive all their materials in the raw state. They turn down the rough castings on hand lathes, make and fit all the small intricate parts, calibrate and check all instruments and turn out their finished product, all operations having been performed by hand.



THE BELFORT METEOROLOGICAL OBSERVATORY

of JULIEN P. FRIEZ AND SONS

Northwest Corner Baltimore Street & Central Avenue, Baltimore, Maryland, U. S. A.

One of the first and most widely known of the Friez weather instruments is the Cup Anemometer for the direct reading of the wind movement and the electrical transmission of such to the Velocity Recorder giving directly the miles per hour of the wind.

(Fig. I)

This instrument, as manufacturered by J. P. Friez, was first used in the U. S. Weather Bureau in Washington, D.C. in December, 1885, and now can be found not only in the weather bureaus all over the United States, but wherever people are interested in the velocity and direction of the wind. These instruments are put out today in much the same way as they were first designed, the only change having been made at the request of the Weather Bureau at Washington, which was the change from a 4 cup anemometer to a 3 cup anemometer in 1926.

The photographic Sunshine Duration Transmitter and Recorder is another set of their old standard instruments. This instrument was used in the Weather Bureau at Washington as early as the year 1896.

(Fig. II)

By 1900 it was electrified. Now essentially it consists of a differential air thermometer enclosed within an evacuated glass shath with platinum wire electrods fused into the column at the center. When connected electrically

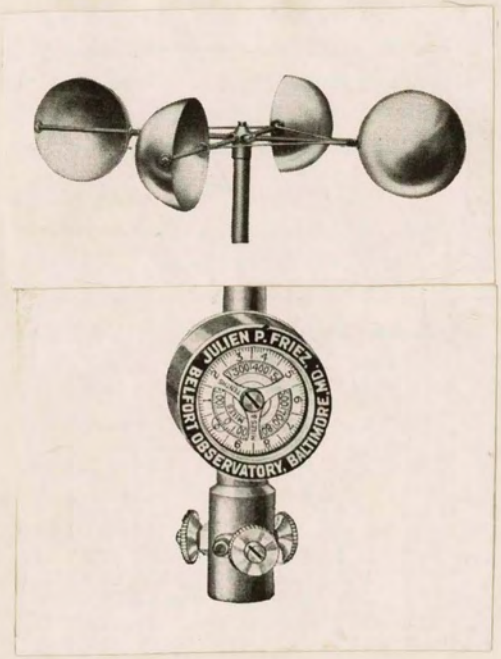


Fig. I
Wind Velocity Recorder

to a Sunshine Recorder

(Fig. III)

the duration of the sunshine is recorded at any convenient location. The chart cylinder makes one complete revolution every six hours.

The Thermograph

(Fig. IV)

an instrument graphically giving a continuous record of all the variations in atmospheric temperature for extended periods of time, is installed in almost every Government meteorological station. The temperature registering element of this instrument is known as a Bourdon tube, of phosphor bronze containing alcohol, and situated well outside of the instrument proper. The bending of this tube under changes of temperature due to contraction and expansion of the liquid, operates the recording pen arm, through a link control. The use of this Bourdon tube is limited to the Friez instruments. The recording chart can be adjusted so as to give a daily or weekly record, that is the chart makes either one revolution per day or one revolution per week.

Through the ingenuity of the Friez Co. their instrument has been adapted to use in storage plants, agricultural experiment stations, green houses, and in many other industrial plants where records of temperature changes are indispensable. In the case of the agricul-

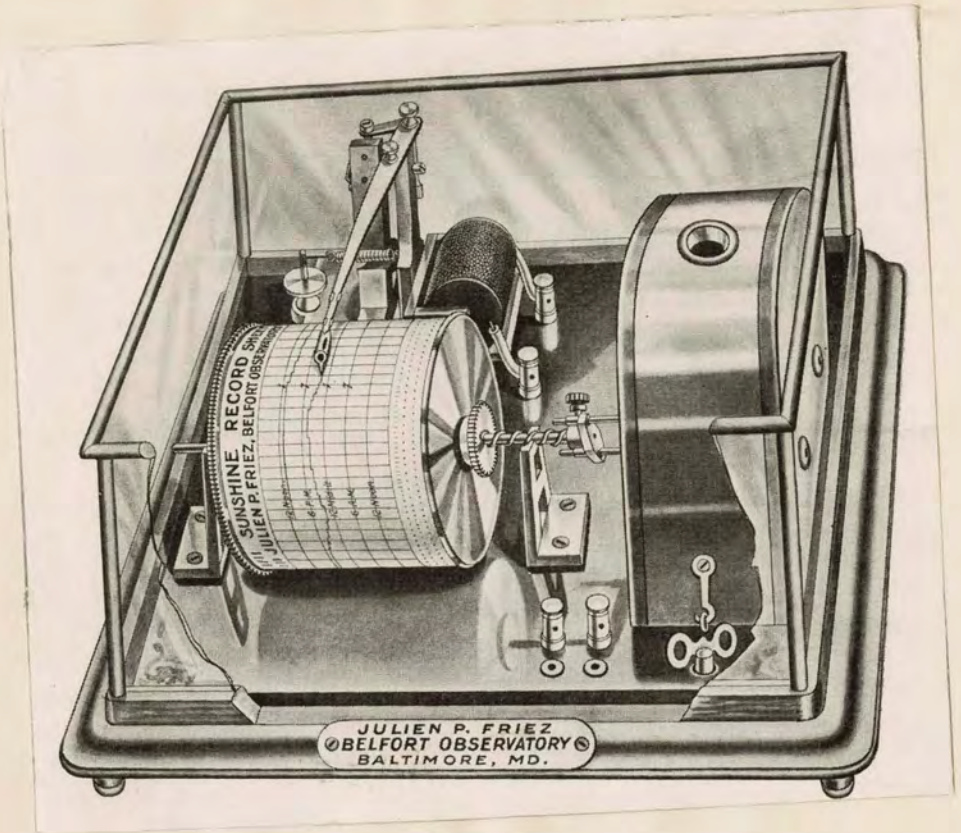


Fig. III
Electric Sunshine Recorder

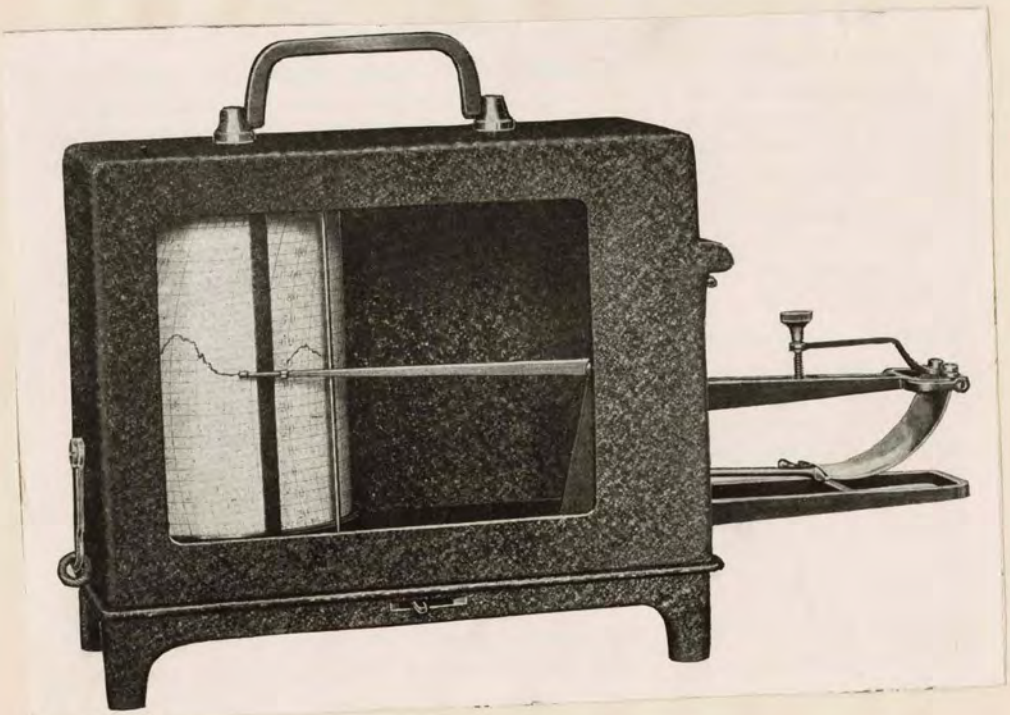


Fig. IV
The Thermograph

tural industries, the thermostatic element is a copper tube 1" in diameter and 12" long filled with a non-freezing liquid, which can be brought into direct contact with the ground. The tube is connected to the recording pen through a capillary tube, which is also filled with liquid, and both tubes hermetically sealed. As this liquid is incompressible, its action on the diaphrams is constant and positive.

Another difference which adapts the instrument to either air or liquids and makes it more sensitive for remote readings is the change from one single tube to a series of tubes in the shape of a grid, which employs four tubes of smaller diameter, giving more surface area and less amount of liquid, giving a more instant response to rapid changes of temperature.

The Hygrograph,

(Fig. V)

because of its simplicity, has been adopted as the standard wherever a graphical record of the humidity of the air is required, such as steel mills, textile mills, chemical laboratories and paper mills. The registering element is 50 strands of human hair of equal length. No other device approaches this peculiar one in unvarying sensitiveness. As the humidity increases, there is a corresponding increase in the length of the stands causing the pen to rise on the chart and a decrease in

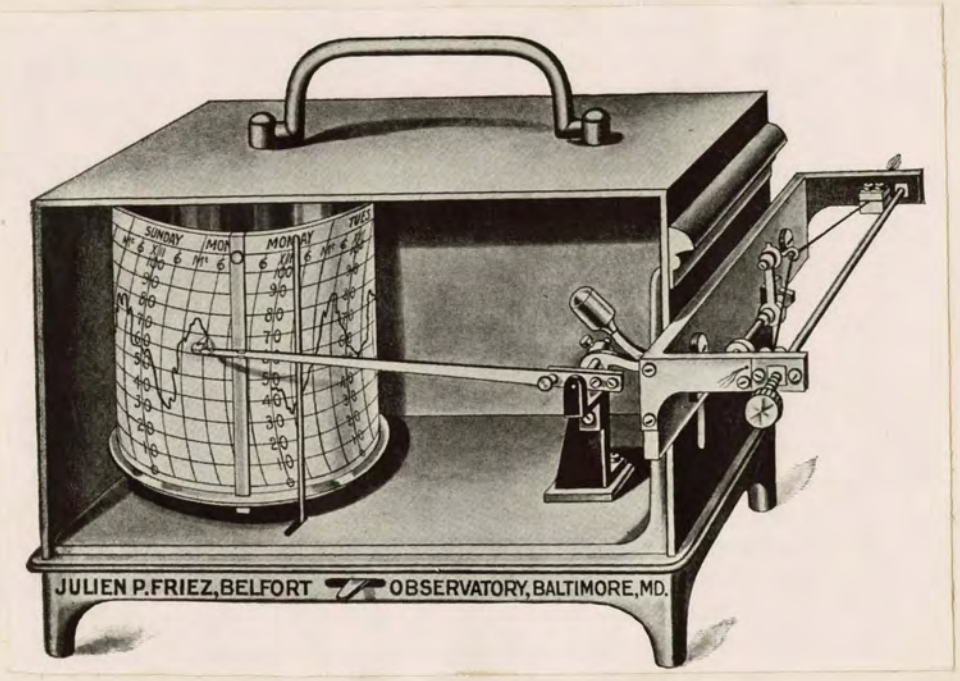


Fig. V
The Hygrograph

Fig. VI
Belfort Observatory

humidity causes a shortening of the stands and a fall of the pen on the chart. The charts are timed for either daily or weekly periods.

The Friez Co. was completely wiped out in the devastating fire of 1904, which swept that whole section of Baltimore. J. P. Friez then bought the old McKim Place on the northwest corner of Central Avenue and Baltimore Street. This old house, dating back for at least 150 years, is still an integral part of the Friez Co.'s plant. They named this new location the "Belfort Observatory," after the birthplace of the elder Friez.

(Fig. VI)

In 1906, Friez Water Stage Recorders were used in Panama in great numbers to show the drainage of water into the prospected Gatun Lake, and today at Conowingo, Maryland, and in most of the other hydro-electric plants these instruments are used.

During the World War, the Friez Co. in conjunction with the naval authorities at Washington, D. C. developed an intricate device to be incorporated in the wind apparatus for moving ships. It is called a "Wind corrector." This corrector apparatus takes account of the speed of the moving vessel and the direction of its travel, and computes the actual and true wind velocity and its direction independent of the vessel's direction or speed of travel.

It was while he was working on the "wind corrector" in the year 1915 that Julian P. Friez died. The manufacture and distribution of the scientific instruments was then taken over the youngest son, Lucien L. Friez. (Fig. VII).

In the year 1920, under the direction of L. L. Friez, the company began the manufacture of still another type of instrument, the Nephescope. This instrument was designed for the study of cloud movements and velocities and is most important in the field of aviation. In connection with this latest field of research and experimentation, namely aviation, the Friez Co. has developed an instrument known as the Aero-Meteorograph. (Fig. VIII) which compiles upon one chart simultaneously the records of Barometric Pressure, temperature and humidity. The great dirigible Shenandoah carried one of these instruments on its last flight and this instrument, recovered from the wreckage, is kept in the archives of the Navy Department.

In 1927, again working with the U. S. Navy, the Friez Co. perfected a new method and system of recording and indicating wind velocity and wind direction. The first instruments of this type were designed for the two airplane carriers, the Lexington and the Saratoga, and by

LUCIEN L. FRIEZ

Fig. VII
Lucien L. Friez

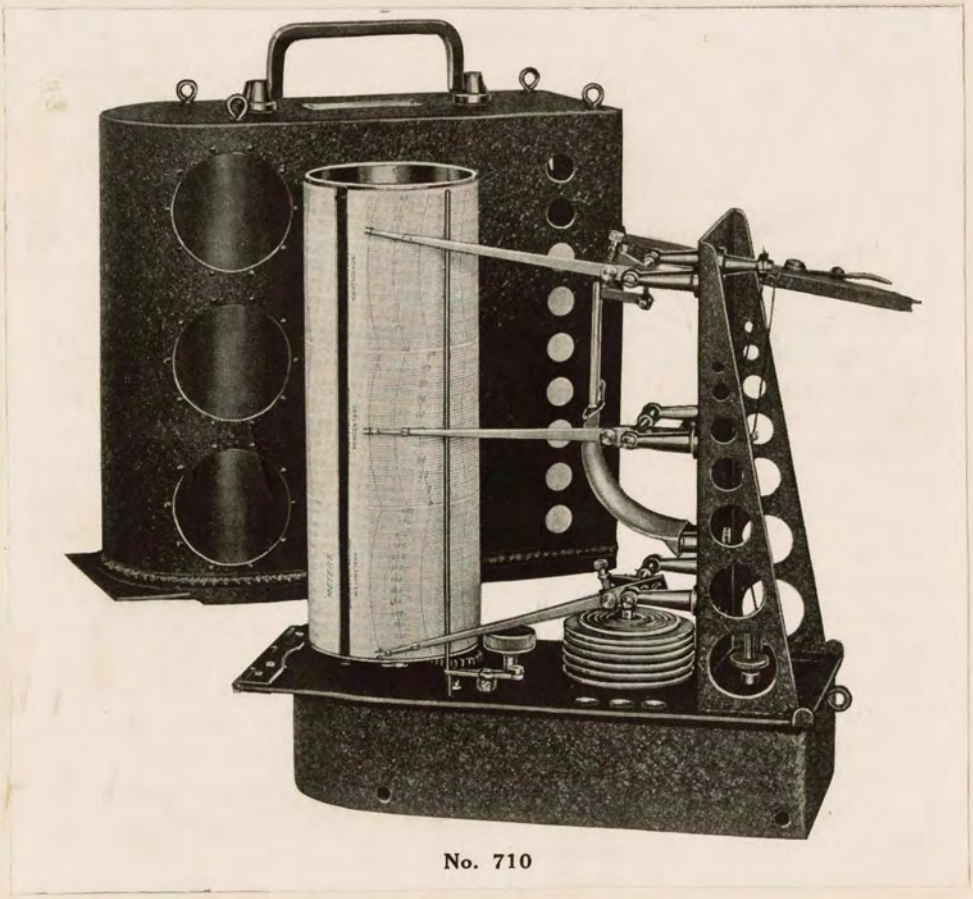


Fig. VIII
Aero-Meteorograph

means of seven dials placed at various points on ship-board, the speed of the wind and its direction across the ship are known.

In the same year (1927) the Friez Co. developed and put on the market a long distance-indicating gage for all kinds of liquid levels, as those of gasoline, crude oil, alcohol, water in reservoirs, etc. The gages show accurately such level changes to the thirty-second part of an inch, and will operate without any care for many years.

They have also in the year 1927 designed and perfected a Bacteria Colony Counter, which has been adopted in many Health Department Laboratories, dairies, and filtration plants.

So, here on the corner of Central Avenue and Baltimore Streets, in a quaint set of buildings, is situated a manufacturing instiution of nation wide and almost world wide importance, of which Baltimore, and even the whole of Maryland may be justly proud, for not only does it lend its aid in the time of war in support of the country, but it concentrates its power on the development of the great peace time industries as well.

-:- CONCLUSION -:-

The subject matter for this thesis was obtained mainly from personal interviews with Mr. Aubreck, superintendent of the Friez Meteorotogical Instrument Company.

The dates of the introduction of the instruments into the Government Departments were gotten from the U. S. Weather Bureau files at Washington, D. C.

Explanation of the workings of the instruments was gotten from an inspection trip through the Friez plant.

This thesis is not my idea of what was desired by those assigning the subject, being sadly lacking in historical data. This deficiency is mainly due to the lack of cooperation on the part of Mr. Moore, the business manager, to whom I was referred for the desired information.

-:- BIOGRAPHY -:-

Julian P. Friez was born in the city of Belfort, on the eastern border of France. He came to this country when still a young man and went to work for the Ottmar Mergenthaler Company of Baltimore, Maryland.

While working for them as superintendent of the factory, he, in collaboration with Ottmar Mergenthaler the inventor, built the first linotype machine; the disc-phonograph and the Rowland Multiplex Machine, the latter used for dividing the inch into parts the thickness of a hair, were products of his enterprise and mechanical genius. He rendered untold services to his country through his research and inventions, during the Spanish American and World Wars. When he died in 1915, the city of Baltimore sustained a real loss, for no one person or company has spread the name of its city more widely or made its name so well known throughout the scientific world.