The clinical thermoscope and uniformity of means of observation : two notes / by Edward Seguin.

THE CLINICAL THERMOSCOPE

AND

UNIFORMITY OF MEANS OF OBSERVATION.

TWO NOTES.

By EDWARD SEGUIN, M. D.,

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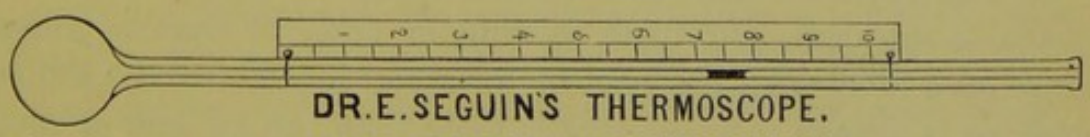
THE CLINICAL THERMOSCOPE.

An Instrument of Diagnosis in Physic and Surgery; a Monitor in the Nursery; a Test in the Physiological Laboratory; also a Necrometer in the Dead Chamber. By EDWARD SEGUIN, M. D., New York.

Mr. President and Confrères: My excuse for occupying the allotted ten minutes of your time with this device of mine, is the growing prevalence in diagnosis of the Hippocratic method of observation "by the body-temperature," instead—without exclusion, however—of the Galenic, "by the pulse-beat." Such solemn *Renaissance* in our art calls out many more workers—that is the reason of my addressing you; and demands some new instruments—that is the reason I have made the thermoscope, intended as a quicker and more delicate test of differential temperatures than the thermometer; and less to give the degrees of the heat, than the velocity of its radiation.

This little instrument is a simple application to medical diagnosis of the principle of physics on which Rumford and Leslie constructed their differential thermometer.



DR. E. SEGUIN'S THERMOSCOPE.

DIAGRAM—HALF-SIZE.

The clinical thermoscope is a glass tube, T, a quarter of a line bore, seven inches long, closed at one end by a bulb, B, nine lines in diameter, and open at the other end, mouth-like, M, by a delicate enlargement of the rod. In this state, it contains nothing but air (Several other forms have been tried, more fitting to the

surfaces of the body, but none favors the movement of dilation of air like the spheroid.).

To make the thermoscope ready for clinical use, its bulb is heated over a lamp or fire, sooner in a bowl of "hot water," and when the air contained in the bulb is dilated a few degrees above the ambient temperature, the open end is quickly plunged in—an inch deep—and quickly withdrawn from another bowl of "cold water." The drop or two, which will have then entered the mouth, is seen to run up the tube. If it stops near the bulb, it will be the "index" of the thermoscope. If it stops sooner, say two or three inches from the mouth, or if it runs into the bulb, the latter was too cold or too hot; we have to jerk away that drop of water and recommence; three or four trials to obtain a good "water-index" take hardly a minute.

In this condition, the air contained behind the "water-index" makes itself isothermal to the ambient temperature, and the thermoscope is ready.

Simpler yet: Over-heat the bulb, let the water run in it. When you want an index, invert the instrument, apply your hand on top; some water will descend in the tube and form an index; then quick, fit your scale to it, look at your watch, all is ready.

It is "applied"—I do not say "introduced"—like the fever or surface-thermometers, anywhere an anomaly of caloricity is known or suspected. Its habitual place (*lieu d'élection*) is not, however, the axilla; it is the shut-hand.

In five to ten seconds the index has attained the maximum height, or fall, of any significance.

To read it, we mark the starting point of the index, the terminus of its course, and the time (in seconds) to reach it.

To take more mathematical observations, a mobile scale is attached to the stem, and made to slide, in order to put its lowest figure on a level with the head of the water-index; so that a thermoscope is always correct—that is more than can be said of most of our clinical thermometers.

But with or without a scale, it gives, by contact, indications, (*a*) at the start of the volume of heat escaping by radiation, (*b*) at the end of its course, of the *portée* or reach of its velocity; whilst, without contact, by gently blowing on the bulb, it shows the degree of combustion which takes place in the lungs, and other phenomena of ustion which I have no place to explain.

Without a scale a mother can tell at what hour the index rose quicker and higher, or quicker only, and not so high, etc. Without a scale, too, a physician who well knows his case, and is short of time can, in less than ten seconds, decide upon the dynamic conditions of the next twelve or twenty-four hours dependent on the waste of caloricity by radiation—that is to say of life itself in many cases—and prescribe accordingly.

The thermoscope may often be called to decide about the precise seat of an affection indicated only by general, reflex, and regional symptoms. For a few days a business man felt dispirited, good for nothing; no hunger, no thrust, no true sleep; complains of cephalalgy, nausea, hypogastric pains. The fifth day he remains in bed, has several shivers; seen in the evening, appearance prostrate, pulse 85, temperature one centigrade-degree above the norme. The family was whispering fears of typhoid fever; but this rise only to 100.4° F. could hardly be found the second evening of the abdominal typhus, but the fifth! . . . Manual examination discovered nothing; the thermoscope revealed no difference of radiation between the right and left iliac regions, but proved a decided rise (half an inch) on the right of and above the pubis. This indication was trusted; warm fomentations *in situ* of a decoction of digitalis leaves and elder blossoms, warm drinks and five grains dover-powder, brought on an abundant diuresis and a profound sleep, followed by an early start for business. What an opening for "medication," if the thermometer had not told what the disease was not, and if a delicate thermoscopy had not limited the sick organ in the painful region.

Besides this daily use, the thermoscope criticises and comments some of the rare enigmatic findings of the clinical thermometer. Called near a man fallen from a three-storey hatchway, I found a compound fracture of one leg, and a fracture of the skull; rather insensible to pain, full connaissance, jactitation with a speck of erotism, pulse confuse, temperature, 98.5° F.; in other terms, at the point of perfect health. Was it derision or delusion? Neither; it was a compound temperature whose component elements escaped the fever thermometer.

I tried the thermoscope; put in the hand, it rose; in the axilla, it rose more; below the sternum, it rose less; in the inner angle of the eye, it fell rapidly. The thermoscope had discovered the point where extravased blood was coagulating—at the base. Thus

became comprehensible that sardonic 98.5° F.=perfect health, in a dying man, as a compound temperature whose composition could be skematically approximated by these figures: 100.3° F. of general pyrexia, balanced by 96.7° F. of hemorrhagic apyrexia, leaves 98.5° F. This thermoscopic analysis saved the man further painful manipulations, and he died, as predicted, inside of three hours.

If we pass from the sick chamber to the death slab, the thermoscope will prove to be yet the only "necrometer" founded upon the radiation of vital temperature, notwithstanding the joke practised on the Paris Academy of medicine, to which *my* physiological thermometer was presented as a necrometer, after displacing the zero from the point of health to a fanciful point of death.

To test the necroscopic power of my new instrument, I repaired to the Bellevue Hospital of this city. By the courtesy of Dr. E. Janeway, I was shown, in the dead-house, about noon, the body of a young woman brought in at 9. A.M. The thermoscope being applied below the sternum, its index did not move from the position it had taken in the ambient temperature of a very cold January day; but put in the axilla, it slowly and steadily rose about 6 centimetres=2 inches. A thermometer inserted instead, and kept in the same axilla fully ten minutes, did not perceptibly move.

So the thermoscope, in contact with the living, shows the activity of their caloricity; and, in contact with the dead, it ceases to indicate heat only when and where organic combustion becomes progressively extinct.

As thousands are and have been buried alive, the invention of a true "necrometer" excites a deep interest, intensified, if possible, since cremation is mooted. For some have knocked at their coffin and re-entered the world. But of what use would it be to knock for help inside of the furnace? The proof of death is wanted now more than ever, and, if I am not mistaken, the thermoscope will give it.

I present this simple and costless instrument to my confrères, as I did seven years ago the "Surface" and the "Physiological Thermometers," begging them to try it in the spirit of candor which made Biot say: "We must not shun the humblest contrivances, when they can improve or supplement our *medical senses*."

NEW YORK, 17 East 21st Street.

MEETING OF THE AMERICAN MEDICAL ASSOCIATION.

DR. SEGUIN ON THE BRUSSELS INTERNATIONAL CONVENTION—IMPORTANCE OF AMERICAN REPRESENTATION—SCIENTIFIC OBJECT OF THE DELEGATION.

LOUISVILLE, Ky., May 5.

The following paper, from Dr. Seguin of New York, relating to the International Convention to be held at Brussels, was read:

To the American Medical Association.

MR. PRESIDENT AND GENTLEMEN: You have twice sent delegates to the British Medical Association and kindred European societies, to invite them to concert a plan of uniformity of methods, instruments, scales, and records for clinical observations. This proposition has become more opportune since the meeting in Paris of the convention for the adoption of uniform weights and measures by all nations, in which convention Profs. Henry and Hilgen represented the United States, but in which the special wants of unity of measures in our profession was not considered. This uniformity of means of observation is advocated by Sir William Jenner, W. Reynolds, Sibson, Stewart, Squire, Sydney Ringer, Wilson and Tilbury Fox in England, and on the Continent by MM. Marey, Charcot, Lorain, Potain, Lepine, Ollier, Chauveau, and other distinguished physicians, all ready to open a commission in Paris and a sub-commission in Lyons, in order to concur in your plan of uniform observations. This plan embraces the unity of clinical thermometer and of the thermometric scales, charts. etc., a uniform graduation of the sphygomagraph, nyograph,

spyrograph, œstheisiometer, manometer, globulimeter, ophthalmoscope, thermoscope, and other instruments of precision used in diagnosis; a uniform method of measuring and registering the hearing, the sight, and the velocity of other sensory impressions, the regularity of co-ordinate movements as the walk, and a uniform registration of all clinical cases according to their kind. Of this plan the International Medical Congress, meeting at Brussels the 19th of September, proximo, proposes to carry out only one part, the uniform measurement and record of hearing by all nations. It is therefore important that the American Medical Association be represented this year at Brussels in order to present and urge there the adoption of their original plan of uniformization of clinical observation in its integrity and entirety.

Dr. Seguin then offered the following resolution:

Therefore, the American Medical Association resolve to nominate new delegates commissioned to again advocate in Europe the unity of clinical observation, and charge them to report in brief at the next meeting in 1876.

NEW YORK, 17 E. 21st st.

In a ordance with these conclusions, the following gentlemen were appointed delegates to the International Medical Convention at Brussels, to the British Medical Association, to the French, German, and other kindred societies: Drs. I. A. Adrian, I. C. Hutchison, I. C. Huff, E. C. Harwood, D. H. Holton, H. R. Warner. The Permanent Secretary of the American Medical Association is vested with the power of adding a few names to this list.