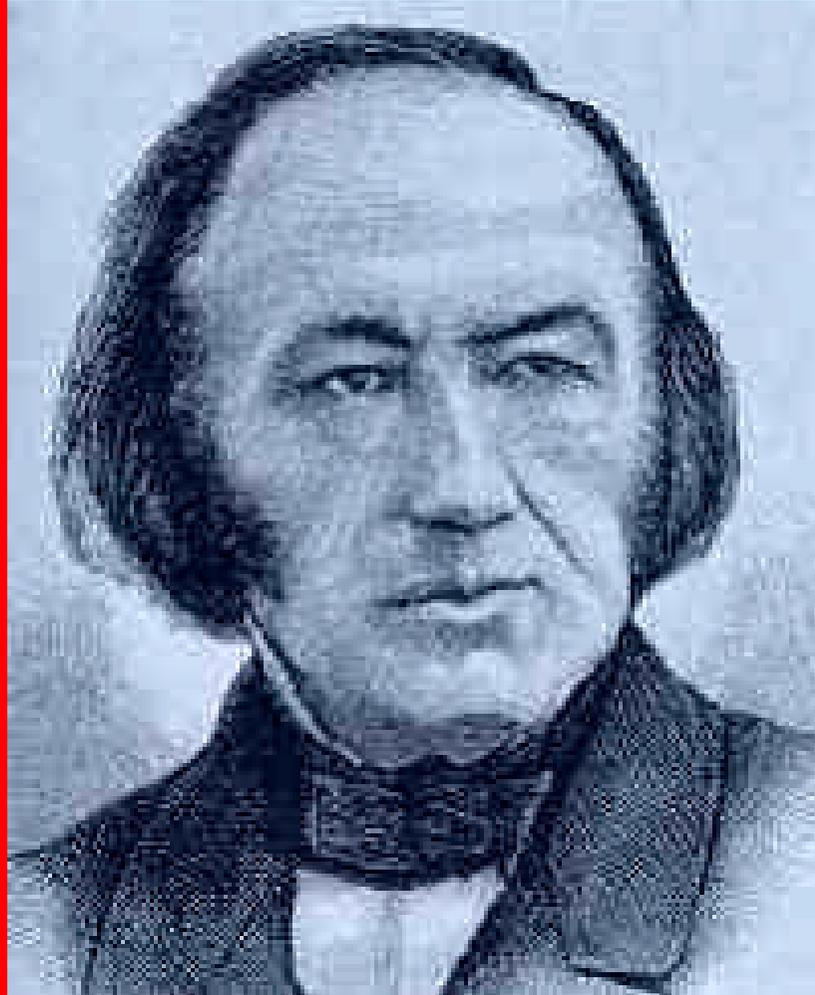


A Question of Balance

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“I consider the hospital the antechamber of medicine, it is the first place where the physician makes his observations. But the laboratory is the temple of the science of medicine.”

--Claude Bernard, 1878

"It is said: medicine is the *art of healing*. Rather, one should say that medicine is the *science of healing*. **The aim of medicine is to arrive at a cure scientifically and not empirically.** The problem that medical practice must resolve is thus immense, for it is necessary to embrace both physiology and pathology before one can achieve a scientifically valid treatment."

Bernard C. Pensées: Notes Detachées". Bailliere et Fils, 1937:

"La fixité du milieu intérieur est la condition d'une vie libre et indépendante"

The fixity of the milieu supposes a perfection of the organism such that the external variations are at each instant compensated for and equilibrated, . . . All of the vital mechanisms, however varied as they may be, have always one goal, to maintain the uniformity of life in the internal environment . . . The **stability of the internal environment** is the condition for free and independent life.

Bernard C. Lectures on the phenomena common to animals and plants. Hoff HE, Guillemin R, Guillemin L. Springfield, IL, Charles C Thomas.



“Organisms, composed of material which is characterized by the utmost inconstancy and unsteadiness, have somehow learned the methods of maintaining constancy and keeping steady in the presence of conditions, which might reasonably be expected to prove profoundly disturbing”.

--Walter B. Cannon, 1932

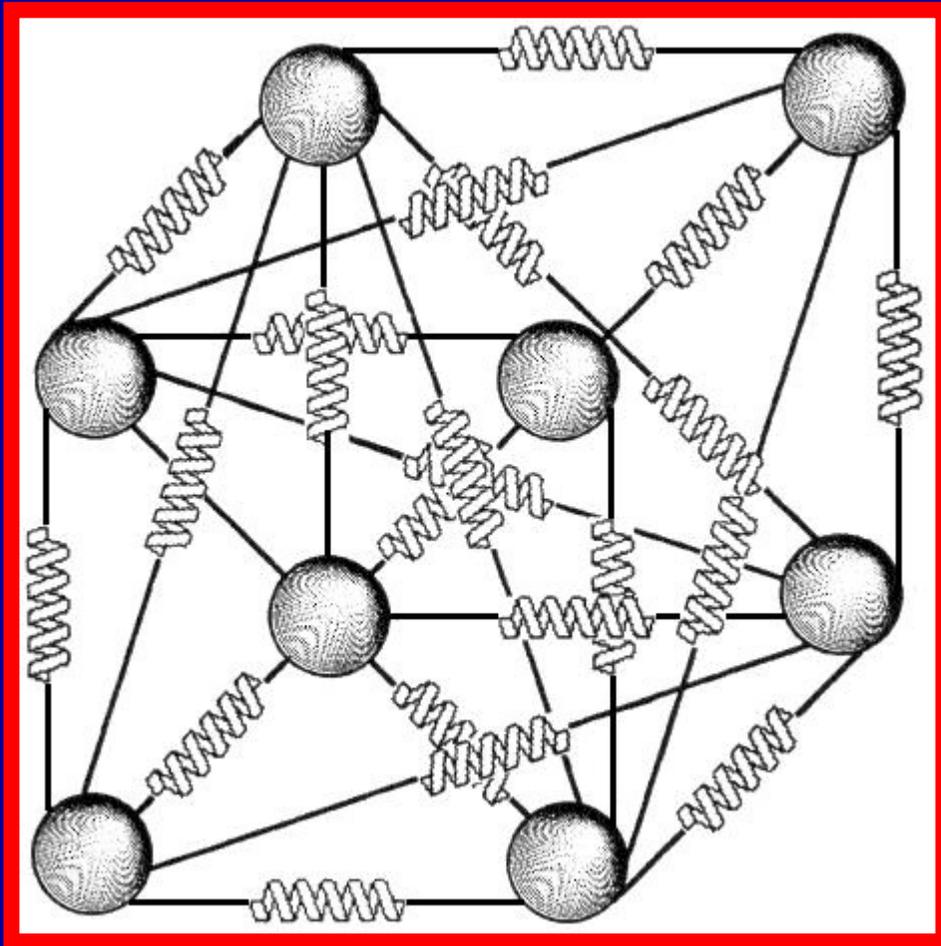
Human Homeostasis

Maintenance of constant weight for 40 years, during which time is processed 6 tons of solid food and 10,000 gallons of water, yet body composition is unaltered.

Loss of Homeostasis in Critical Illness

- Consider SIRS versus CARS, IL-6 versus IL-10
- MODS is homeostasis gone totally array
- Intensivists manipulate the tipping point

Bone RC: Immunologic dissonance: A continuing evolution in our understanding of the systemic inflammatory response syndrome (SIRS) and the multiple organ dysfunction syndrome (MODS). Ann Intern Med 1996; 125: 680-687



**Redundant,
complex,
forward and
reverse servo
signaling,
networked,
dynamic,
genetically
determined,**

Zimmerman JJ. A Question of Balance. Crit Care Med 1999; 27 (1): 7-8

Action

Interval
Change
In Patient
Status

Reaction

Titration
Of Some
Therapeutic
Intervention

ICU
Care
Provision

***Choose a job you love and you will never have
to work a day in your life . . .***

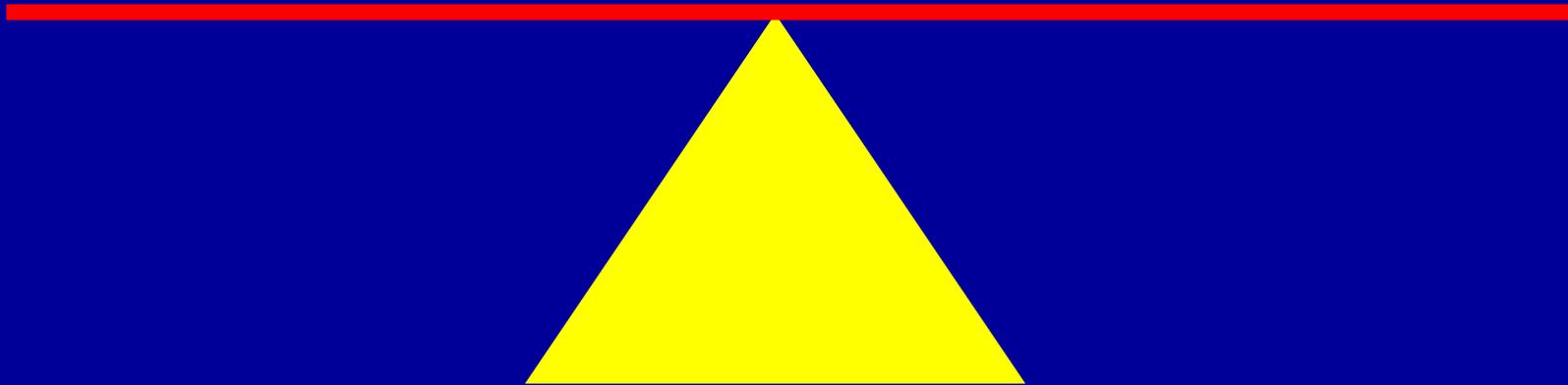
--Chinese Proverb

Behavior is a homeostatic mechanism. The main service of social homeostasis would be to support bodily homeostasis.

--Walter Cannon

Work

Life



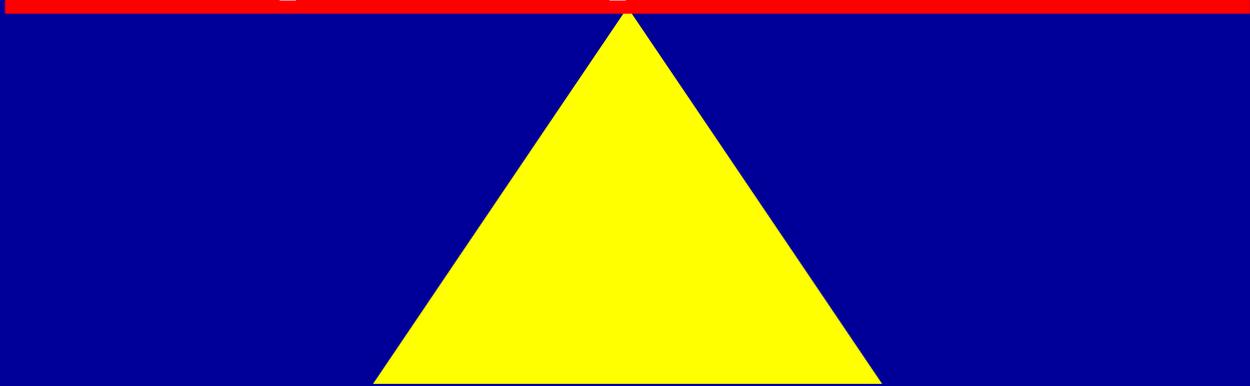
“Much bad medicine is the result of treatment done by old habits, intuition, and the ‘gut reactions’. While these treatments may appear to be tailored to the individual patient, they often lack any supporting research while proven interventions are often ignored or haphazardly implemented.”

--Ezekiel Emmanuel

“It is through the experimental method that science is carried forward--not through uncritically accepting the authority of academic or scholastic sources. In the experimental method, observable reality is our only authority. . . .”

--Claude Bernard

E q u i p o i s e



The Balance

After he had journeyed and his feet were sore and he was tired, he came upon an orange grove and he rested and he lay in the cool. And while he rested he took to himself an orange and tasted it and it was good. And he felt the earth to his spine and he asked and he saw the tree above him and the stars and the veins in the leaf and the light and the balance. And he saw magnificent perfection whereon, he thought of himself in balance and he knew he was . . .

--Graeme Edge and Ray Thomas, 1970



