

1953

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### Recommended Citation

Fred E. Inbau, The First Polygraph, 43 J. Crim. L. Criminology & Police Sci. 679 (1952-1953)

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## THE FIRST POLYGRAPH

Fred E. Inbau

The author is Professor of Law at Northwestern University and Managing Director of this publication. Professor Inbau, an authority on lie detection, is the author of *Lie Detection and Criminal Interrogation*, the third edition of which is now in preparation.—EDITOR.

Generally overlooked in the history of the lie-detector technique is the fact that the so-called "Polygraph" was in existence at least as early as 1906. Its invention, of course, was not for lie detection purposes but rather for use in medical examinations. Nevertheless, it did contain the essential features of the present day instruments and its construction was based upon precisely the same principles.

The inventor of the first polygraph was Sir James Mackenzie, a famous heart specialist of London, England. He first described the instrument in an article entitled "The Ink Polygraph," which appeared in the June 13, 1908 issue of the *British Medical Journal*.

Following is an exact reproduction of Dr. Mackenzie's article, from Volume 1 (1908), p. 1411, of the *British Medical Journal*.

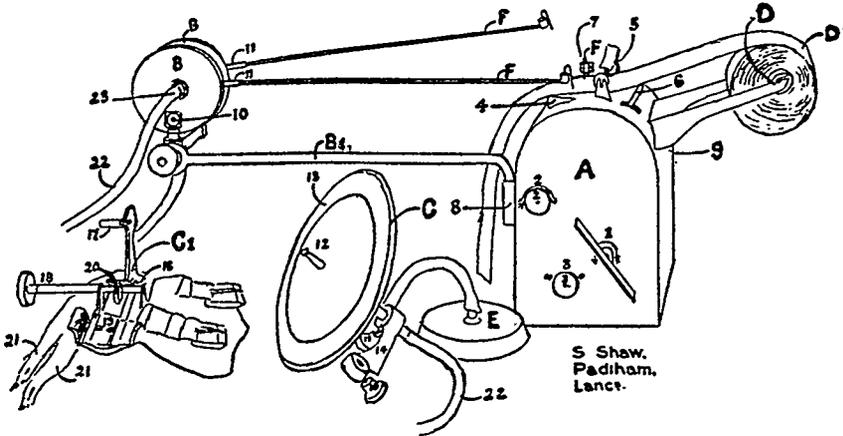
### The Ink Polygraph

"I exhibited at the meeting of the Medical Section of the British Medical Association in Toronto in 1906 a method of recording the movements of the circulation by means of an ink polygraph. I have not hitherto published a description of this method as there has been some difficulty in getting the instrument made, and the maker until lately has not been able to meet the demand for the instrument.

"A long experience in taking graphic records of the movements of the circulation impressed me with the fact that there were many features in these movements which it was impossible to investigate satisfactorily by the methods in vogue. Changes in the heart's contraction that occurred at infrequent intervals, or in great variety, were apt to be overlooked, while the relationship of the respiration has never been satisfactorily worked out. There was a necessity, therefore, to devise a method by which tracings could be taken over a period of time of considerable duration. I conceived the idea that if a roll of paper could be unwound and levers could be made to inscribe the movements in ink, the end I had in view would be achieved.

"I had considerable difficulties to overcome, but found a skilled helper in Mr. Shaw, who not only comprehended and appreciated my ideas, but constructed an instrument that carried them out. The case, *A*, in the accompanying figure contains the clockwork for the roller which unwinds the roll of paper, *D*, and also the separate clockwork which moves the time-marking pen; *B*, *B* are the two tambours, and *F*, *F* their levers, one of which is represented raised, while the pen of the other is resting on the paper. The writing pens are narrow grooved wires, one end fixed to the bottom of a small cistern at the free extremity of the lever. The other end of the grooved wire is adjusted

barely to touch the paper. The ink is put into the tiny cistern, and it flows along the grooves to the pen-point by capillary attraction. If the pens are kept clean and the ink is free from dust, they serve their purpose most admirably and are ever ready for use.



“As the radial pulse is the most serviceable of standards, a special method is employed to record it. A splint, *C*, somewhat like that belonging to a Jaquet sphygmograph, is fastened to the wrist in such a manner that the pad of the steel spring falls on the radial artery and is pressed down by an eccentric wheel, *18*, until a suitable movement is transmitted to the spring by the artery; then the broad tambour, *C*, is fitted on to the splint so that the knob, *12*, falls on the moving spring. This wrist tambour is connected to the tambour, *B*, by india-rubber tubing, *22*, *22*, and the movements of the radial pulse are recorded by the lever, *F*. The shallow cup (receiver), *E*, is placed on the pulsation which it is desired to record, and the movement is conveyed to the lever, *F*, of the other tambour. In this way simultaneous with the radial pulse a record can be obtained of the apex-beat, carotid, jugular, or other pulses.

“To record the respiratory movements a bag can be substituted for the receiver, *E*.

“By turning the screw, *3*, the rate at which the paper passes can be quickened or slowed at will. This is of the greatest use, for it often happens that in quickly succeeding events a wider interval may be required, whereas in recording respiratory movements a slow rate is best. As the time-marker registers one-fifth of a second and is driven by a separate clockwork, the rate of the recorded movements can always be ascertained with absolute accuracy.

“It has been suggested that another tambour should be added to record three movements, and I have tried this, but I have practically discarded it, as, though it might be of use occasionally, it would complicate the apparatus unnecessarily. When making observations single-handed the two tambours are quite sufficient to occupy attention. With a little practice this apparatus can be used with the greatest facility. In the course of a few minutes the different movements can be recorded with the patient sitting up or in the recumbent position.

“When the tambour is strapped to the wrist to take the radial pulse, one hand is always free to start the machine and to replenish the ink or regulate the rate, the other hand holding the receiver over the movement to be recorded.

“The instrument is made by Mr. S. Shaw, instrument maker, Padiham, Lancashire.”

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This interesting historical information about the “Polygraph” came to my attention for the first time while reading an article entitled “The Search for the Truth” by William O. Gay, in a 1948 number of the *English Police Journal* (vol. 21, No. 4, at page 284), in which Mr. Gay, while discussing the use of lie-detectors in the United States, made the statement that “the Polygraph is really a modification of a device invented by Sir James Mackenzie, the famous heart specialist.”