SOUTHERN

MEDICAL AND SURGICAL JOURNAL.

EDITED BY

HENRY F. CAMPBELL, A.M., M.D.,
PROFESSOR OF SPECIAL AND COMPARATIVE ANATOMY IN THE MEDICAL COLLEGE OF GEORGIA;

AND

ROBERT CAMPBELL, A.M., M.D.,
DEMONSTRATOR OF ANATOMY IN THE MEDICAL COLLEGE OF GEORGIA.

MEDICAL COLLEGE OF GEORGIA.

"Je prends le bien où je le trouve."

VOL. XIV.—1858.—NEW SERIES.

AUGUSTA, GA:
J. MORRIS, PRINTER AND PUBLISHER.
1858.
Observations on Malarial Fever. By Joseph Jones, A.M., M.D., Professor of Physics and Natural Theology in the University of Georgia, Athens; Professor of Chemistry and Pharmacy in the Medical College of Georgia, Augusta; formerly Professor of Medical Chemistry in the Medical College of Savannah.

PRELIMINARY OBSERVATIONS.

In the present state of Medical Science, the complete investigation of all the effects and phenomena of disease, is impossible.

Imperfections in our instruments; imperfections in our methods of analysis and the complicated nature of the phenomena, render physiological and pathological investigations difficult and uncertain.

The truth of this assertion may be established by an examination of the relations of animated beings to exterior inorganic bodies, to each other, and to the physical and chemical forces.

Organized animate bodies are composed of inorganic elements, and are governed by all the laws and phenomena of inorganic bodies, and are absolutely dependent, for their existence, upon inorganic bodies. They have, however, a new set of phenomena, dependent upon the vital force; and in animals we have another set of phenomena, dependent upon the existence of the nervous system and intellectual faculties; and in man we have another set of phenomena, dependent upon the combination of the intellectual with moral faculties.
Inorganic bodies, with their properties, form the necessary conditions for the existence of plants and animals, just as the properties of cohesion and gravitation form the essential conditions for the existence of the universe, in its present arrangement.

The phenomena of living beings, plants and animals, are therefore more complicated, and less general, than those of inorganic inanimate bodies.

Without entering into an enumeration of all the distinctions, between inorganic bodies and animated beings, it may be stated, that inorganic bodies are homogeneous in structure, and would remain forever at rest, and unchanged, physically and chemically, unless acted upon by extraneous forces; whilst, on the other hand, all vegetables from the simple cell, to the most highly developed, and all animals from the simple cell animalcule, to the complicated organism of man, have arisen from cells, and are composed of cells, variously developed, and grouped so as to form organs, and systems of organs, and apparatus, capable of accomplishing definite results, when moved by the proper chemical and physical forces.

The acts of development, nutrition, secretion, excretion and propagation are peculiar to plants and animals, and are directed by the vital force which is incorporated with, and presides over, every molecule of living organized matter, directing all its physical and chemical changes, so that amidst innumerable and unceasing changes the individuality of every organ, apparatus and animal is preserved. Physical and chemical forces exist independently of the vital force. The vital force, on the contrary, cannot exist and manifest its peculiar effects, without matter and the physical and chemical forces.

The germination and development of vegetables and animals, and the maintenance of their life actions, depend essentially upon the correlation of the vital, chemical and physical forces.

The study of complicated, highly developed plants, and animals, involves the consideration of their origin, development, structure, and relations to exterior bodies—involves the consideration of the chemical and physical properties of the elements, and combination of elements, entering into their constitution, and the relations of the constituents of their bodies to the surrounding medium—involves
the consideration of the relations of the vital, chemical and physical forces and intellectual and moral faculties—involves the consideration of the relations of animated bodies to the forces of the sun.

These phenomena may be studied with a greater degree of precision in the lowest orders of plants and animals, whose structures are simple.

As we rise in the scale of vegetable and animal existence the phenomena of life become more complex and less general, and the conditions of existence become more complicated and restricted. The truth of this proposition is illustrated in a forcible manner, by the relation of vegetable and animal existence, to the distribution of the forces of the sun upon the surface of our globe.

Thus, as a general rule, after the inorganic elements and moisture have been supplied, the luxuriance and perfection of plants depend upon the intensity of the forces of the sun. The more complicated and perfect the vegetable structures, the closer is their dependence upon the proper supply and balance of the physical forces. The converse of this proposition is also true.

The truth of this proposition is established by a reference to the distribution of plants upon the surface of our globe, and upon mountains which rise to a great height in tropical countries.

Whilst, in equinoctial and tropical countries, where a sufficient supply of moisture combines with the influence of heat and light, vegetation appears in all its magnitude and glory; on the other hand, in polar regions and upon the summits of lofty mountains, all the more complicated forms of vegetable existence disappear, and lichens and microscopic plants take the place of the majestic forests and impenetrable jungle.

In the tropics, the lowest orders of plants are comparatively rare, whilst in the polar regions and upon the summits of mountains they form almost the entire vegetation. The plants which first form upon barren rocks and lava streams, and coral islands, are those of the most simple organization. The simply organized lichens covering the bald-granite rocks are familiar to every resident of a primitive region.

Along the sides of Etna, Ischia, Vesuvius, and other volcanoes, lava streams are seen stretching in all directions, which have flowed down like rivers. These lava streams are of different ages, and many of them were formed within the memory of
man. An investigation of these lava streams affords an opportunity of determining the gradual distribution of vegetables. Some are still naked—others have only a few plants, scattered here and there, in hollows and crevices, and in others the decaying plants are forming a soil.

According to the observations of Professor J. F. Schouw, the plants which first settle upon the naked lava, and form a soil for the more complex, are especially those lower and simply organized plants called lichens. Certain succulent and fleshy plants, as the Indian fig (Opuntia vulgaris), which are nourished chiefly by the carbonic acid and aqueous vapor of the air absorbed by the stem and leaves, are also amongst the earliest inhabitants of the lava streams. Geology also teaches that the lower orders of plants appeared first upon our globe.

As the luxuriance and perfection of plants depend upon the temperature of the surrounding medium and the intensity of the forces of the sun, so also the perfection of the nervous system; and of all the organs and apparatus, and the activity and intelligence of animals, correspond, in a great measure, to the rapidity of the physical and chemical changes going on in the molecules of their bodies, and to the relations of the physical and chemical and vital forces, and to the temperature which they are able to maintain, regardless of that of the surrounding medium.

As the chemical changes become feeble, and the temperature of animals descends and becomes dependent upon, that of the surrounding medium, they become more simple in their organization and mode of life, the conditions of their existence become less restricted, and they resemble closely the simple forms of vegetables, and in the twilight of existence, we can scarcely distinguish between the lowest forms of plants and animals.

If we examine the relations of the physical and chemical agents to the animal kingdom, we will find that the most simply constructed animals, many of which are devoid of a nervous system and special organs of sense, as the infusoria, are, as in the case of the simply organized plants, the most widely distributed over the face of our globe, and are at the same time far less dependent for their existence upon the temperature of the surrounding medium.

(1) Schouw's Earth Plants and Man.—Bohn's Scientific Library.
Infusoria occur in immense numbers in every situation: in stagnant pools, in marshes, in mud of rivers, in peat earth, twenty feet below the surface; in the structures and fluids of living animals and vegetables, in putrifying organic matter, in the bed and waters of the ocean, in snow, in ice, and in boiling springs. Sir John Ross, in the year 1840, picked up some brash ice, of a brown yellow color, in the Arctic regions, not far from Mount Erebus, which was supposed to contain alluminous matter, ejected in fine ashes from the volcano. Specimens were brought home in sealed glass vessels, and forwarded to M. Ehrenberg. This microscopist found the coloring matter to consist of myriads of infusoria, almost the whole of which reached Berlin in 1844, in a living state.

Here we see that these microscopical animals, after having been frozen and thawed out, lived without food for four years.

Certain species of these animalcules have been found living and propagating in boiling springs, and some of them have been observed to recover, after drying in vacuo along with chloride of calcium and sulphuric acid for twenty-eight days, and after exposure to a heat of 248°.(2)

The infusorial animals were created at an early geologic period, and a large number of the fossil species which compose the Polirschiesfer and semi-opal of Bilin, are found at the present time living and propagating in the seas and oceans. The infusoria form a chain connecting the organic life of distant ages of the earth, and demonstrating, conclusively that the distribution of animals, and the power to survive physical changes, depends upon their development.

The simpler the structures, the feebler the vital, nervous and physical forces, the less complicated the conditions of existence. The gelatinous meduse (Gelly fishes) occur in such vast numbers in the cold Greenland sea, that they impart an olive-green color to the sea, rendering the water dark and opaque in comparison with the ordinary cerulean hue.

(2) See experiments of Doyère, in Mém sur les Tardigrades, et sur leur proprete de revenir à la vie, 1842, pp. 119, 129, 131, 133. Also, Ehrenberg's Die Infusions-thierehen, als vollkommen Organismen, 1838.

The space allotted to this article will not allow us to enter more fully into the consideration of the distribution and relation to the physical forces, of the other members of the invertebrate kingdom.

These facts are sufficient to illustrate for this class of animals, this law, which has an immediate bearing upon our investigations.

Cold-blooded vertebrate animals, although more highly organised than invertebrate animals, still show remarkable powers of enduring extremes of heat and cold, without death. Fish may be frozen and again thawed out without a destruction of life. *The rapidity with which the absence of heat is attended with loss of sensibility and death, is directly proportional to the development and perfection of vertebrate animals.*

The relations, between the physical, chemical and vital forces, are strikingly exhibited in certain cold and warm-blooded vertebrated animals, which become torpid or hibernate during the winter season. In this state, all the chemical and physical actions are of the most sluggish character. The heart scarcely beats, the frequency and force of the action of the heart, and flow of the circulation, is greatly diminished, if not entirely stopped. The amount of carbonic acid thrown off from the lungs is greatly diminished, and all the chemical and physical changes of the elements of the tissues, and fluids and organs of these animals, are retarded.

If the temperature of a warm-blooded animal be reduced in like manner, all its physical, chemical, and vital actions will be depressed, and the active animal will be reduced to the condition of a sluggish cold-blooded animal, and death will rapidly ensue. There is, however, this great difference between the cold and warm-blooded animal—*the conditions of the existence of the latter are far more restricted than those of the former.*

The chemical changes of the cold-blooded animal are slow, and it can exist without food for weeks and months, whilst a few days starvation is fatal to the warm-blooded animal.

*These facts demonstrate conclusively that the conditions and phenomena of life are complicated and restricted, in exact accordance with the development and perfection of the organs and tissues of animals, and the rapidity of the chemical and physical changes of the molecules of their bodies,*
To understand the bearing, complication and imperfections of pathological investigations, we must take a general view of the most important phenomena and relations of man. Those who would attempt to investigate pathological and physiological phenomena, must first form clear conceptions of the phenomena to be investigated, and the perfection of the methods and instruments capable of being employed in these investigations.

Man is composed of inorganic elements, prepared and grouped into definite compounds in the vegetable kingdom, by the combined actions of the vital force, and the physical and chemical forces of the sun.

Man is governed by all the laws and phenomena of inorganic bodies, and is absolutely dependent for his existence upon the existence and mutual relations of inorganic bodies.

As all the motions, in the various forms of inorganic matter upon the surface of our globe, are excited by the forces of the sun, in like manner, all the forces of man, are dependent through vegetables, upon the forces of the sun. As there can be no creation of force in inorganic matter, independent of the Deity, so man, although an active being, cannot create any force, however feeble, any more than he can create or annihilate a particle of matter. His forces are the resultants of the chemical changes of those substances, which, in the vegetable kingdom, have been elevated into a state of force by the action of the sun.

The mechanical power which man, or any animal, is able to exercise, is exactly proportional to the amount of food consumed, assimilated and chemically altered in the production of the nervous and muscular forces. The power of a well-constructed steam-engine, is exactly proportional to the amount of fuel consumed, or, in other words, is exactly proportional to the amount of chemical action. The amount of chemical action is exactly proportional to the amount of force derived from the sun, and expended in grouping the molecules of matter, in such a manner, as to be capable of chemical change and development of physical force. The power of falling water which turns the water-wheel, and accomplishes various mechanical operations, is the resultant of the combined actions of gravity, and the heat of the sun. The laws of physics apply as well to the human machine in action, as to the changes in the exterior universe.
Man is the most perfect engine that has ever been constructed for the same amount of chemical combinations and decompositions, he produces a much greater amount of work than the most perfect engine.

Man has other phenomena besides the physical and chemical. He is a machine and something more. The generation, development, constitution, and structure of man is similar to that of all vegetables and animals.

Man, in common with vegetables and animals, is endowed with vital force, and like them is dependent for his existence and action upon exterior bodies, and the physical and chemical forces.

Man, in common with all animals, and in contra-distinction to vegetables, possesses a nervous system, endowed with special sensibilities.

The nervous system is the apparatus which relates man and animals to the exterior world, and also relates the various organs and apparatus to each other, in such a manner, that amidst an innumerable number of complex actions, unity and harmony result.

*Man possesses not only a vital force, an organism composed of inorganic elements, perfect in its mechanical structure, and material arrangements of its parts, and a nervous system endowed with special sensibilities; but he also possesses an intelligence endowed with special faculties, capable of receiving impressions from the motions of exterior bodies, and of exciting the forces by which it is surrounded, and a moral nature which relates him in a peculiar manner to the universe.*

The possession of moral and intellectual faculties combined, distinguishes man from every other form of matter, and every other being upon our globe.

The immaterial, intellectual, moral soul of man has no direct communication with the exterior world. The mind receives impressions, transmits its volitions, and excites the mechanical structures of the engine by which it is environed, through the nervous system which is endowed with special sensibility. The impressions of exterior bodies, upon the nervous system, is always attended by a change of the structure of the nervous system.

All the organs of sense are excited by changes of matter. The excitement of the nervous system and transmission of the
impressions are attended by a change of matter. Every act of
the mind which excites the nervous system, is attended by a
change of the chemical elements of the nervous system. Every
action excited in the mechanical apparatus by the nervous system
is commenced and sustained by a physical and chemical change
of the elements of the muscular system, and nutritive fluids.
The intellectual and moral faculties of man work only through and by the
physical and chemical forces; they are distinct from matter, they excite
matter to action, they direct and control the actions of matter.

By his intellectual moral nature, man overcomes all the barriers and
obstacles of nature, not by a suspension or alteration of her immutable
laws, but by peculiar applications of those forces and laws.

The material portion of man is composed of the same elements as the ex-
terior world. It is governed by all the astronomical and chemical and phys-
ical laws of inorganic bodies, and comprehends within itself all organic
nature. The size of his organs, the strength of his muscles and
bones, and the vigor of his forces, have all been constructed
with exact reference to the force of gravity, the size of our
globe, and its relations with the sun, and all other worlds in the
universe. Man revolves with the earth and planets around the
sun, and the whole system moves forward in space at the annu-
al rate of one hundred and fifty millions of miles, around a dis-
tant unknown centre. Like plants and animals, his existence
is dependent upon the length of the day, and of the year, which
are dependent upon the adjustments of the solar system. His
existence, through plants, is absolutely dependent upon the
intensity of the forces of the sun. If the distance from the
earth to the sun be increased or diminished, the structure of
many inorganic bodies would be changed, the conditions of ex-
istence would be correspondingly altered, and all vegetable and
animal life would be destroyed.

The molecules composing the structures of man, like the im-
mense masses of matter which are scattered through space, are
in a state of unceasing activity. As each star has its own ap-
propriate motions, its own peculiar offices to perform, so each
molecule of matter, each organ and tissue in the body of man,
has its own peculiar motion, its appropriate office to perform.

As the universe is governed by a Being, infinite in wisdom
and in power, who constructed, controls and directs matter and
all its chemical and physical actions, so the material part of man, this little world, is governed by an intelligence distinct from matter, which works by and through matter, and moulds exterior material nature, after the ideal creations of its own interior immaterial nature. Man then is a type of the universe. It is evident, therefore, that to understand the phenomena of man in health and disease, and his relations to the universe, we must comprehend the phenomena and mutual relations of all animate and inanimate bodies, terrestrial and celestial.

If the phenomena of man in health be thus complicated, how much more complicated must they be in disease, where the complex constitution of his solids and fluids may be altered in many ways, and the relations between the vital, chemical and physical forces deranged.

Any one of the normal constituents of his body may be deranged, and occupy different relations to each one of the other constituents. As these constituents are numerous, the resulting derangements may be correspondingly numerous. The forms of this class of diseases may be as numerous as the different positions which the elements may be made to assume towards each other.

Any one of the elements of his body may be in excess or deficiency, and the diseases may be as numerous as the elements themselves, and at the same time totally different from the diseases arising from an alteration in the relative positions of the elements.

Foreign morbid agents may be introduced into the fluids and solids, which will excite abnormal changes in the elements of the solids and fluids. The number of diseases of this class will correspond to the number of distinct morbid agents. Combinations of these morbid agents may produce still more numerous and complicated diseases.

The Creator has associated the vital force with a definite constitution of matter. Whatever interferes with this constitution, interferes with the action of the vital force. Whatever interferes with the vital force, necessarily disturbs its relations with the physical and chemical forces. If the balance of the forces, their correlation be disturbed, the chemical actions between the elements may not only be deranged in kind, but also in degree, and the generation of the physical forces which work the machinery, and the manifestation of the intellectual and moral phenomena will be correspondingly altered.

One or two, or all of these causes of disease may act at once, or successively, and thus render the results still more complex.
The relative intensity of the effects of disease will depend upon the perfection of the constitution and relations of the organs, tissues and apparatus, and upon the power and correlation of the vital, chemical and physical forces. As no two human countenances are exactly alike, as no two temperaments are exactly alike, as the chemical actions and forces of different individuals vary, so also will the effects of disease vary.

The nervous system is the last and most perfect work of the vital force, and thus the index of the power of the vital force. The nervous system not only forms the medium of communication between the intellectual faculties and the exterior world, but it also forms the medium of communication between the organs and apparatus, solids and fluids of the economy. That the nervous force is nothing more than a higher development of the vital force, is evident, from the fact that plants, and the simply constructed animals, which are devoid of a nervous system, are capable of carrying on the offices of generation, development, digestion, assimilation, nutrition, secretion, excretion, and preserving a definite form amidst unceasing changes. Many of the simply organised animals, although without a nervous system, still possess sensation and voluntary motion. The nervous system appears only when the parts of the machinery are complicated, and need a special means of communication.

The development and perfection of the nervous system corresponds exactly to the development, perfection and complication of the organs and apparatus.

This fact is true of the animal kingdom in its successive degrees of development, and also of the successive stages of the development of the solids and fluids of each individual highly organized animal. Physical and chemical actions take place in a similar manner in all animals, simple or complex; they differ only in intensity. The higher the animal, the more complicated its parts, the more rapid the chemical changes and consequent generation of the forces, and the greater is the necessity for some special apparatus endowed with a high vitality, which will bring all these complex organs and actions into relation. Unless the actions of different organs can be telegraphed (so to speak) to each other, confusion in a complicated organism will necessarily result. Thus, if the amount of blood circulating through any
organ, and the chemical actions, are too great, how can they be regulated without some medium of communication with the other parts of the system, and some means of regulating the chemical and physical actions? To the nervous system is delegated this property of regulating the actions of the organs and apparatus, and thus regulating the amount of oxygen and blood supplied to the organs and tissues and apparatus.

The blood supplying the nutritive elements of the tissues and organs, and the materials for the secretions and development of the forces, and oxygen being the active agent in all the chemical actions of the bodies, it is evident that whatever disturbs the constitution of the nervous system, necessarily disturbs the functions of the apparatus and organs and produces corresponding alterations in their secretions and excretions. As the integrity of the nervous system depends upon the integrity of the blood, in like manner, whatever alters the constitution of that fluid, will produce aberrated action in the nervous system, and in turn, this disturbance may extend itself indefinitely.

*Disease then, whether arising in the organs, or in the blood, or originally in the nervous system, will always be attended by aberrated nervous action. The most prominent symptoms of disease therefore will be connected with the nervous system. In all our investigations into the causes and effects of disease, we should always remember, that the origin of the disease may be connected with derangements in the constituents of the blood and all the organs, independent altogether of the nervous system. Thus in malarial fever, the poison, whatever it be, is rapidly destructive of the colored blood corpuscles, and destroys the ferment in the blood, which converts the animal starch into grape sugar, it also produces profound alterations in the structure of the spleen and the blood which it contains. Now, these effects, in the beginning, may take place entirely independent of any alteration in the nervous system.

The nervous system will be secondarily affected, and its action seriously disturbed, and this disturbance will give rise to a distinct set of phenomena, but it is evident that the cause and origin of the disease lies back of this disturbance.

In the investigation of the origin, causes, effects and treatment of disease, the constitution of all the fluids and solids of all the organs and
tissues, of the blood, secretions and excretions, should be carefully ascertained and compared with the standard of health. All the chemical and physical changes, and the relations of the vital and physical forces, should be ascertained.

The temperature, the amount of chemical change, the alterations in every organ and tissue should be determined. How can these things be accomplished when physiologists and pathologists are not acquainted with many chemical changes going on in the body:—when they dispute about the origin and offices of some of the most important constituents; and know little about the origin and offices of the extractive matters of the blood and urine: when they are ignorant of the offices of the spleen, supra-renal capsules, thymus and thyroid glands: when they cannot even explain the mode of origin, propagation and death of the solitary gland cells of the blood, which elaborate the materials for the nervous and muscular systems: when they possess no absolutely accurate method of analyzing the blood, or of determining the amount of the products thrown off from the lungs and skin? It is important that we should know and acknowledge our ignorance and weakness.

At the very outset, I acknowledge that these physiological and pathological investigations, which I hope to present from time to time, are imperfect in many respects. They could not be otherwise in the present state of science, and especially when I had to act as physician and surgeon to one hundred patients, and at the same time, conduct the investigations.

I have determined to present them in their imperfect condition, because they were instituted with a desire to discover the truth, and with the hope that I might acquire during their prosecution, sufficient knowledge to point out to the young members of the profession, the difficulties and methods of conducting such investigations; and because they were conducted at a sacrifice of much time, money, and health.

"Art is long and time is fleeting,
And our hearts though stout and brave,
Still like muffled drums are beating
Funeral marches to the grave."

I think and hope that they will at least demonstrate the impossibility of the successful investigation, of all the phenomena of disease, by a single individual, and lead to unity and concert of action amongst investigators.
In pathological investigations, we need in this country, above all things, an organised corps, who would make a division of labor. We should have a separate investigator for the careful examination of each one of the following subjects:

The analysis of the urine (1); blood (2); determination of animal temperature (3); functions of skin and lungs (4); record of symptoms and treatment (5); meteorologic, geologic, and topographical investigations, and record of mortuary statistics (6); examinations chemically and microscopically of the structure and alterations in the nervous system after death (7); and of the liver and bile (8); of the alimentary canal with its secretions and excretions (9); and of the kidneys and the other organs (10).

If a corps of intelligent, generous-minded observers would act with zeal and unity, the results for medicine would be of the most momentous character. It would, in time, rank amongst the exact sciences, and the physician would become a true prophet; and instead of the frequent disagreement between theory and practice, and between rival schools, we would have harmony; instead of distrust in the public, and even in the minds of physicians, themselves, we would have confidence.

These investigations were conducted in the Savannah Marine Hospital and Poor-house, and two hundred and fifty patients suffering with the different forms of malarial fever, came under my observation.

I would here acknowledge my obligations to my friend and former colleague, Dr. Richard D. Arnold, Professor of the Theory and Practice of Medicine in the Savannah Medical College, for his kindness in resigning into my hands, the charge of the Savannah Marine Hospital and Poor-house.

I would also, return my thanks to Theodore McFarland, M. D., and Mr. Robert Myers, student of medicine, in the Savannah Medical College, for valuable assistance during post-mortem examinations.

The medical topography of Savannah will be considered more fully hereafter. The following brief statement will give a general idea of the medical topography.

Savannah is situated on the Savannah river, eighteen miles from its mouth, upon a sandy plain, elevated forty-two feet above half tide. On the north, this plain is terminated abruptly by the Savannah river, a turbid stream, pursuing its sluggish
course through the low-grounds and rice-fields of South Carolina and Georgia. On the east and west, the city is flanked by extensive tide-swamps, formerly under wet culture, at the present time under dry culture. The sandy plain extends for several miles beyond the city. Savannah, therefore, is surrounded on all sides, except the south, by malarious districts.

SECTION I.—INTERMITTENT FEVER.

CASE I.—Seaman, entered Savannah Marine Hospital September 29th, 1857; native of New York; age 22; height 5 feet 4 inches; weight 140 lbs.; black hair, and florid complexion; handsome, intelligent countenance; sanguine nervous temperament. Has never been sick before. Has been in Savannah two weeks, and this is his first visit. Slept on board the ship the first week, and the last week slept at the "Sailor's Home," on the bay. Says that he was taken sick four days ago, with chill, vomiting, and pains in all his bones, and has had a chill every day since, commencing regularly at 12 o'clock M. Had a chill this day, commencing a few minutes after 12 o'clock M. Says that he took three blue pills and castor oil, night before last. This medicine operated twice.

7 o'clock P.M., Sept. 29th. Has fever, and complains of pains in his joints. Slight tenderness upon pressure of epigastrium; tongue clean, moist, red at tip and edges; papillae enlarged and of a bright red color. Reaction of saliva decidedly acid.

Pulse 120. Respiration 32, full, thoracic.

Temperature of Atmosphere, 79°F.

" Hand, 103°33' under Tongue, 106°

B. Calomel, grs. xij.; sulphate of quinia, grs. vij. Mix, and administer immediately, and follow with castor oil in four hours. As soon as fever remits, give sulphate of quinia, grs. v., every three hours, up to grs. xxv. During fever, give soda powders (pulveres effervescents tartarizati). Diet, gruel and flaxseed tea.

Sept. 30th, 1 o'clock P.M. Medicine operated freely, and says that he is much better, but complains of weakness. Tongue presents the same appearance; skin cool and relaxed; face not so much flushed.

Pulse 70, regular. Respiration 22, regular and gentle.

Temperature of Atmosphere 68°F.

" Hand, 92° under Tongue, 99°5'

Amount of urine passed the last 18 hours, grains 23,220.

Amount of urine excreted each hour, grains 1,290.

Calculated amount of urine for 24 hours, grains 30,952.

Reaction of urine decidedly acid.
This is characteristic of the urine of fever; the acidity is in proportion to the severity of the attack. The acidity is more intense in remittent than in intermittent fever, and still more intense in congestive fever, than in intermittent and remittent fever.

Color of urine, light orange. Urine passed last evening and night up to 11 P.M., specific gravity 1011, color a shade higher than that passed this morning. Specific gravity of urine passed from 11 o'clock P.M., last night, up to 1 o'clock P.M., this day, 1008.

Uric acid in whole amount of urine passed in 18 hour, (grs. 23,220). grs. 1·0035
" " " calculated " " " " 24 " (grs. 30,952). " 1·3376
Uric acid in 1000 parts of the night urine, (sp. gr. 1,011) 0·0494
" " " " " " morning " (sp. gr. 1,008) 0·0396

Up to this time, 1 o'clock P.M., has taken 20 grains of sulphate of quinia, and the action of this medicine may be connected with the marked diminution of the uric acid.

The urine was set aside and examined under the microscope after successive intervals. After standing 48 hours, there was a small light yellow deposit, which, under the microscope, was found to consist of small vegetable cells of several shapes—globular, elliptical, and acicular. When viewed under a low magnifying power, these cells resembled a collection of globular and acicular crystals of the urates of ammonia.

A careful examination under the microscope, with the appropriate chemical re-agents, demonstrated that they contained no uric acid or inorganic salts, but were of vegetable origin. The size of the cells were many times less than those of the torula cerevisiae.

5 o'clock P.M. Half an hour ago was taken with chill and vomiting. Now the chill appears to be subsiding, the shaking and contraction of the muscles is diminishing. Extremities cool, whilst the head and trunk are hot and pungent to the hand.

Pulse 108. Respiration 30, labored, thoracic.

Temperature of Atmosphere, . . . . . . . . . 74°F.
" Hand, . . . . . . . . . . . . . . . . . . . . . . . . . . . . 91°
" under Tongue, . . . . . . . . . . . . . . . . . . . 105°5'

Instead of a reduction of temperature in the trunk and head during chill, there is a decided elevation. The sense of cold arises from a want of circulation in the capillaries of the extremities.

The patient had taken 20 grains of the sulphate of quinia before the chill came on. This did not arrest, but delayed the chill for several hours.

4. Spirits of Mindererus f ½ iss. in sweetened water.
8½ o'clock P.M. Says that he is more comfortable.

Pulse 108. Respiration 32, not so thoracic and labored as during the chill, but still thoracic and labored.
Temperature of Atmosphere, . . . . . . . . 73°F.
" " Hand, . . . . . . . . 103.5°
" under Tongue, . . . . . . . . 105°
Slight tenderness upon pressure of epigastrium. Reaction of saliva decidedly acid. Tongue red at tip and edges; papillae enlarged and red.
Amount of urine passed from 1 P.M., (8 hours), grs. 5,100.
Calculated amount for 24 hours, grs. 15,300.
Amount of uric acid in 5,100 grs. of urine, grs. 2.
" " 15,300 " " 6.
Uric acid in 1000 parts of urine, 0.3921.
Specific gravity of this specimen of urine excreted during the chill, 1020. Color normal. Reaction decidedly acid.
The uric acid has increased in amount during the chill and commencement of the fever: when compared with the former specimens of urine, it is, however, still below the standard of health. If the diminution of the amount of uric acid be due to the action of the sulphate of quinia, it shows that this action of this remedy pointed out by Ranke, 3 is not necessarily attended with a disappearance of the chill.
Amount of urine excreted hourly during last 24 hours, grains 1,180.
Amount of urine passed in the last 24 hours, ending Sept. 30th, 8 o'clock P. M., grs. 28,320.
Amount of uric acid in grs. 28,320 of urine, grs. 3.0035.
B. As soon as fever remits, give sulphate of quinia, grs. v., every three hours, up to grs. xx. Diet, gruel.
October 1st, 11 o'clock A.M. Says that he is better, and has no pain, except a slight headache, and was in a perspiration all night. Fever intermitted at 12 P.M.
Skin cool. Pulse 76. Respiration 23.
Temperature of Atmosphere, . . . . . . . . 70°F.
" " Hand, . . . . . . . . 95°
" under Tongue, . . . . . . . . 98°5'
Has taken 15 grs. of sulphate of quinia since the intermission of the fever.
B. Continue sulphate of quinia up to grains xxv.
Diet, mutton soup, gruel and tea.
Reaction of saliva slightly acid. Reaction of urine decidedly acid. Urine clear, no deposit, and a shade higher colored than normal.
Specific gravity of the urine passed during the first half of the night, 1010.
Specific gravity of the urine passed subsequent to 12 M., last night, 1012.
Amount of urine passed during the last 15 hours, grs. 19,209.
Calculated amount of urine for 24 hours, grs. 30,734.
Amount of urine excreted each hour, grs. 1280.
October 2nd, 11 o'clock, A.M.—Says that he feels badly; had no chill yesterday evening, but the fever came on at 7 o'clock, P. M. Suffered with headache, and was restless, without sleep during the night. Skin soft and moist; slight tenderness upon pressure of epigastrium; tongue redder and dryer than yester-
day, but still soft and moist; reaction of saliva, acid; face flushed.
Pulse 84. Respiration 32.
Temperature of Atmosphere, ............... 74° F.
“ Hand, ............... 100. 5'
“ under Tongue, ............... 102
The fever is subsiding. Urine of a deep orange color: higher colored than yesterday; turbid, with slight deposit. Reaction, alkaline, after standing 20 hours; it was acid when first voided.
The deposit is due to the precipitation of the alkaline and earthy phosphates, in combination with the ammonia, generated during the decomposition of the urea.
As far as my experience extends, the rapid change from the acid to al-
kaline reaction of the urine is, in malarial fever, a sign of convalescence.
Every specimen of urine excreted during the active stages of malarial fever, which I have examined, gave a decided acid reaction, and the in-
tensity of this reaction corresponded to the intensity of the disease. As the disease declined, the reaction of the urine became less acid, and the tendency to fermentation, and the development of an alkaline reaction increased.
Amount of urine passed during the last 24 hours, grs. 15,810.
“ of uric acid in 15,810 grs. of urine, grs. 9.300.
Specific gravity, 1020.
Uric acid in 1000 parts of urine, 0.588.
Amount of urine excreted hourly, grs. 658.
Has not had a movement of his bowels since the operation of
the calomel.
F Calomel grs. vi; sulphate of quinia grs. vi; castor oil in four hours. After the action of the calomel, commence with sulphate of quinia, grs. v, every three hours up to grs. xv.
October 3rd, 11 o'clock, A.M.—Says that he feels much better, and has “no pain, except a slight soreness in his bones.” Tongue clean, moist, and only a shade redder than normal. Papillae still enlarged, red and distinct. Reaction of saliva, acid. No pain upon pressure of epigastrium. The fever intermitted yester-
day afternoon, and he has had no return.
Temperature of Atmosphere, ............... 74° F.
“ Hand, ............... 96°
“ under Tongue, ............... 93°5'
Color of urine a shade lighter than normal, and in 22 hours after it was voided, let fall a copious light yellow deposit of triple phosphate and urate of soda. 20 hours after it was voided, its reaction was decidedly alkaline. It was acid when first voided, but much less acid than during fever. The urea has also undergone decomposition much more rapidly, because it has become decidedly alkaline in the same time in which the febrile urine remained decidedly acid. When first passed, the urine was clear, devoid of sediment. The deposit in the urine which had stood over night, was due in a great measure to the precipitation of the phosphates, by their union with the ammonia generated during the decomposition of the urea.

Amount of urine passed during the last 24 hours, grs. 18,180. Specific gravity 1010.

Amount of urine excreted hourly, grs. 757.5. Uric acid in grs. 18,180, of urine, grs. 8.100. Uric acid in 1000 parts of urine, 0.445.


October 4th, 11 o'clock A.M. Much better. Has had no return of chill and fever. Tongue clean and papillae not so distinct and red. Bowels opened twice.

Pulse 60. Respiration 20.

Temperature of Atmosphere, .... 72°5' F. " Hand, .... 96° " under Tongue, .... 99°5'

Reaction of urine after 18 hours strongly alkaline. It emits ammonia. When a rod dipped in hydrochloric acid is held over the urine, it emits heavy fumes of hydrochlorate of ammonia. Heavy light yellow deposit.

Amount of urine passed during the last 24 hours, grs. 20,520. " " " hourly, grs. 855.

Specific gravity, 1018.

R. Officinal infusion of quassia and soda. Continue snake-root tea.

October 5th, 11 o'clock A.M. Has had no return of fever, and complains of nothing except weakness. Tongue clean, moist and soft; papillae still redder and more enlarged than normal; skin soft and cool; reaction of saliva acid.


Temperature of Atmosphere, .... 70°F. " Hand, .... 96° " under Tongue, .... 99°33'

Urine normal in color. Specific gravity 1015. Amount of urine excreted hourly, grs. 1268.
Amount of urine passed in last 24 hours, grs. 30,450.
" Uric acid in grs. 30,450 of urine, grs. 15,000.
Uric acid in 1000 parts of urine, 0.492.
After standing 12 hours, alkaline reaction and a light yellow deposit.
This patient continued to improve, and left the hospital on the following day. He returned to the same locality on the bay, and was exposed to the damp north-east winds blowing over the river and low grounds of South Carolina.
He returned to the hospital October 18th, with an attack of chill and fever, of the same type as the one we have just described. The chill came on every day.
The annexed Table will present a condensed view of the phenomena observed.

In this case there was a close relation between the state of the skin, pulse, respiration and temperature of extremities and trunk.
A rapid full pulse, hurried thoracic respiration, and dry skin, was attended with a corresponding elevation of temperature.
If the functions of the organs and apparatus be properly performed, a full and rapid vigorous circulation and respiration must be attended by the rapid absorption of oxygen, and exhalation of carbonic acid gas, and correspondingly rapid chemical changes, and development of heat.
A slow pulse and respiration, and cool moist skin, was accompanied with a low degree of heat.
During the cold stage (chill) there was a rapid feeble pulse, full thoracic rapid respiration, and a hot trunk and cold extremities.
During the rapid thoracic respiration, oxygen is supplied in abundance, and enters into the blood, which is confined during the cold stage, almost entirely to the trunk and large organs. The temperature of the trunk is correspondingly elevated. This elevation of temperature does not extend to the extremities, because the circulation of the blood in the blood-vessels and capillaries is feeble. The surface of the extremities look bluish during the cold stage, because the supply of oxygen being withheld in great measure, the change from the venous to arterial hue does not take place.
We hope to demonstrate hereafter, by numerous careful observations, that the determination of the relations of the circulation, respiration, and temperature or chemical changes in malarial fever, is of the greatest importance, in enabling the practitioner of medicine to understand the nature and treatment of the different forms of this disease, and predict with a great degree of certainty its course and termination. Whenever, as in congestive fever, there is a want of correspondence between the circulation, respiration and chemical changes, the patient is always in danger. A patient with a rapid feeble pulse, and rapid thoracic respiration and
<table>
<thead>
<tr>
<th>Month</th>
<th>Day of Month</th>
<th>Hour of Day</th>
<th>State of Skin</th>
<th>Medicine</th>
<th>Pulse</th>
<th>Respiration</th>
<th>Temperature of Atmosphere</th>
<th>Temperature of Hand</th>
<th>Temperature under Tongue</th>
<th>Uric Acid excreted in 24 hours</th>
<th>Uric Acid excreted hourly</th>
<th>Uric Acid excreted in 24 hours</th>
<th>Hours</th>
<th>Specific Gravity</th>
<th>Calculated amount of Uric Acid excreted in 24 hours</th>
<th>Calculated amount of Uric Acid excreted in 24 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept</td>
<td>29</td>
<td>7 P.M.</td>
<td>Hot, dry</td>
<td>Calomel grs. viij, sulp. qui. gr. viij, castor oil in 4 hrs. Sulph. quinia grs. xxv.</td>
<td>120</td>
<td>32</td>
<td>79° F.</td>
<td>103°33'</td>
<td>106°</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>1 P.M.</td>
<td>Cool relaxed</td>
<td>Sulph. quinia grs. xxv.</td>
<td>70</td>
<td>22</td>
<td>68°</td>
<td>92°</td>
<td>99°5'</td>
<td>1290</td>
<td>2322</td>
<td>00</td>
<td>1009.5</td>
<td>1.0055</td>
<td>3095</td>
<td>1.3376</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>5 P.M.</td>
<td>Chill.</td>
<td>Spirits of Mindererus.</td>
<td>108</td>
<td>30</td>
<td>74°</td>
<td>91°</td>
<td>105°6'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>8 P.M.</td>
<td>Hot, dry</td>
<td>Sulph. of quinia gr. xx.</td>
<td>108</td>
<td>32</td>
<td>73°</td>
<td>103°5'</td>
<td>105°</td>
<td>2832</td>
<td>20</td>
<td>5.0035</td>
<td>1160</td>
<td>5100</td>
<td>8</td>
<td>1020</td>
</tr>
<tr>
<td>Oct.</td>
<td>11</td>
<td>A.M.</td>
<td>Cool, moist.</td>
<td>Sulph. of quinia grs. v.</td>
<td>76</td>
<td>28</td>
<td>70°</td>
<td>95°</td>
<td>98°5'</td>
<td>2430</td>
<td>1014</td>
<td>1920</td>
<td>8</td>
<td>1020</td>
<td>2.000</td>
<td>15300</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>11 A.M.</td>
<td>Warm and Moist.</td>
<td>Calomel grs. vi, sulp. qui. grs. vi, castor oil in 4 hrs. Sulph. of quinia grs. xv.</td>
<td>84</td>
<td>32</td>
<td>74°</td>
<td>100°5'</td>
<td>102°</td>
<td>1581</td>
<td>0</td>
<td>9.300</td>
<td>658</td>
<td>1581</td>
<td>0</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>11 A.M.</td>
<td>Cool and Moist.</td>
<td>Snake-root tea and sulph. of quinia.</td>
<td>62</td>
<td>20</td>
<td>74°</td>
<td>96°</td>
<td>98°5'</td>
<td>18180</td>
<td>8</td>
<td>100</td>
<td>757</td>
<td>18180</td>
<td>0</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>11 A.M.</td>
<td>Normal.</td>
<td>Quassia and soda.</td>
<td>60</td>
<td>20</td>
<td>725°</td>
<td>96°</td>
<td>99°5'</td>
<td>20520</td>
<td>855</td>
<td>20520</td>
<td>0</td>
<td>1018</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>11 A.M.</td>
<td>Normal.</td>
<td>&quot; &quot;</td>
<td>62</td>
<td>21</td>
<td>70°</td>
<td>96°</td>
<td>99°8'</td>
<td>30450</td>
<td>15.000</td>
<td>1268</td>
<td>30450</td>
<td>24</td>
<td>1015</td>
<td>15.000</td>
</tr>
</tbody>
</table>
low temperature (sluggish chemical changes), is always in great danger. A full rapid pulse, and rapid thoracic respiration, and correspondingly high temperature, are always favorable symptoms, provided there be no complication, as congestion of the brain. The severity of malarial fever is by no means proportional to the height of the fever (animal temperature). As a general rule, the higher the fever (temperature), the more readily does the attack yield to treatment, and the less serious the effects. High temperature signifies active chemical changes, and an effort on the part of nature to break up and consume the poison, and a power of resistance.

It is the want of a high temperature which is the most dangerous symptom in malarial fever.

In this case, the amount of urine excreted corresponded with its specific gravity, or degree of concentration. Considering the situation and diet of the patient, the amount of urine did not differ greatly from the standard of health.

The urine is affected by so many varied external and internal conditions, that the amount excreted exhibits great fluctuations even in health.

No two observers agree with reference to the amount excreted in definite periods. Thus, Lecanu, from examinations of the urine of 16 individuals, living upon mixed food, estimated that the amount of urine discharged in 24 hours, ranged from 8085 grains to 34,973 grains.

Becquerel found that the mean daily quantity passed by four men, was 19,511 grains, and that by four women, was 21,130 grains.

Lehmann, from experiments instituted upon himself, estimated the quantity discharged daily, at from 13,829 grains to 22,299 grains.

According to the valuable experiments of Dr. William A. Hammond, instituted upon himself, the amount of urine excreted under a mixed diet, ranged from 19,684 grains to 22,756 grains, with a mean of 20,898 grains; under a diet of albumen, from 12,325 to 21,592, with a mean of 17,738 grains; under a diet of starch, from 14,339 to 23,352, with a mean of 18,427 grains; and under a diet of gum, from 20,516 to 23,721 grains, with a mean of 21,538 grains.

The only accurate method of determining whether or not the urine be increased or diminished, is, to refer it to the standard of health, in the individual examined. In hospital practice this is, in the majority of cases, impossible, and we are compelled to be content with approximate results.

In this case, during fever and under the action of sulphate of quinia, the uric acid was greatly diminished, and on the other hand, when the fever declined, and the action of the sulphate of quinia ceased, the amount of uric acid increased beyond the normal standard.
From the microscopical and chemical examination of several hundred specimens of urine excreted during the different forms of malarial fever, I found it, as a general rule, to be true, that in the mode of treatment which I adopted, the uric acid appears in much larger quantities in the urine of convalescence, than in that excreted during the fever, even when the sulphate of quinia had been withheld, or sparingly administered. The majority of specimens of urine excreted during fever, which were set aside and examined, under the microscope, at successive intervals, gave no deposits of the crystals or salts of uric acid, whilst specimens of the urine of convalescence very soon gave evidence of the presence of uric acid, by letting fall deposits of urate of soda and ammonia.

These facts explain the nature of the so-called critical discharges of malarial fever. The urine excreted during fever is generally deficient in uric acid and the earthy salts, whilst its acidity is increased, and it will remain for a great length of time without undergoing decomposition.

The urine of convalescence, on the other hand, is rich in uric acid and the earthy and alkaline salts, and readily undergoes decomposition. The deposit of the urates of soda and ammonia, and the precipitation of the triple phosphate, by the ammonia generated during decomposition of the urea, form the so-called critical discharges.

As a general rule, the urine excreted during the hot stage of intermittent fever, is poorer in uric acid than the urine of remittent fever, and I have known cases in which, during fever, the uric acid disappeared almost entirely.

In several cases of congestive fever, the urine contained only traces of uric acid, and in one case, which terminated fatally, the disappearance of the uric acid was attended with the disappearance of the urea.

Dr. Ranke (4) states in his article upon the physiological action of sulphate of quinia, that according to all observers, there is in ague an increase of uric acid. My observations do not correspond with this assertion, if it is intended to apply to the active stages of intermittent, remittent and congestive fevers. The fact that uric acid increases during convalescence from malarial fever, demonstrates conclusively that the diminution of the amount of uric acid by sulphate of quinia is an attending circumstance, and not necessarily one of the beneficial, remedial modes of the action of this medicine.

Case II.—Englishman: entered the Savannah Marine Hospital Oct. 9th, 1857; age 27. Has been in America thirteen years. Height 5 feet 10 inches; weight 145 lbs.; muscular sys-
tem well developed; sanguine temperament. Occupation, steward on ship. Has been in Savannah three weeks.

Says that he was taken yesterday at 12 o'clock M., with cold feelings and headache. The chilly feelings lasted four hours, and were succeeded by fever, which continued until 4 o'clock A.M. this morning. Two and a half hours after the subsidence of the fever (8½ o'clock A.M.), he shook violently. This chill was followed by fever.

Now, 8 o'clock P.M., fever is subsiding. Pulse 98, full but soft.

Temperature of Atmosphere, . . . . . . . . . 72°F.

" " Hand, . . . . . . . . . . . 102°5'

" under Tongue, . . . . . . . . . . . 103

Tongue moist; skin in a profuse perspiration.

Says that he took, last evening, a dose of salts and cream of tartar, which operated twice this morning.

B. When fever goes off, give sulphate of quinia, grs. v., every three hours, up to grs. xx.

October 10th, 12 o'clock M. There was a complete intermission of the fever about 2 o'clock A.M. this morning. At this time the sulphate of quinia was commenced, and he has taken grs. xv.

Amount of urine passed the last 16 hours, grs. 6,144.

" " " hourly, grs. 321·5

Calculated amount of urine for 24 hours, grs. 9,216.

<table>
<thead>
<tr>
<th>ANALYSIS I</th>
<th>In grs. 6,144 of Urine (16 hrs.)</th>
<th>In grs. 9,216, calculated for 24 hrs.</th>
<th>In 1000 parts of Urine.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea,</td>
<td>226·980</td>
<td>340·470</td>
<td>36·943</td>
</tr>
<tr>
<td>Uric Acid,</td>
<td>0·600</td>
<td>0·900</td>
<td>0·097</td>
</tr>
<tr>
<td>Fixed Saline Constituents,</td>
<td>40·200</td>
<td>60·100</td>
<td>6·542</td>
</tr>
</tbody>
</table>

Specific gravity of urine 1024—clear, no deposit, light red color. Reaction decidedly acid.

Microscopical examination of urine.

After Standing 12 hours, no deposit.

" " 36 " a very slight, light yellow deposit.

After standing 60 hours, the surface was covered with a pellicle, which under a magnifying power, of 210 diameters, was found to consist of small oval cells, about the size of the human blood corpuscle. There were also other elongated elliptical cells, the short diameters of which did not differ from those of the globular cells. Many of the elongated cells had a vibratory motion. The deposit at the bottom consisted of these globular elliptical acicular cells, and a few crystals of triple phosphate.

That these cells were organized bodies, was demonstrated by
the action of chemical re-agents under the microscope. Not a trace of uric acid was found in the pellicle and deposit. The bottle containing the urine had been kept closely stopped.

12½ o'clock, P.M.—A chill is just coming on. The thermometer, placed in his hand, indicated 91½° F. Simultaneously with the increase of the chill, it commenced to descend, and in 15 minutes stood at 87½°.

In 15 minutes his hand lost 4° F. He feels very cold, but does not shake. The extremities feel cold, whilst the surface of the head and trunk feel hot and pungent. When the bulb of the thermometer was simply placed between the skin and flannel shirt, and gently pressed against the surface of the chest, it commenced to rise rapidly and in a few moments indicated 103° F.

When placed in the arm-pit, it rose rapidly to 107° F.

Pulse 100; not so full as during fever, but small and threaded. Respiration 26, full thoracic.

Temperature of Atmosphere, 68°5' F.

“ Hand, 87°5'

“ in Axilla, 107°

Tongue pointed, but moist, and not much redder than usual. Skin dry, with a purplish mottled appearance, as if the circulation in the capillaries was retarded. Says that he has "dull pains wandering around his loins up to his chest." Complains of great thirst. His stomach is so irritable that I could not ascertain the temperature under his tongue. I made seven unsuccessful attempts. At every trial the contact of the bulb of the thermometer, with the base of the tongue, excited violent retching and vomiting. I applied a sinapism over the region of the spinal column, 18 inches in length, and 8 inches in breadth, also, one over the epigastrium, and administered brandy and snake-root tea, f 3 ij. The brandy and snake-root tea were vomited up in a few moments. In half an hour after their application, the mustards aroused the capillary circulation in the extremities.

His surface does not present the mottled appearance; the heat has in a great measure returned to his extremities, the cold sensations have disappeared, and "he feels warm all over." The temperature of his hand is now 99°. In half an hour, the temperature of his extremities has risen 11°5'. The temperature under the arm pit is still 107°.

The temperature of the hand does not correspond fully with that of the trunk, and reaction is not yet fully established.

Nitrates of urea remarkably silky and white.

Microscopical Examination.—The urine was poured into a closely stopped bottle, and set aside for 60 hours. At the end of this time the surface had a pellicle, and there was a small, light yellow deposit.

The pellicle consisted entirely of the globular, elliptical and vibrating cells, observed in the former specimen. The deposit also consisted of these cells, and a few, beautifully formed, prismatic crystals of triple phosphate.

The fact, that the bottle was kept closely stopped, does not prove that the germs of these cells originated in the urine, for the bottle, in which the urine was first deposited, remained open during the voiding of the bladder, and the germs of these vegetable bodies were, without doubt, then received from the atmosphere.

This specimen of urine is interesting, because it was passed at the close of a chill, and was probably excreted by the kidneys, during the existence of the cold stage. It was much lighter in color than that passed during fever: in fact, it resembled the urine of hysterical women, in its light color and low specific gravity. The urea and uric acid were diminished, whilst the fixed saline constituents were relatively increased.

If the diminution of the uric acid was due to the action of the 15 grains of sulphate of quinia, which he took this morning, then the fact is demonstrated that the diminution of the amount of uric acid by the sulphate of quinia, has nothing to do with the cure of intermittent fever.

B. During fever, give soda powders. As soon as fever remits, give sulphate of quinia, grs. v., every three hours, up to grs. xxx. Do not wait for the complete intermission of the fever. Diet, gruel and flaxseed tea.

7 o’clock P.M. The fever is abating, and his skin is in a slight moisture. The circulation is fuller and more regular, and the temperature more equally distributed.

Temperature of Atmosphere, 67°F.

Hand, 102

Amount of urine passed since 12½ P.M., (6½ hours,) grs. 5,075; high colored, resembling new madeira wine. Reaction decidedly acid.

Specific gravity 1015.
Nitrate of urea white, silvery.
Amount of urine excreted hourly, during last $6\frac{1}{2}$ hours, grs. 780.

Calculated amount of urine for 24 hours, grs. 20,300.
Actual amount of urine excreted during the last 24 hours, grs. 18,240.
Amount of urine excreted hourly during the last 24 hours, grs. 760.

<table>
<thead>
<tr>
<th>ANALYSIS III</th>
<th>5075 grs. of Urine, passed in 6-1-2 hrs.</th>
<th>20,800 grs. calculated amount of Urine for 24 hrs. contain'd grs.</th>
<th>1000 pts. of Urine, contain'd grs.</th>
<th>18,240 grs of Urine, passed during last 24 hrs. cont'd grs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea, . . .</td>
<td>99.425</td>
<td>397.700</td>
<td>19.586</td>
<td>365.956</td>
</tr>
<tr>
<td>Uric Acid,</td>
<td>0.250</td>
<td>1.000</td>
<td>0.049</td>
<td>1.270</td>
</tr>
<tr>
<td>Fixed Saline</td>
<td>28.500</td>
<td>114.000</td>
<td>5.615</td>
<td>78.500</td>
</tr>
<tr>
<td>Constituents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Microscopical examination of the last specimen of urine excreted during the last $6\frac{1}{2}$ hours, up to 7 o'clock P. M.

After standing 60 hours a slight deposit fell, consisting of the vegetable cells, previously described, and prismatic crystals of triple phosphate.

Chemical reagents failed to give any evidence of the presence of uric acid in this deposit. His fever still continues. This specimen of urine therefore was excreted during fever. The patient has taken no sulphate of quinia since 11 o'clock A. M., this morning.

*It is important to note, that, in this case, the uric acid is diminished, both in the cold and hot stages.*

October 11th, 10\frac{1}{2} o'clock, A.M.—Says that he is much better.
There was a complete intermission of the fever this morning, at 5 o'clock, A.M. The subsidence of the febrile excitement was attended with a profuse perspiration, which continued up to 8 o'clock, A.M. At the present time his pulse is 88, and respiration 22. Tongue moist and soft; skin relaxed and soft; bowels were moved this morning.

Has taken 20 grains of sulphate of quinia since the intermission of the fever.


Amount of urine passed during the last 15\frac{1}{2} hours, grs. 9144.
Specific gravity, 1\textsuperscript{10}16.
Amount of urine passed hourly during the last 15\frac{1}{2} hours, grs. 590.
Calculated amount of urine for 24 hours, grs. 14630.
Chemical and microscopical examination of the urine passed during the last 15½ hours. Specific gravity 1016. Color, deep orange inclining to red, with a heavy, light-yellow deposit. Reaction alkaline. It has changed rapidly from acid to alkaline since it was voided. This is characteristic of the urine excreted during convalescence from intermittent fever. During the active stages of malarial fever, the urine is always decidedly acid, and retains this reaction for many hours, and in severe cases, for several days, even in the heat of summer. When the fever intermits and the skin is moist and relaxed, and the patient is convalescent, the urine then excreted, rapidly undergoes decomposition, and in a few hours the reaction changes from acid to alkaline. I believe this to be one of the most certain signs of convalescence in malarial fever.

The deposit in this specimen of urine was found, under the microscope, to consist of well formed, prismatic crystals of triple phosphate, and globular acicular crystals of urate of soda, and the globular and elliptical cells previously described. When the deposit was treated with hydrochloric and acetic acids, under the microscope, an abundant crop of crystals of uric acid appeared. This is the first specimen of urine in which the deposits have contained uric acid.

The chemical analysis of the urine also shows that the uric acid is more abundant than in the urine of the hot and cold stages, notwithstanding that the patient was under the influence of 20 grains of sulphate of quinia.

October 12th, 11 o'clock, A. M.—Continues to improve. Missed the chill, but had a slight fever in the evening.

Pulse 84. Respiration 20. Countenance, complexion, skin, and temperature, normal.

B. Quassia and soda. Continue snake-root tea: full diet.

The urine through mistake was not preserved for examination. 7½ o'clock, P. M.—Pulse 92; skin moist and cool.

Amount of urine passed during the last 9 hours, grs. 15120. Specific gravity 1008. Orange color.

Amount of urine passed during each hour, grs. 1680. Calculated amount of urine for 24 hours, grs. 40219.

October 13th, 10 o'clock, A. M.—Says that he is quite well. Had no fever last night, and rested well. Tongue and skin normal in appearance; reaction of saliva slightly acid; during the height of the fever, it was decidedly acid.
Respiration 16. Pulse 68.
Temperature of Atmosphere, ... 78° F.
" " Hand, ... 98
" " under Tongue, ... 99

Amount of urine excreted during last 14½ hours, grs. 13662.
Specific gravity, 1012.
Amount of urine excreted hourly, grs. 942.
Calculated amount of urine for 24 hours, grs. 21859.
Amount of urine excreted hourly during the last 24 hours, grs. 1199.
Actual amount of urine excreted during last 24 hours, grs. 28782.

<table>
<thead>
<tr>
<th>ANALYSIS V.</th>
<th>13662 grs. of Urine excreted in 14½ hours, contained,</th>
<th>21859 grs. of Urine calculated for 24 hours, contained,</th>
<th>100 parts of Urine contained,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea,</td>
<td>101.850</td>
<td>162.960</td>
<td>7.188</td>
</tr>
<tr>
<td>Uric Acid,</td>
<td>2.025</td>
<td>3.240</td>
<td>0.148</td>
</tr>
<tr>
<td>Fixed Saline Constituents,</td>
<td>29.700</td>
<td>47.520</td>
<td>2.173</td>
</tr>
</tbody>
</table>

Reaction of the urine alkaline, in 12 hours; color normal; light yellow deposit. Under the microscope, this deposit consisted of a few prismatic crystals of triple phosphate, globular crystals of urate of soda, and vegetable cells.

October 15th.—Dressed up and walking in the hospital yard.
 Pulse 64. Respiration 16. Reaction of saliva, slightly alkaline.

Amount of urine passed during the last 24 hours, grs. 16320.
Color normal; no deposit in 18 hours. Specific gravity 1020.
Reaction acid. Urine excreted hourly, grs. 680.

<table>
<thead>
<tr>
<th>ANALYSIS VI.</th>
<th>Grains 16320 of Urine excreted in 24 hours, contained,</th>
<th>1000 parts of Urine contained,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea,</td>
<td>488.880</td>
<td>29.818</td>
</tr>
<tr>
<td>Uric Acid,</td>
<td>9.600</td>
<td>0.588</td>
</tr>
<tr>
<td>Fixed Saline Constituents,</td>
<td>115.200</td>
<td>7.058</td>
</tr>
</tbody>
</table>

The patient had no return of fever, and was discharged the next day.

The following table will present a condensed view of the results obtained.
<table>
<thead>
<tr>
<th>Case II</th>
<th>Fixed Saline Constituents calculated for 24 hours</th>
<th>Urea Acid calculated for 24 hours</th>
<th>Urea</th>
<th>Urea excreted in 24 hours</th>
<th>Urea excreted hourly</th>
<th>Fixed Saline Constituents</th>
<th>Fixed Saline Constituents excreted in 24 hours</th>
<th>Urea Acid</th>
<th>Urea Acid excreted in 24 hours</th>
<th>Urea Acid excreted hourly</th>
<th>Temperature of hand</th>
<th>Temperature of Atmospheric</th>
<th>Respiration</th>
<th>Pulse</th>
<th>State of Skin</th>
<th>Medicine</th>
<th>Hour of Day</th>
<th>Day of Month</th>
<th>Month</th>
</tr>
</thead>
</table>
The most striking phenomena in this case were those manifested during the cold stage. The temperature of the extremities was $19\frac{1}{2}$ degrees below that of the trunk. The temperature of the trunk was elevated 8 degrees above, while the temperature of the extremities was depressed $10\frac{1}{2}$ degrees below the normal standard.

Similar phenomena have been manifested by every case of intermittent fever which I have examined during the cold stage. The phenomena of the cold stage will be illustrated by the following cases, which were carefully examined, just as they occurred in the hospital, without any selection.

**Case III.**—Seaman: aged 55, height 5 feet 4 inches, small, spare man. Has been in the hospital for several months, suffering with an affection of the eyes.

This case has originated in the hospital.

Chill came on one hour ago: he is still shaking violently, and his lips and hands look blue. Pulse 100. Respiration 36 to 50, varies with each quarter of a minute; irregular, thoracic, labored.

Temperature of Atmosphere, $71^\circ 5'$ F.

“ Hand, $92^\circ$

“ under Tongue, $104^\circ$

**Case IV.**—Seaman: aged 38, height 5 feet 8 inches, light hair, blue eyes, sallow complexion. Looks as if his liver was out of order. Says that he "has had chills off and on from the 16th of July to the present time, October 12th." His first attack of intermittent fever was contracted in the swamps of the Pee Dee River, S. C. Tongue clean and pale; lips pale, anæmic. This patient presents the true malarial hue, and his blood is deficient in colored corpuscles. In the present attack of intermittent fever, he has a chill every day.

October 12th.—This morning had a chill, followed by hot fever. During the febrile excitement, his pulse was 108 and his respiration 32 to the minute. As soon as the fever remitted, 20 grs. of sulphate of quinia were administered. The sulphate of quinia delayed the chill; it did not appear at the regular hour on the 13th inst., but came on at 4 o'clock, P.M., on the 14th inst.

I commenced the examination about 15 minutes after the commencement of the chill. Lips and fingers pale, and of a bluish color; extremities cold, whilst the trunk is hot to the touch. Patient is shaking all over.

Pulse 92, feeble. Respiration 32, thoracic, labored.

Temperature of Atmosphere, $77^\circ 5'$ F.

“ Hand, $91$

“ under Tongue, $103$
A small amount of urine was excreted at the close of the cold stage, and commencement of the general elevation of temperature, (equalization of the actions of the general and capillary circulation,) which had a normal color. Specific gravity 1023, and decided acid reaction, and under analysis exhibited a large increase of uric acid.

Analysis VIII.—1000 parts of urine contained Urea, 21.825
Uric acid, 1.467.—Fixed saline constituents, 7.436.

This specimen of urine is in striking contrast with that excreted, under precisely similar circumstances, in Case ii. During the sweating stage the reaction of his skin was neutral. As a general rule, I have found it to be acid in the various forms of malarial fever. Reaction of saliva, as usual, acid.

October 15th. Complete intermission of fever.

Pulse 80, fuller. Respiration 20, regular.

Temperature of Atmosphere, ............. 71° 5' F.

" " Hand, ............. 96

" under Tongue, ............. 88

Case V.—Frenchman, aged 45: brown hair and eyes; height 5 feet 7 inches; weight 180 lbs. Thin, spare man. Had an attack of intermittent fever, commencing Sept. 15th.

This case was treated in the Savannah Poor House, and yielded to the ordinary remedies, and the patient was discharged in the course of ten days. He returned to a miasmatic situation, on the Savannah river, and was attacked again with intermittent fever. He entered the Hospital and Poor House Oct. 7th, and stated that for the last four days, he had had "dumb ague," which came on every day at the same hour, (11 o'clock A. M.,) and lasted two hours.

A purgative, followed by xxv. grains of sulphate of quinia, was administered. This delayed the "dumb ague" until Oct. 9th, 3 1/2 o'clock P. M. (28 hours).

Examination commenced half an hour after the commencement of the "dumb ague." Lips and fingers purplish; extremities cold; head and trunk warm. Complains greatly of the sensations of cold, but shakes far less than in the former cases recorded.

Pulse 92, so feeble that it is with difficulty felt, and with still greater difficulty counted. The vibrations of the pulse resemble those of a fine thread. Respiration accelerated and irregular.

Temperature of Atmosphere, ............. 75° F.

" " Hand, ............. 83

" under Tongue, ............. 101° 5'

6 1/2 o'clock P. M. Reaction has taken place, and he now has fever.

Pulse 96, much fuller than during the chill, but weaker than in a frank open case.
Temperature of Atmosphere, ....... 70° F.
" Hand, ............. 101° 75'
" under Tongue, ......... 102° 75'

In this case, which was far more serious than any which we have yet recorded, the urine was of a high color and specific gravity, and correspondingly rich in urea and extractive matters. The uric acid was slightly increased.

Oct. 10th. Intermission of fever.
Temperature of Atmosphere, ....... 70° F.
" Hand, ............. 97° 5'
" under Tongue, ......... 98° 5'

Case VI.—Irishman; black hair, black eyes; height 5 feet 10 inches; weight 150 lbs. In health, florid complexion.
Has been suffering with intermittent fever for four days. Chills have been slight. The present chill (Sept. 23d) is slight.
Temperature of Atmosphere, ....... 79° F.
" Hand, ............. 90
" under Tongue, ......... 102

Case VII.—Seaman—Englishman: brown hair, brown eyes; florid complexion in health, now his complexion is anaemic; weight 146 lbs.; age 25; height 5 feet 6 inches.
Sept. 10th. Entered the Savannah Marine Hospital, with bilious remittent fever, and from this date until the 19th inst. was extremely ill.
This patient recovered so as to be able to walk about the hospital yard. Notwithstanding the administration of tonics and iron, his complexion was pale, anaemic, and he complained of a severe and continual pain in his head.
Cut cups, external applications and internal remedies, failed to relieve the pain in his head. On the 4th of October he was taken with a severe chill, followed by high fever. This returned every day.
Oct. 6th. The chill has been on him one hour, and the hot stage is just coming on. Pulse 110, feeblener than after the complete reaction, but stronger than during the lowest depression of the cold stage. Respiration irregular, thoracic, panting—45-50. Muscles trembling violently.
Temperature of Atmosphere, ....... 70° F.
" Hand, ............. 97
" under Tongue, ......... 104

Case VIII.—Irish laborer: stout, well formed man; sanguine temperament; light hair, blue eyes, florid complexion; height 5 feet 9 inches; weight 190 lbs.
This is his second attack of chill and fever this season.
Sept. 18th, 11 A.M. Chill is now just going off. Pulse 112.
Respiration 28.

Temperature of Atmosphere, 90° 5' F.
" Hand, 100
" under Tongue, 104


Temperature of Atmosphere, 91° F.
" Hand, 97° 5'
" under Tongue, 99

Recovered from this attack—commenced work upon a steam Tug, and slept on board, in the Savannah river, at night. Returned to the hospital with a third attack of intermittent fever.

October 2nd, 2 P.M. Has a chill and is shaking violently.
Pulse 120, in sitting posture. Respiration 22, in sitting posture.

Temperature of Atmosphere, 79° F.
" Hand, 89
" under Tongue, 102° 25'

Oct. 3rd, 2 P.M. Has high fever. Pulse 100. Respiration 26, thoracic.

Temperature of Atmosphere, 77° 5' F.
" Hand, 89
" under Tongue, 106


Temperature of Atmosphere, 76° F.
" Hand, 96° 5'
" under Tongue, 98° 5'

From these and many other examinations of the phenomena of intermittent fever, I have deduced the following conclusions, the importance and bearing of which will be more fully pointed out hereafter.

(1). The higher the temperature of the trunk, during the cold stage, the more rapid will be the equalization of the circulation and temperature.

(2). The higher the temperature of the trunk, during the cold state and of the extremities and trunk during the subsequent hot stage, (stage of equalization of the circulation and chemical action,) the milder and shorter will be the attack. A high temperature in intermittent fever is then a favorable symptom.

Whether the high temperature signifies an effort on the part of nature, to break up, chemically alter, destroy, and throw off the malarial poison; or whether the high temperature be significant of nothing more than vigorous, vital, nervous, physical and chemical forces, nevertheless the determination of the correlation of the respiration, circulation, and temperature (chemical action), affords the most valuable information to the medical practitioner.
Having already extended this article over much more than the space allotted, I will leave the discussion of these subjects to a subsequent article.

Before closing, it is necessary that I should state the methods by which the Temperature, Pulse and Respiration were determined.

The pulse and respiration in these and subsequent investigations, were, unless stated otherwise, always determined in the recumbent posture.

All the temperatures recorded in these and subsequent investigations, were determined by the same instrument. This thermometer was compared with standard instruments, and found to be accurate. The thermometer was always allowed to remain under the tongue, in the hand, or under the arm-pit, for some time after it was stationary, and all the observations were taken and recorded at the bed-side, under my own hand and eye.

The greatest care was exercised in determining the temperature; the patients were in all cases, unless stated otherwise, lying quietly in bed, and protected from all currents of air. The importance of attending to these circumstances, are strikingly illustrated by the following experiments, which I performed upon myself.

Athens, January 23rd, 6 o'clock A. M. Lying in bed, just after waking from sleep. Pulse 76. Respiration 15.

Temperature of Atmosphere of Chamber, 45° F.
   " Atmosphere 28
   " Hand, 95
   " in Axilla, 98

Dressed myself and took a walk of two miles, over several hills, in thirty minutes. The ground was frozen and covered with frost. During the walk, my hands were bare and freely exposed to the atmosphere. At first, the sensation of cold was unpleasant, but towards the end of the walk, reaction appeared to take place and they felt much warmer.

Pulse 90. Respiration 20.

Temperature of Atmosphere, 30° F.
   " Hand, 78
   " in Axilla, 98

During the walk, the pulse had gained 14, and the respiration 5, to the minute. The temperature in the hand had fallen 17°, whilst that in the axilla had remained stationary. The respiration, in bed, was gentle and regular. The respiration, after walking in the cold, was accelerated, full and vigorous.

Here we see that a diminution of the temperature upon the exterior was attended by a corresponding change in the movements of the circulatory and respiratory systems. They became
more active, in order to receive, and distribute more rapidly, the oxygen, and remove, with corresponding rapidity, the increased products of the increased chemical changes.

It is also worthy of note, that the increased circulation and respiration was not attended with a rise of temperature, because the radiation of heat from the surface of the body, more than balanced the increased generation of heat, consequent upon the increased chemical change.

I took breakfast, and then walked three miles over several hills, in 40 minutes. My hands were kept in the over-coat pocket during the walk.

Temperature of Atmosphere, . . . . . . . 45° F.
“ Hand, . . . . . . . . . . . . . . . . . . . . . . . . 97°
“ of Axilla, . . . . . . . . . . . . . . . . . . . 98°5'

January 24th, 4 o'clock, P.M.—After sitting and writing for several hours in a cold room, without fire, my right hand, which was freely exposed moving over the paper, felt very cold and stiff.

Pulse 76. Respiration 16.
Temperature of Atmosphere, . . . . . . . 48° F.
“ Right Hand, . . . . . . . . . . . . . . . . . . . . 75°
“ in Axilla, . . . . . . . . . . . . . . . . . . . 98°5'

In this experiment the right hand lost 22° in the course of two hours.

These experiments demonstrated, conclusively, the absolute necessity of adhering rigidly to a uniform method of ascertaining the pulse, respiration, and temperature in health and disease.

In comparative investigations, the truth will not be obtained without the most scrupulous and unremitting attention, to the position and state of the patient, and all the surrounding circumstances.

(To be continued.)


A brief notice of the anatomy and physiology of the blood will make its morbid changes during fever more evident.

Anatomy.—The blood is a living fluid tissue, which is formed and matured by the organizing force of the automatic nervous system out of the organizable constituents of the maternal blood during embryotic life.

After birth, the organizable elements of the blood are derived from the food, which is decomposed by the gastric juice. These
elements are then transformed and rearranged by the organizing force of the automatic nervous branches of the stomach, and constitute chyme.

This is conveyed into the duodenum, in which additional organizable elements are received from the liver and pancreas. The whole mass is then transmuted and reformed by the organizing force of the automatic nervous branches of the duodenum into chyle.

This is absorbed by the lacteals, in which it undergoes a continued series of molecular changes and combinations, until it is deposited in the subclavian vein.

The blood consists of a vast number of cells, which are the agents the automatic nervous system employs to perform its functions in the human organism. These differ in form, size, and functional endowments, according to the varied duties they are designed to fulfil.

For practical purposes, they may be arranged into two classes; one of nutrition or reproduction, the other of secretion or removal. When the human organism is at maturity and in health, these processes should maintain a relation of exact equivalence.

Physiology.—The cells of nutrition are endowed with an elective force, by which they select and attract the nutritive elements of the blood, which they transform and rearrange into molecular combinations. These combinations undergo a continued series of molecular changes and recombinations, until they attain maturity, when the elements they have elaborated are appropriated and form constituent parts of the tissues, with which they possess identity of elementary composition and arrangement.

The cells of secretion are, likewise, endowed with an elective force, by which they select and attract the effete or worn-out elements which they transform and arrange into molecular combinations. These combinations undergo a continued series of mutations, till the elements they possess are completely elaborated in the capillaries of the depuratory glandular systems, in which they are coalesced and removed from the blood as secretory products. The form of force by which they are coalesced is a specific endowment of each of these glandular systems, by which this important change is produced. One depuratory system cannot, therefore, compensate for deficient function in another only so far as the elements conveyed to it are identical with those of its own secretion.

The blood gives each tissue the means of repairing itself: first, by furnishing it with material of new growth; secondly, by removing from it those elements of its composition which have become worn out and useless. Were this the whole history of the blood, its investigation in disease would be comparatively easy. But it undergoes progressive changes analogous to the
growth of the solid tissues. The new materials it obtains from the food are not blood at the time of their addition; they are crude immature products which subsequently mature.

The automatic nervous system endows the blood with a power to resist changes, convert crude material into its own elements, and perpetuate its own elementary composition and molecular arrangement. Physiology teaches that the abundance of cell development measures the activity and constancy of growth; and that this developmental activity in the blood is infinitely greater than in any other tissue. Cell-germs abound in the fluid of the thoracic duct. But they attain their maturity and fulfil the purpose of their creation only when received into the blood.

Not only does the blood grow, but its growth must precede that of every other tissue in the organism. It grows, then the other tissues grow at its expense.

Its functions in health will show sufficiently what peculiar difficulties attend any investigation of its changes in disease. The extreme rapidity with which all its changes transpire, and the minute quantities in which several ingredients exist, oppose great obstacles to the research; but these are greatly enhanced by the physiological fact that all the elements of the blood correspond to different periods of time, to different degrees of development, and to different developmental cells.

Viewed as an object of scientific research, human life exhibits itself in a series of manifestations, the connection and recurrence of which are determined by the changes which the food and the oxygen absorbed from the atmosphere undergo in the organism under the controlling influence of the automatic nervous system; for the first condition of life is the assimilation of nutritive material, and the second is that of a continual absorption of oxygen from the atmosphere. The intensity, the integrity, the quantity, and the quality of the molecular combinations and rearrangements of the elements of the blood depend on the mutual action of the oxygen of the atmosphere and the elementary constituents of the food.

The most convincing experiments have proved that the human organism is absolutely incapable of producing an elementary constituent, such as carbon or nitrogen, out of substances which do not contain it; therefore it follows that all kinds of food, to produce the tissues and maintain them in a normal relation with each other, must possess the elements of which the tissues are composed. Fibrine and albumen, the chief ingredients of the blood contain seven chemical elements, among which are oxygen, carbon, hydrogen, nitrogen, phosphorus, and sulphur. The serum retains in solution sea salt and the salts of potassa and soda, in which the acids are carbonic, phosphoric, and sulphuric.

The globules of the blood contain fibrin and albumen, with a
red coloring matter in which iron is a constant element. They are formed out of the elements contained in the serum; because it is the atmosphere, and supplies the material for cell develop-
ment, which is constantly taking place within this fluid. Hence it is the most important branch of haematology.

The chief constituents of the blood are compounds, in which the relative proportions are invariable. These compounds are the nascent state of the tissues, and maintain a relation of mutual dependence on each other. The blood could not become organ-
ized, nor could it promote the growth of tissues without the existence of albumen in the serum; because the globules are de-
veloped in this fluid at the expense of its albumen, and they carry the oxygen which they absorb from the atmosphere into every tissue of the organism, where it determines the changes which may transpire.

Oxygen is necessary to the growth and maturity of the tissues; it is necessary for their conservation; and it is necessary for their conversion into lifeless compounds; but it can only be introduced by the agency of the globules. These can only attain a condi-
tion favorable to the reception and conveyance of the oxygen at the expense of the primary elements of the blood, which are obtained from the elementary constituents of the food.

The absorption of oxygen and the secretion of carbonic acid gas constitute the visible functions of respiration, and the vast ab-
sorbent and secretory capacity of the lungs depends on the im-
mense expanse of absorbent and secretory cells brought in pro-
ximity to the oxygen of the atmosphere at each inspiration, and on the quantity and quality of the molecular combinations of the elements of the blood which are developed during that period.

The food must contain and supply the elements of which the blood is composed; they must undergo normal transformation; they must grow and mature normally, before the necessary quan-
tity of oxygen can be absorbed to consume them by combination. For a more enlarged consideration of this interesting subject the reader is invited to an essay in the American Journal of the Med-
ical Sciences, for July, 1855, on the Physiology of the Automatic Nervous System, in which I maintain the unity and mutual con-
vertibility of all the different forms of external force and of all the different forms of the automatic nervous force, and to another essay in the same Journal for April, 1856, in which I endeavored to show the causes of fever, and explain the mode in which they produce diseased transformation of the tissues.

Pathology.—From these physiological facts, it is evident that fever may assume a vast multiplicity of forms, which are mani-
fested by characteristic symptoms. These have often been mis-
taken for the disease itself; and the error has been magnified and perpetuated by giving them names which have been commemo-
rated by learned authors. Symptoms are like sentinels on duty; they guard the organism, evince the existence of disease, indicate the avenues of its approach, and the degree of resistance offered by the organism, manifest its progress, portray its pathology, and proclaim its triumph or announce its extermination. Clothed in the attire of fancy, marshalled by the mandates of theory, mantled by the nomenclature of authors, they are often received and entertained in the mansion of affliction instead of the disease.

Fever is a diseased transformation of all the tissues, but the fluid tissues suffer the most, because the solid tissues are formed in them and of them. The blood contains not only the nutritive elements, but also the effete constituents of the transformed solid tissues. Both the nutritive and the effete elements are formed, matured, and appropriated by cellular combinations.

These are the agents of the automatic nerves force acting on the organizable constituents of the food, and blood, or upon the organizable elements of the transformed tissues.

The activity, the quantity, and the quality of the molecular combinations depend on the intensity and integrity of this force, manifested as nutritive attraction, molecular affinity, and effete repulsion. The nascent state of this force in any of these forms are easily transmuted; and both the developmental cells and the molecular combinations, to the formation of which it contributes, as the formative or organizing force, will partake of the abnormal mutation. Hence the vast number of symptoms which arise during the incipiency and course of fever. The cells of nutrition neither grow nor mature normally; nor are their constituents appropriated to the nutrition of the tissues normally. From the diminished quantity and feeble intensity of the organizing force of the automatic nervous branches of the digestive and assimilative organs, the organizable elements of the food are not decomposed, transformed, rearranged, and absorbed in normal quantity and quality; only a small amount of nutritive material is received by the lacteals out of which blood may be formed and developed; and the molecular combinations of the cells, containing this, are so imperfect, that they cannot undergo mutations with normal force and celerity.

Imperfectly developed by molecular combination, the nutritive constituents of the blood often aggregate in some of the capillaries, in which they then constitute excessive and perverted nutrition, or inflammation. This is of frequent occurrence during the progress of fever, and merits the anxious and careful consideration of the physician.

During fever the secretory cells are neither formed, developed, nor matured normally; nor are the elements which they should normally aggregate and elaborate depurated from the blood; because the nutritive elements neither absorb a normal quantity of
oxygen from the atmosphere, nor does that which is received undergo normal molecular combinations on account of their imperfect molecular developement.

The imperfectly combined oxygen, when it is not consumed by molecular combination with the protein elements of the blood, acts upon those elements of the solid tissues exciting the sensation of pain, when it consumes branches of the sensitive nervous tissue, producing irregular and involuntary muscular actions, when it consumes those of the excito-motory, and creating the sensation of thirst, oppression, and suffocation, when it consumes only those of the automatic nervous system.

During the incipiency of fever, the effete elements of the blood, therefore, undergo a series of abnormal transformations, and are chiefly retained in the blood; a lesion of nutrition and secretion exists, the organizing force of the automatic nervous system, which in a normal state, creates, maintains, and governs the cellular formation and coalescence of the elementary constituents of the blood is increased, decreased, or perverted; there is a lesion of capillary circulation; the blood recedes from the external capillaries and accumulates chiefly in the portal venous system; a diseased transformation of all the tissues is present; Fever exists; it is manifested by symptoms; these assume a great multiplicity of appearances and forms, according to the pathological condition of the tissues.

There is no longer a perfect equilibrium between the processes of waste and repair; neither a normal quantity of food is desired, nor could it be assimilated, were it ingested; every tissue, therefore, suffers for appropriate nourishment.

Those more immediately concerned in the processes of nutrition most early evince the requirements of food, or the necessary elementary constituents for the repair of their tissues.

As the automatic nervous system creates, governs, and maintains all the tissues by its organizing force acting on the organizable elements of the food and blood, it is the first tissue to manifest the want of nourishment by lesion of the different forms of its force.

Quinine supplies nutritive elements to this tissue, and by this gives its different forms of force increased intensity. Its physiological effects on the organism are an increase of the developmental intensity and celerity of the cells, and a promotion of their molecular combination and coalescence, by which the transformation of the nutritive cells is increased, and those of secretion augmented. When a diseased transformation exists, it should, therefore, be carefully administered, and its effects sedulously investigated.

In the June No. of the Cincinnati Medical Observer for 1857, I have given my views of the use of quinine in fever; and in the
July No. of the American Journal of the Medical Sciences for 1857, I have discussed, at some length, the use of water in fever.

In the latter essay I have maintained that the hydrogen of the water combines with the imperfectly combined oxygen in the blood, forms water, and is removed from the blood in the form of sweat or perspiration; while the oxygen of the water combines with the carbon of the blood, evolves heat, and is secreted in the form of carbonic acid gas.

The attention of the reader is invited to each of these essays.

After the employment of appropriate remedial agents, and the removal of the more manifest symptoms of fever, there often remains an impoverished condition of the blood, which is a fertile source of local dependent forms of disease, especially when, during the progress of fever, a chill from time to time occurs. The condition of the blood is sensitively evinced by lesion of nutrition, loss of nervous energy, want of appetite, muscular debility, and more or less perversion of secretion; and it is caused by deficient developmental intensity of the molecular combinations of the elements of the blood.

The large proportion of albumen generally found in this morbid condition of the blood, is the result of defective cell-growth; because there is more nutritive material in the serum than could have remained there, if the normal proportion of blood-cells had been developed out of it. The evidence is, therefore, almost conclusive, that the albumen which exists in the blood does not grow and mature normally, or it would be consumed by molecular combination.

The causes of fever, how slight soever they be, retard the developemental intensity and activity of the blood cells; and if they be long continued, frequently repeated, or of great disturbing force, they impair the normal molecular changes of the blood, and transmute them, with more or less celerity, into the different forms of chemical force, when life may soon become extinguished. If the abnormal mutations be arrested, a period of time must transpire before the different forms of the organizing force of the automatic nervous system can attain normal tranquility and intensity; because the tissue of this system has suffered for normal nutrition; and its different forms of force have been so disturbed and so transmuted, that time is required for them to regain normal intensity and a controlling influence over the molecular combinations of the blood.

When this is obtained, all the forms of the organizing force are united in purpose, harmonious in action, and conspire to promote the conservation and well-being of the organism. But they require organizable elements to elicit their action; and the lesion of nutrition opposes the attainment of this grand object by not supplying all the constituents necessary to the developmental intensity of the blood-cells.
Although so minute, these cells always act harmoniously; they elaborate the constituents of the blood in a continued series of succession; each performs a definite and distinct duty; but the blood must contain all the elements, of which the tissues are composed, or these cells cannot be normally transformed and rearranged; they cannot grow and mature normally, because the absence of a single organizeable element would disturb the unity of purpose and the concert of action between the different forms of the organizing force, and thereby impede the molecular growth and development of the whole. This is precisely what always transpires during the incipiency of fever; and it is perpetuated throughout its course. The lesion of nutrition may be slight, but it is sufficient to produce and maintain the continued absence or immature condition of one or more constituents of the tissues.

The developement of the blood must, therefore, be imperfect; and this imperfection will always be commensurate with the degree and duration of the nutritive lesion.

The dependence of the capillary circulation upon the normal molecular combinations of the elements of the blood always produces a lesion of this circulation proportionate to the abnormal mutations, which transpire from imperfect developement of the globules.

There is, therefore, always present more or less anaemia in fever; because the morbid changes of the molecular combinations of the constituents of the blood prevent its introduction into the capillaries in normal quantity by nutritive attraction; and although the arterial system may be bounding and throbbing, these vessels convey an absolutely diminished quantity of blood to the capillaries.

The mechanical force of the muscular action of the heart and arteries is derived from the cellular changes of the elements of the blood at the ultimate termination of their muscular fibres; so that it must be diminished in intensity when these molecular mutations do not take place with normal force and celerity from deficient developement of the globules.

Enfeebled action of the heart and arteries is, therefore, always present in fever. Their mechanical force is diminished; they only propel a quantity of blood to the external capillaries equal to their propulsive intensity; and as this is not equal to the whole quantity of the blood, a certain portion must regurgitate from the heart, at each systole, in the portal venous system.

The morbid accumulation of blood in this venous system produces an anaemic state of the external capillaries.

These abnormal states of the circulation perpetuate fever, because only a small quantity of nutritive material can be elaborated and introduced into the blood on account of the capillary lesions; and the molecular mutations of the blood in the depurato-
ry glands are, consequently, so abnormal, that what already exists is very imperfectly depurated.

Only a limited quantity of oxygen is absorbed; but that which is received is not normally consumed by combination. Imperfectly consumed by combination, it combines with the solid tissues, producing their death and decomposition by conversion into lifeless compounds.

Fever, attended by the symptoms which arise from these states of the solid and fluid tissues, is called typhus or typhoid. It is frequently observed in the southwestern States in the autumn, when the days are hot and the nights cool, especially if fever with intermittent symptoms prevailed during the preceding summer.

Throughout the southwestern States, fever, with chills at irregular periods, is often of protracted duration; and, during its course, the spleen is liable to become hypertrophied, and the blood poor and attenuated. When the spleen is greatly hypertrophied, and soft and yielding upon pressure, large granular globules, two or three times the size of the natural colourless corpuscles, may frequently be observed in great abundance in the blood; and usually the ordinary colorless corpuscles are in great excess in this condition of the spleen. Southwestern physicians, who have unfortunately employed bleeding from a large orifice in the treatment of inflammation of the lungs, when the spleen is in this pathological condition, can bear witness to the frequency of these appearances of the blood.

When this pathological state of the blood exists, the hepatic functions are always more or less disturbed by the morbid accumulation of blood altered in quality in the hepatic capillaries. This disturbance, when it is of long duration, is usually manifested by a yellow appearance of the skin, clay-colored discharges from the bowels, and scant high-colored urine, alternated with green fetid evacuations from the bowels, and large quantities of yellow sedimentary urine.

A serous diarrhœa sometimes supervenes upon these conditions, when the sufferer is rapidly exhausted by the continuous drain of serum. Cruveilhier, Becquerel and Rodier, Andral and Gavaret, have conclusively shown that the attenuation of the blood by bleeding decreases the quantity of the corpuscles, while the other constituents undergo little change in their proportion either to each other or to the entire mass.

The same law prevails in respect to hemorrhage and many exhaustive forms of disease. The attention of the profession is particularly invited to menorrhagia, as it affects women who reside on our southwestern alluvial bottoms. With them the hemorrhage often alternates with serous diarrhœa, when general anæmia is soon produced and pervades every tissue of her organism.
The human female has a peculiar law of blood-development. During about thirty years of her life she forms blood enough for herself and an infant. If she be pregnant or suckling, this redundant blood formation fulfils its purposes by nourishing her organism and that of her infant; but if she be neither pregnant nor suckling, the large blood formation, which is normal to her for these purposes, becomes excessive in their absence, and tends to effect its own cure by means of recurrent hemorrhage for the mucous membrane of the uterus, which attends the discharge of unfertilized ova from the Graafian vesicles, and constitutes menstruation when it is normal, and menstruation when it is abnormal from the excessive quantity of blood discharged. Lesions of this process most usually occur from general causes affecting the development of the blood; and among these, in the south-western States, the most universal are those vicissitudes of the atmosphere which produce fever. The morbid influences of the climate or locality impoverish the blood and produce the pathological conditions which arise from the want of cell development of the blood-corpuscles.

The anæmia which so often takes place about the period of puberty in young women in the western States, consists essentially in deficient growth of blood-cells; and it is of much more frequent occurrence than is generally apprehended. During the autumn, teething children often suffer of a serous diarrhœa of protracted duration. This is perpetuated by the want of developmental activity of the globules.

The physiological effects of iron conclusively evince, that it promotes the development of the blood cells and accelerates their maturity. This is in accordance with a general law of the human organism, that the specific stimulants of cell growth in every tissue are elements identical with the natural contents of the cells, or convertible into them.

The globules of the blood contain increments of iron obtained from the food; and from the physiological facts that these are always present in normal blood, it is self-evident that iron is absolutely necessary to animal life.

From the physiological fact that the globules do not contribute to the nutrition of the tissues until they have attained maturity; that they will not mature normally without certain increments of iron; that when these are normally present they greatly promote the developmental intensity and activity of the blood-cells; that they increase the capacity of these cells for the absorption of the oxygen of the atmosphere and for the secretion of carbonic acid gas from the blood, by which the globules assume a bright-red colour; that the blood in this manner oxidized is conveyed and introduced into the capillaries, in which its elements are transformed, matured, and appropriated to the nutrition of the
On the Use of Iron.

June, 1876

408

tissues, evolves animal heat, and absorbs the effete constituents of the transformed tissues; and that the pathological states which are produced are those which are dependent on imperfect molecular development of the globules, and the consequent deficient oxidation and depuration of the blood; we can appreciate the cause of the perverted condition of the different forms of the automatic nervous force, the abnormal forms this force assumes in the molecular combination of the elements of the blood, when all development is deficient, and the best means to effect its tranquility and early restoration.

Iron is the most efficient agent to promote the normal restoration of these lesions, because it supplies the element required to promote the growth and maturity of the protein globules. The effects of few medicinal substances are more immediate or more remarkable than that which results in disease from deficient cell development from the exhibition of iron.

Every physician has observed how soon, under the influence of this remedy, patients recover their normal complexion. A chemical analysis of the blood explains this sufficiently. F. Simon relates a case in which, after a few weeks of treatment, the proportion of blood globules rose from 32 to 95 in the thousand; Herberger, one in which it rose from 38 to 98; Andral, one in which it rose from 46 to 95.

Iron is seldom administered in a metallic state. It is usually oxidized, and combined with a vegetable or mineral acid. The compounds formed by combination of iron with the vegetable acids are less powerful and efficient than those by mineral acids. The citrate and tartrate of iron are mild in their action, and they may, therefore, often be given before the stronger compounds.

We not unfrequently observe that the stronger compounds of iron, when first administered, apparently increase all the anaemic symptoms, especially those referable to the stomach and head. The potassio-tartrate of iron may be given along with the bitartrate of potassa, when there is œdema of the ankles, or of the cellular tissue generally. This is a valuable compound of iron in the anaemia of females, when there is local effusion in the cellular tissue.

Several of the compounds of iron are often given in larger doses than is necessary when the design is to promote the absorption of the iron into the blood. This observation applies especially to the carbonate, sulphate, and mutriated tincture. The regeneration of the globules, when much diminished in quantity and altered in quality, must require considerable time.

That the efficacy of a ferruginous compound is not in proportion to the quantity of iron it contains is shown by the fact that many mineral waters are very powerful, though they contain less than a grain in the pint. This fact clearly evinces the necessi-
ty of the greatest care in the selection of the compound we are about to employ; because the efficacy of iron often depends on the compound used and its mode of administration. Deficient cell-growth, which occasions the necessity for the employment of iron, causes a vast multiplicity of symptoms, which are produced by the functional disturbance of the visceral glands. The compound of iron should, as nearly as possible, be adapted to the particular state of the digestive organs, that it may be readily absorbed and elaborated with the nutritive elements of the blood; for this is the only mode by which iron can promote the growth and maturity of the blood. Sir James Murray first recommended the administration of iron in the following mode: Dissolve one drachm of the bicarbonate of soda in four ounces of water; then add to this one drachm of the muriated tincture of iron. The draught should be taken during effervescence. It should be repeated three or four times a day. Although the quantity of iron is small, yet it is in a state of subdivision so minute as to favour greatly the absorption of each increment. The double decomposition which takes place forms, as one of its products, muriate of soda. This saline is most congenial to the development of the globules.

During the protracted continuance of fever, diarrhoea, dysentery, or any other form of disease, during the autumn or winter in the Southwest, the use of iron according to this suggestion of Sir James Murray, is often attended with the greatest efficacy, especially when the fever, or other form of disease, assumes what is usually termed a typhoid form. The iron should be administered every three or four hours. alternated with other appropriate remedies. The minute quantities of iron and muriate of soda thus presented to the digestive and absorbent glands, which have been so long deranged and weakened, stimulate and promote the growth and maturity of their cells, and thereby favor the digestion and accelerate the absorption of any nutritive or medicinal substance. This will be clearly evinced by the increased secretion, which will take place in a day or two from the beginning of the use of the iron. The biliary, urinary, and cutaneous secretions will be greatly augmented; the tongue will become more moist, the thirst less urgent, and the sleep more tranquil.

When inflammation exists, iron should be used cautiously and carefully. When fever, dysentery, or diarrhoea assumes what is called a typhoid state, iron is of the greatest efficacy, because it stimulates and promotes the growth and maturity of the blood-cells. The matured blood-cells absorb and elaborate more oxygen from the atmosphere; an increased transformation of the elements of the blood ensue; the capillary circulation is accelerated and augmented, and increased secretion from all the depuratory glandular systems takes place.
When a typhoid state exists in any form of disease, western physicians have often prescribed for several days without observing scarcely any effect from the medicine they had directed. Let them employ iron, as here directed, and in a day or two, each medicinal article will begin to manifest its characteristic effects on the organism.

Muriated tincture of iron is a very efficacious compound in the treatment of menorrhagia. Its use should be continued for a considerable time. It may often be employed with the greatest advantage in fever with typhoid symptoms.

Iodide of iron is a preparation which combines in some degree the properties of iodine with those of iron, though the latter predominate. It seems to promote the secretions more than any other compound of iron. When it is not too stimulating it is one of the best tonics in the anaemia of phthisis and scrofula; and from my experience of its effects in these affections in this climate, it is never too stimulating. It may be advantageously employed in all cases of anaemia combined with enlargement of the lymphatic glands. It changes the molecular condition of indurated glands and promotes their absorption. It may be used advantageously in the chronic form of many diseases, in which calomel should have been employed during the acute state.

The citrated aromatic wine of iron possesses the most agreeable odor and taste of any medicinal compound of iron. It is seldom rejected by the most delicate stomach. I have directed it for children and young persons in various forms of disease with debility, and I never found it disliked or rejected, and its repetition is more generally desired.

When excessive secretion from a relaxed state of the mucous membrane in chronic bronchitis exists, combined with wine of ipecacuanha, it is of peculiar efficacy. In all diseases which arise from deficient developmental activity of the blood-cells, it is a remedy of great value. There are many other compounds of iron of peculiar value and great efficacy; but I cannot extend the limits of this paper by a definite notice of them.

When we contemplate the effects of the climate of the alluvion districts in the southwestern States in the production of an impoverished condition of the blood, the frequency with which this state of the blood is met with in these localities, and its injurious consequences to the organism when allowed to continue, the value of iron in the promotion of the growth and maturity of the blood-cells, and the consequent removal of this condition of the blood, can scarcely be sufficiently appreciated.
Lecture on Chorea and Myelitis of the Chord. By THOS. ADDISON, M. D., F. R. C. P., Senior Physician to Guy's Hospital.

GENTLEMEN.—There is that case in the bed, No. 15, that boy, J. B——, aged 11 years—a delicate, strumous boy that moves about like a frog or a lizard thrown into half a hundred contortions, and which you recognise at once as hemiplegic chorea. There is that poor boy, I say, so curiously afflicted; the case is one of great interest. You observed, no doubt, some of you, when first I saw him, how carefully we listened to the action of the heart, and how I felt the skin. I will explain why I did so as we go along.

Now, whenever I see a young subject the victim of chorea, I always suspect that it had its origin in rheumatism. I felt this boy's skin to discover if he had that sweaty surface, so characteristic of rheumatism. I listened to the heart, and what did I find? Loud mitral bruit. And what do we learn in going over the previous history, as noted by the clinical clerk? We find that about three years ago he had rheumatism; and here I may tell you, that you will often find, under the name of severe "growing pains," that you have had, in point of fact, a veritable attack of rheumatism. Are we to believe this mitral bruit was the result of rheumatism, or not?

Believe me, rheumatism is a very eccentric disease; I know none more so. There is no disease, perhaps of which we know really so little as rheumatism in its pathological essence and nature! An old physician of considerable experience was asked What cure is for rheumatism? His answer was laconic: "The cure for rheumatism is—six weeks!" In other words, rheumatism must be let cure itself. I have cut rheumatism and rheumatic gout short in less than half the time with colchicum or the powdered cormus and sulphate of magnesia, and other things; but I am not so certain that cutting rheumatic gout short by potent measures is quite the same thing as curing it. Let us, however, at all hazards mind the heart in these cases.

Rheumatism is a queer or eccentric disease, I have said. Now, it is my belief that rheumatic disease, whatever it is, sometimes attacks the skin alone. It is my firm belief that it sometimes attacks the heart alone. I know the rheumatic skin well; and I am satisfied also about the ravages committed by this so-called rheumatic inflammation in the endocardium and pericardium, and that, too, without any pain to attract attention. I see the rheumatic skin; and when I do, I almost with certainty predict rheumatism, which is sure to supervene. One may sometimes find the heart inflamed, by itself, but you will do well to look out for rheumatism in the joints and their syno-
vial or ligamentous tissues. This pericarditis is of a marked kind, with no pain about the heart.

But you say, What has all this to do with chorea? Well, what the relations are is not clearly made out; but that there is a connection or relation is perfectly evident. If we look at it in this way, we find, for instance, in acute endocarditis, the patient's manner is often very remarkable, more so than in pericarditis; he may be even quite delirious or laboring under decided cerebral complications.

Some ability and ingenuity are shown by Dr. Kirkes and others in tracing certain clots or shreds of fibrinous matter, as washed from the endocardium into the brain, causing irritation there. On the continent, I find they look on the matter in a less mechanical way, and they say a poison—say, like that of some other serous effusions—is carried to the brain from the rheumatic deposit in the endocardium. I am afraid we have too many analogies in pyæmia and other affections to give stability to this hypothesis.*

There are several curious associations, I have said, between the brain and heart, epilepsy, for instance, affects the heart. Sometimes, a fit of epilepsy extends itself in a violent tumult of the heart. I was consulted some time ago by a gentleman—a manufacturer at Huddersfield, or somewhere down there—for some curious functional derangement of the heart. I told his family doctor it was epilepsy of the heart; and I believe my friend thought I did not know what I was saying, and smiled at me; but the epilepsy of the heart, with those curious fits of unconsciousness he could not understand; and how puzzling they are you will find when you get into private practice; so that you cannot give too much attention to them. Well! these anomalous fits of unconsciousness and tumultuous palpitation ended, nevertheless, in regular fits of epilepsy—some of the most marked, perhaps ever seen. I do not pretend to explain how this is brought about; I only know the practical bedside fact. The relations of the fit in epilepsy itself are very peculiar; but emotional influences will produce palpitation of the heart; and, I suppose, in some such way, epilepsy produces it as a

* Chorea is derived from the word choros, a dance. During the middle ages, we learn from Hecker, sundry choreic ravings attacked the peasants at Kolhig, Erfurt, and Utrecht, in 1374. At Aix-la-Chapelle the sick thus seized "appeared to have lost the control over their senses, and were only relieved by swathing the body;" and various incantations common at the time. These choreic ravings were mixed up with various religious ravings, evidently the reflection of sundry broken images, as from the broken mirror of some popular impression of the day. The name "St. John's Dance" was given to chorea, as it was at one time thought chorea, originated in the revels of that festival and St. Vitus's dance, because of the cures effected at the celebrated chapel of St. Vitus. This disease continued two centuries. Paracelsus (no very reliable authority) gives a long description of the epidemic, and the Arabians called it a palsy.
sort of first of three warnings.” Emotional influences or fright will cause chorea; in fact, it is the most common of all causes of the disease. A dog runs after a child; a ghost story is told by a foolish nurse; a house takes fire, and child is exposed to danger; the child, perhaps, is seized with chorea: some horrible agitation* is set up in the emotional (or central) parts of the brain, and chorea fits are the result. The complication or connection of chorea and heart diseases is so common that I always look for it. See in that case of gout, on the other hand, in that poor woman in the other part of the ward, you can scarcely tell it from rheumatism; she has renal disease, with gout in her foot; but her heart is perfectly free, and, in all probability will continue free. How curious these peculiarities are!

Yet gout and rheumatism are pathological first cousins; but why does one affect the heart, the other not? I cannot tell you. Well, we gave this boy a mild mercurial first, to settle all right in the prime vic, and we shall follow that up with the sulphate of zinc, in which I have great faith as a remedy in chorea. At Guy’s at least, we have not yet hit on any thing equal to it.

These poor patients with chorea are often very ludicrous, but very distressing to observe. I have seen four or five deaths from the excessive exaggeration of the chorea symptoms; like lizards or eels, such patients are contorted into a myriad of forms; they glide and twist and tumble about the floor and out of bed or into the fire! I have known chorea to begin with pregnancy, and go on increasing as the poor big-bellied woman got bigger and more unwieldily, and only yield when the uterus became empty again! Dr. Hamilton once thought purgatives cured chorea; but I do not believe this is invariably found. Sulphate of zinc or oxide of zinc is the remedy we have made out as most valuable at Guy’s. I have known a patient take of sulphate of zinc (not oxide, mind) so much as eighteen grains four times a day. My attention was once drawn by the late Dr. Chambers to a peculiar cast of countenance such patients acquire who are taking these very large doses of zinc: you know, of course, the dark tint or tinge produced by nitrate of silver, the dark line of the gums by lead, &c. We were attending a patient for another disease altogether, and though Dr. Chambers could not describe what it was, he said, to one in the apartment, “Why you are taking zinc, are you not?” and it turned out that he was. The nearest idea I can give you of the zinc complexion of the face is, that it is destitute of the freshness and cherry redness of rude health, and the skin of the face assumes a glossy sameness of

* It was recently stated that a young man dropped dead of fright, at a theatre, on seeing the Ghost in ‘Hamlet’ stalk forth for the first time on the stage; and a similar case of death from fright, not long since formed the subject of a coroner’s inquest.
tint very like pewter; in fact, Dr. Chambers knew the "pewter face" very well; it requires the light to fall in a particular direction, and then you will see it: the hint may be of use to you. We will now say a few words about the patient in the bed No. 20. He has been in the habit, he tells us, of carrying heavy loads on his head; this I need not say, produces a strain on the muscles about the neck, and pressure on the veins. Well, he has had fits of unconsciousness, and now has excessive pain of a neuralgic character in his limbs. We had a man not long since under care, you recollect, with what I called, "ligamentous rheumatism." I have seen more than once this sort of ligamentous rheumatism attacking the delicate ligaments, the odontoid, and others of the articulation of the axis occipital bone and others of the axis and atlas; in one case of a boy it threatened to end in universal paralysis, as the thickened membranes no doubt pressed on the medulla oblongata, producing a somewhat common disease, myelitis of the medulla oblongata or chord, or perhaps mechanical pressure. In a woman with the same disease I verily believe we saved her life by keeping the head, almost in splints, perfectly quiet. We will adopt the same plan in this poor man; we shall support him and prescribe cod-liver oil and tonics, and you will see the result.—[Medical Circular.]

On the Causes of the Pneumonia which supervenes upon Laryngotomy. By Professor Schuh.

All surgeons of experience are aware that pneumonia is sometimes observed after the performance of laryngotomy or tracheotomy: but observers are by no means agreed upon the causes of this. Most persons, however, seem of opinion that the operation itself does not bear any direct casual relation to this occurrence. Professor Schuh entirely differs from them, and the performance of a very large number of operations upon the air-passage, during his twenty-three years' attendance at the Vienna Hospital, enables him to speak with authority upon the subject. Although a great advocate for these operations under a variety of circumstances, he is convinced that the altered position and amount of the column of air that is admitted into the lungs is not unfrequently the sole cause of the supervening pneumonia. The following are the grounds for this opinion:—

1. The air, after the operation, enters the lungs by a shorter passage, and by one that is straight in place of being curved, as before; and it does not pass through an aperture which is alternately widened and contracted, as is the case with the rima glottidis. The column of air, too, which passes through the canula is larger than that which traverses the glottis, for if a smaller
canula were employed, it would be liable to dangerous obstruction. We have thus two important changes in the mechanical conditions of respiration; and the lung becomes exposed to the pressure and impulse of a large column of air, arriving more rapidly by a shorter passage. This, so tender and vascular an organ will not always support, and inflammation may be easily excited, just as it may when, in the operation of paracentesis thoracis, the fluid is too rapidly drawn off, and the lung is too suddenly exposed to the pressure of the air. 2. Experience confirms what à priori might have been expected. Any one who has very frequently performed the operation, must have met with cases in which the patient has complained of the admission of too large a quantity of air, and has only felt at ease when the opening of the canula has been diminished a third or a half by sticking-plaster. If such an indication of an intelligent and observant patient be neglected, pneumonia will follow. 3. The author has lost several patients in whom, at the time of its performance, no signs of pneumonia could be detected, and who seemed to be going on very well to the tenth or even twenty-first day. Not only did no other cause for the development of the pneumonia exist, but this was also always found on the right side—this being on account of the greater width and shortness of the right bronchus more exposed to the impulse of the air. The disease does not come on actively, but is indicated by some acceleration of respiration and slight fever. Physical examination, however, shows that very considerable infiltration has taken place; and the neglecting to institute this may be a cause that many pneumonias have been overlooked. 4. Cases of cut-throat, in which the larynx is wholly or partially divided, also strikingly exhibited the danger of opening into the air-passages, such patients not infrequently perishing in a few days of pneumonia, this always commenced on the right side, and in even fatal cases being usually confined to that side. It may also spring up in smaller wounds of this part, if these be not kept carefully closed either by sutures or suitable dressings and bandages.

To the question whether pneumonia after laryngotomy can be prevented, the answer is, that it can in many cases, but not in all. For this purpose no wider canula should be employed than is necessary to maintain uninterrupted respiration; and as soon as the patient can breathe freely enough through the mouth, and can both breathe and speak when its orifice is closed, it should be changed for a smaller one, or its opening should be partly closed by plaster. When the breathing continues perfectly easy, the canula being stopped, before this is entirely removed it should be allowed to remain in, completely stopped, during twenty-four hours, care being taken that it should not
project inwardly, so as to narrow the normal passage for the air. The temperature of the room should never be allowed to sink below 66° Fahr.

It is often exceedingly difficult to determine the time when the canula should be finally removed. After such removal, the patient may continue to breathe quite easy for from two to eight days, when the difficulty gradually returns, until it becomes as bad as ever. If even a couple of days have passed, the re-introduction of the canula can seldom be accomplished, and then only by first passing through the canula a conical obturator, which can better overcome the elasticity of the edges of the cartilage. The longer the canula has remained prior to removal, the more readily may it be re-introduced. The recurrence of dyspnœa is especially to be apprehended when we have reason to suspect ulcer of or around the rima, open abscesses, and sinuses beneath the mucous membrane. Tumefaction rapidly diminishes, and the normal permeability is soon re-established; but on the admission of the stream of air to the diseased part by the withdrawal of the canula, the former difficulties may soon be reproduced. Hence, when the diagnosis can be established, the canula in such cases should be retained during several weeks, in order to give the surfaces time for healing. According to Professor Schuh’s experience, pneumonia never comes on after the first twenty-one days are passed, and the canula may then be worn for months or years without injury. On the other hand, the Professor has lost cases by removing the canula too late, pneumonia unexpectedly appearing. The sensibility of the lung to the unusual arrival of air, is especially great when the difficulty of breathing that has given rise to the operation has been of long duration, and the organ has become enfeebled by venous congestion and a diminution of the contractile powers of its cells.

In a case in which Professor Schuh performed laryngotomy in order to facilitate the removal of a large pharyngeal polypus, the patient who had suffered for months from a difficulty of breathing, was quite well on the day of the operation. The canula having, however, been left in during twenty-four hours, pneumonia was detected by auscultation within this period.

Thus, it results from what has been said, that pneumonia is sometimes a consequence of breathing through an artificial opening; and by due regulation of the size of the volume of air, the temperature of the room, and the timely removal of the canula, it may usually be prevented. This, however is not always the case, for the condition of the patient may require a long retention of the canula, the lung may be excessively sensible to the changed mechanism, and art has as yet furnished no apparatus as a substitute for the alternated dilatation and contraction of the glottis.——[Wien Wochensch., and British and Foreign Med. Chir. Rev.]
EDITORIAL AND MISCELLANEOUS.

THE AMERICAN MEDICAL ASSOCIATION.

This National Medical Congress of our Republic held its eleventh annual meeting in Washington, (D. C.,) beginning May 5th, 1858.

The Association met in the Lecture-room of the Smithsonian Institution, and was called to order at a quarter past 11 o'clock A. M., by Dr. Condie, of Philadelphia, when the Chair was taken by the President, Dr. Paul F. Eve, of Nashville, Tennessee. Vice-Presidents, Breckenridge of Kentucky, Reese of New York, and Campbell of Georgia, were also on the platform; and at their table were the efficient Secretaries, Drs. Foster of Tennessee and Semmes of this city [Washington]. Rev'd Byron Sunderland, D. D., at the invitation of the President, offered an eloquent and appropriate prayer, invoking the blessing of Almighty God upon the Convention.

The meeting was then addressed by Dr. Harvey Lindsley, of Washington, Chairman of the Committee of Arrangements. His welcome was warm and open-hearted, and expressed in language chaste, beautiful and appropriate; and was indeed but the earnest of that abundant hospitality the members were to receive during their sojourn at the Capital.

The number of delegates and permanent members present was larger, we think, than ever assembled on any similar occasion, excepting, perhaps, the meeting in 1853, held in the city of New York. The names amounted to over four hundred, on the calling of the roll at the first session.

On the calling of the roll by the Secretary, State by State, as it had been made out, up to the commencement of the meeting, the following number of delegates responded:

Maine 2, New Hampshire 8, Connecticut 18, Vermont 1, Massachusetts 40, Rhode Island 5, New York 73, New Jersey 25, Pennsylvania 66, Delaware 4, Maryland 24, District of Columbia 25, Virginia 8, North Carolina 8, South Carolina 10, Georgia 12, Alabama 1, Kentucky 9, Tennessee 7, Indiana 6, Illinois 12, Michigan 3, Iowa 3, Missouri 4, Ohio 14, California 1, American Medical Society of Paris 1, U. S. Navy 2. [When the name of Dr Harvey, who has come from California expressly to attend this convention, was called, there was a loud applause.] Other members were announced at different times during the day, and when the Association adjourned there were four hundred and six names registered.

Dr. David M. Reese, of New York, now presented and read a written apology for having recommended for a position in Blockley Hospital,
Philadelphia, Dr. McClintock, who had been expelled from the Association for a violation of the ethics and the etiquette of the Profession, by lending himself to the quackery of Patent Medicines.

On motion of Dr. Condie, of Philadelphia, the apology was accepted, and ordered to be entered upon the minutes.

Dr. Bryan, of Philadelphia, who had also recommended Dr. McClintock, made a verbal adoption of Dr. Reese's apology, the reception of which was warmly debated. Dr. C. C. Cox, of Maryland, opposed, and Dr. Condie advocated the reception. Dr. A. B. Palmer, of Michigan, moved the previous question on a motion to refer the subject to a committee, which was lost. The apology of Dr. Bryan was then accepted. [It was rumored in the hall that Dr. McClintock will be reinstated during the session of the Association.]

The President, Professor Paul F. Eve, of Nashville, Tennessee, then delivered, in a clear voice and with pleasing oratorical effect, his annual address to the Association. This paper, which is a most able review of the history of the Association from its beginning to the present time, most eloquently and conclusively vindicates that body from the charge of having accomplished but little, and is eminently calculated to inspire its members with pride in view of what they have accomplished in the past, and with energy and determined high purpose for the future. It is fortunate that, by the unanimous action of the Association, such a paper is to be recorded in the next volume of the Transactions—and every journal should record it, as an encouragement and a stimulus to the American Medical Profession. It shall be presented to our readers in our next number, as a separate paper.

Dr. Grafton Tyler, of Georgetown, D. C., chairman of the committee on prize essays, reported that the essays received were three in number, each of which had been examined with great care; considering, first, the intrinsic merits of each essay, and then their merits in relation to each other. The first prize was awarded to "an essay on the clinical study of the heart's sounds, in health and disease," bearing the motto—"Clinica clinice demonstrandum." The second prize was awarded to "an essay on vision and some of the anomalies as rendered by the ophthalmoscope," bearing the motto—"Dux hominum medicus est."

Dr. Tyler then proceeded to open the sealed envelopes bearing the above-named mottoes, and containing the names of the writers of the essays. The first was written by Dr. Austin Flint, of Buffalo, New York; and the second by Dr. Montrose A. Pallen, of St. Louis, Missouri. This is the second time Dr. Flint has won this distinguished honor, and the third time that it has been awarded to Buffalo since the association was organized, eleven years ago.
On motion, the report of the committee was accepted and adopted. Doctors Flint and Pallen were then invited to give resumés of their essays, which they did, and each of the gentlemen was listened to with marked attention on the part of the association.

Among other gentlemen, Dr. Peter Parker, ex-commissioner to China, and assistant-surgeon Frederick A. Rose, of the British Navy, were unanimously elected "members by invitation."

The latter gentleman, Dr. F. A. Rose, of the British Navy, who so nobly volunteered his services on board the United States ship Susquehanna, at Port Royal, and who came in her to New York, devoting himself to the sick crew, was unanimously elected a "member by invitation," and invited to take a seat upon the platform. [Applause.] It was announced that Dr. Rose had left the city.

Dr. Francis G. Smith, of Philadelphia, chairman of the committee on publication, made his report, showing the expense of publishing the annual volume.

Dr. Caspar Wistar, of Philadelphia, presented his annual report of receipts and expenditures, showing a balance on hand of $806. Accompanying the Treasurer's report was a resolution providing that the back volumes on hand, when over two years old, shall be sold at two dollars a volume, and that volumes V, VII, VIII, and IX, of which there are a surplus, be sold at $5 a set to any member.

A report was made by the committee on nominations, which was accepted; and the association then elected the following officers:

President, Dr. Harvey Lindsley, of Washington City. Vice-Presidents, Drs. W. L. Sutton, of Kentucky; Thomas O. Edwards, of Iowa; Josiah Crosby, of New Hampshire; and W. C. Warren, of North Carolina. Secretary, Dr. A. J. Semmes, of Washington City. [The other Secretary will be elected when the location of the next association is selected.] Treasurer, Dr. Caspar Wistar, of Philadelphia.

On motion, Drs. Flint, of New York, Gross, of Pennsylvania, and Gibbes, of South Carolina, were appointed a committee to conduct the President elect to the chair.

Dr. Lindsley, having been introduced to the association by the retiring President, Dr. Eve, made a few pertinent remarks, acknowledging the honor as the highest he had ever been called upon to receive, and the highest that any medical man in America can receive. [Applause.] Unaccustomed to preside over so large a body, and having had but little practice in presiding over smaller assemblages, he must throw himself upon the forbearance of the association, and look to the members for support in the discharge of his official duties. [Applause.]

On motion, the thanks of the association were voted to the retiring
officers for the able and impartial manner in which they have discharged the duties of their respective offices. [Applause.]

On motion, the ex-presidents of the association present were invited to take seats on the platform.

The committee on medical topography and epidemics was called by States. A paper from the member from Maine stated that he will report next year. There was no response from New Hampshire, Vermont, Rhode Island, Connecticut, or Massachusetts. Dr. Smith, of New Jersey, read an able report on New Jersey, and the association then adjourned until this morning at nine o'clock.

Evening Hospitalities.—At eight o'clock in the evening the delegates and the ladies who have accompanied them paid a visit by invitation to the Executive Mansion. The East Room, with the adjacent suite of drawing rooms, were brilliantly lighted, and were filled by about five hundred gentlemen, representing all sections of the country, and a hundred or more ladies. One of the delegates had seen upwards of four score years—others have but just entered upon the practice of their profession.

The President received his guests, as they were successively presented by Dr. Cornelius Boyle, chairman of the committee of arrangements, with his accustomed cordiality, and afterwards moved about in the East Room, engaging in conversation with the groups there gathered. The entire cabinet was present, with J. B. Henry, Esq., Marshal Selden, and Commissioner Blake.

From the Executive Mansion the delegates generally proceeded to Georgetown, where they were hospitably entertained at the residences of Dr. Grafton Tyler, at the corner of Gay and Washington streets, and of Dr. Riley, No. 91 Gay street. A cordial welcome and good cheer awaited them at the houses of each of these distinguished practitioners.

There was a large number of arrivals at the different hotels last evening, and an interesting session may be expected to-day.

SECOND DAY.

The Association was called to order by the President, Dr. Harvey Lindsley, and A. J. Semmes, one of the Secretaries, read the minutes of the first days proceedings; which were adopted.

On motion of Dr. Watson, of New York, Dr. Delafield, of New York, one of the first officers of the association, was invited to take a seat on the platform.

On motion of Dr. Atkinson, of Virginia, an amendment to the constitution was received, providing that no person shall be recognized as a member or admitted as a delegate at meetings of the association who has been expelled from any State or local medical association, until relieved by action of such State or local association. [Applause.]
An abstract of the report on medical literature was then read by Dr. A. B. Palmer, of Michigan; which report was, on motion, accepted and referred to the committee of publication.

On motion, Dr. N. Bozeman, of Alabama, was elected a member by invitation.

The report on medical education was now presented by the chairman, Dr. James R. Wood, of New York. This is an able and judicious paper, of which we can at present only give a summary, hoping, in some future number, to transfer the whole of it to our pages. Dr. Wood, in our opinion, acted with good judgment, in referring many of the details of medical education to a convention of professors of colleges. This, certainly, instead of disfranchising the schools, as was apprehended might be attempted at the present meeting, is decidedly a step taken in the other way. This measure is the more to be appreciated, coming as it does, from Dr. Wood, who, though not connected with any college, knows well how to estimate the exigencies and the requirements of medical teaching, in our country, from his long and intimate relation to this department, in the position he has so creditably filled in Bellevue Hospital.

The subjects discussed in this report are the following:—1st, primary medical schools; 2nd, the number of professorships in medical colleges; 3rd, the length and number of terms during the year; 4th, the requisite qualifications for graduation; 5th, such other subjects of a general character as to give uniformity to our medical system. Having reviewed these propositions at length, the committee have arrived at the following conclusions:

First. Primary medical schools should be encouraged; but, as office instruction will continue to be sought by students, practitioners should either give them necessary advantages of demonstrations, illustrations, and recitations, or if not prepared to do so, they should refer them to such primary schools, or medical men, as will give them proper instruction.

Second. The number of professorships should not be less than seven—viz: a Professor of Anatomy and Microscopy, Physiology and Pathology, Chemistry, Surgery, Practical Medicine, Obstetrics, and Materia Medica.

Third. There should be but one term annually, which should commence about the 1st of October, and close with the March following, thus lengthening the term to six months. The commencement of the term, in October, should be uniform in all the colleges throughout the country. During the session there should never be more than four lectures given daily.

Fourth. The qualifications for graduation, in addition to those now required by the schools, should be a liberal primary education, and attendance upon a course of clinical instruction in a regularly organized hospital.

In order to give our medical colleges an opportunity to consider the
recommendations here advanced, and that this body may have the advantage of their wisdom and their mature views, before any definite action is taken upon them, your committee submit to the association the following resolutions:

Resolved, That the several medical colleges of the United States be requested to send delegates to a convention to be held at the day of for the purpose of devising a uniform system of medical education.

Resolved, That the present report of the special committee on medical education be referred to such convention for its consideration.

Resolved, That said convention of delegates from the several colleges of the United States be requested to submit to the meeting of this association in May, 1859, the result of their deliberations.

On motion, the report was accepted and referred to the committee on publication, the accompanying resolution being laid on the table.

The committee on nominations reported Louisville, Ky., as the place of meeting in 1859, and nominated Dr. S. S. Bemis, of that city, as second secretary. They also nominated the following standing committees:


Committee on Medical Literature—Dr. John Watson, N. Y., chairman; Drs. L. A. Smith, N. J.; C. G. Comegys, Ohio; R. W. Gibbes, S. C.; W. M. McPheeters, Mo.

Committee on Prize Essays—Dr. J. B. Flint, Ky., chairman; Drs. M. Goldsmith, N. J.; H. Miller, Ky.; Calvin West, Ind.

Committee on Medical Education—Dr. G. W. Norris, Pa., chairman; Drs. A. H. Luce, Ill.; E. R. Henderson, S. C.; G. R. Grant, Tenn.; T. S. Powell, Ga.


The report was accepted, the nominations were confirmed, and the committee received permission to sit again.

After considerable discussion, it was decided that the meeting go into a committee of the whole, to reconsider the acceptance of the apology presented on the day previous by Dr. Reese.

Dr. T. O. Edwards, of Ohio, now took the chair.

It was now moved, to read the remonstrance of the Philadelphia Medical Society, in which all the circumstances of the recommendation of Dr. McClintock by Dr. Reese, and his appointment to office in Blockley Hospital, were fully set forth.

Dr. Biddle, of Philadelphia, protested against the reading of the remonstrance, as a violation of plighted faith.
The remonstrance was however read. It was a long document, giving a detailed account of the recommendation by Dr. Reese of Dr. McClin- tock for a position in Blockley Hospital, after the last-named gentleman had been guilty of selling quack nostrums, and had thus committed an offence against the ethics of the profession.

Dr. Humphries of Indiana, moved that each member of the commit- tee of the whole be restricted to five minutes, allowing Dr. Reese what- ever time he wished to defend himself in.

Dr. Phelps showed that a ten-minutes rule was now in force. Dr. Cox moved, as an amendment, to make the time fifteen minutes; which amendment was lost, and the original motion of Dr. Humphries was then carried.

Dr. Reese then ascended the platform, and made a statement of his position from the commencement of the controversy. He considered his apology of the day previous a satisfactory one, but was willing to make it more so if it was objected to. He had not brought the subject before the association; but had been given to understand that if he made the apology which he had made, the remonstrance would not be offered. During his remarks there was a demand for the reading of the apology; which was read, as follows:

To the Officers and Members of the American Medical Association:
The undersigned, one of the vice-presidents of the American Medical Association, having during the interval since our last annual meeting, certified to the professional fitness for the charge of the Blockley Hospi- tal, at Philadelphia, of an individual who had been expelled from this body for a violation of our code of ethics, after consultation with the other officers, and yielding to the advice of other personal friends, desires to say to the association now assembled—

1st. That in giving said certificate, he was prompted solely by motives of sympathy and humanity to a fallen brother, who had been a personal friend prior to his offence; and that he did not realize, acting under the impulse of the moment, that his individual act could be construed by the profession as indicating hostility to his brethren.

2d. That while his own mind is clear that his certificate contained only the truth, and that under his peculiar relations to the party con- cerned, he could not withhold his certificate, of medical qualification, consistent with conscience and duty, yet he is ready to concede that he had no abstract right to relieve the party from the censure of the association until this body had restored him to his fellowship.

3d. That so far from intending any disrespect to the association, or to its act of discipline, the undersigned had publicly sustained and de- fended both. He therefore disclaims the inference from his certificate
that he intended to recommend to a high professional office a man whom the association had excluded, and thereby nullify the action of this body.

And, finally, with these statements and disclaimers, the undersigned, while retaining his own opinion of the rectitude of his motives, and of his duty, under the peculiar circumstances of the case, is nevertheless prepared to defer to the judgment of those whom he knows to be his friends, that he erred in doing what he had no right to do, in view of his official position in the association, and is hence called upon to offer this explanation and apology to his brethren.

(Signed) DAVID M. REESE.

It was moved to refer the apology and remarks of Dr. Reese to a special committee of seven, to report to-morrow morning. Dr. Atlee, of Lancaster, and other gentlemen urged delay.

Dr. Condie hoped that a committee would be appointed to give the subject a careful consideration.

Dr. Cox, of Maryland, after complimenting Dr. Reese as an able practitioner and an experienced editor, whose labors have been of great value to the profession and to the country, said that he did not consider the statement full and satisfactory. The offence was not an unpardonable one, but the violation of that code of ethics which is the life of the profession should be properly atoned for. [Applause.] The apology was good enough, but it carried as its sting the mental reservation which Dr. Reese persists in. Nay, in his journal, issued simultaneously with this meeting, and circulated here, he says: "Having done right in certifying to the labors of our quandam friend McClintock, we resented the unmerited censures of our Philadelphia brethren." This completely stultifies the effect of the apology.

Dr. La Roche, of Philadelphia, explained his action and that of the Philadelphia county society in the matter.

Dr. Pain, of Vermont, Dr. Cox, and Dr. Bond made some rather sharp remarks. Dr. Davis of Massachusetts, thought that Dr. Reese had but to admit that he had done wrong, and ask pardon without any mental reservation.

Dr. Reese said that he had intended to make a satisfactory apology. Such was his earnest wish and desire, and he wished to frankly state that he had no mental reservation, neither did he attempt to conceal anything. He made the statement which had been read without reservation and without evasion. [Applause.]

Dr. Conte expressed his entire satisfaction, as did numerous other gentlemen, several crossing to where Dr. Reese was sitting and shaking hands with him.
The committee of the whole then rose, and the chairman reported to the president that the committee had heard and discussed the apology of Dr. Reese, and that they considered that it was "ample, full, complete, and satisfactory."

On motion, the report of the committee was received and adopted.

The case of Dr. Bryan then came up, when it was suggested that his apology should be in writing, he expressing a willingness to make one as ample as was that of Dr. Reese.

Dr. Reese then drafted an apology, but several gentlemen insisted that he should insert the word "regret." Dr. Reese declined, stating that no gentleman would apologize for that which he did not regret, and that he would never be dictated to by any gentleman, even if the prison-door stood open on his right hand, and the stake was at his left hand.

Dr. Wood (who was greeted with loud applause) stated that he had been with the side which had offered the apology, but he did not consider the apology complete without the insertion of the word "regret."

Drs. Bonner, Clark, of New Jersey, Hard, of Illinois, Parker, of New York, and other gentlemen participated in an exciting debate on the necessity of having the word "regret" inserted.

Dr. Reese added the following sentence, "and regrets that he has incurred the displeasure of his brethren." This was not favorably received.

Dr. Boyle, chairman of the committee of arrangements, here announced that arrangements had been made by which delegates who had purchased tickets on their way to the convention over the following roads could return free by exhibiting their cards of membership: Pennsylvania, Wilmington and Manchester, Illinois, Central, Northeastern South Carolina, and Richmond and Petersburg.

The apology of Dr. Reese was again taken up, and discussed with spirit, although there was no manifestation of bad feeling on either side. At length he presented the following:

"The undersigned regrets that he certified to the professional qualifications for Blockley Hospital, Philadelphia, of an expelled member of this body, and hereby offers this apology for his departure from the ethical code."

This was received with loud applause, and on motion of Dr. White, accepted as an ample and satisfactory apology.

Dr. Bryan submitted a similar apology, which was also accepted, and then the committee adjourned until to-day at nine o'clock, A.M., evidently well pleased that this question was finally disposed of.

THIRD DAY.

The President, Dr. Lindsley, having called the Association to order at half-past 9 o'clock, Dr. Grant, of New York, asked leave to present a
comment against the New York Medical College, but on information by Dr. Edwards, that a Committee on Ethics would be recommended by the Nominating Committee, he withdrew the request.

The appointment during last year of Dr. George Hayward, of Boston, as a delegate to represent the American Medical Association, in kindred societies in Europe, was announced by Dr. Eve.

**Medical Education.**—Dr. Hamilton, from the Committee of Delegates from medical schools and colleges, to whom was referred the report of the Special Committee on medical colleges, reported the following preamble and resolution:

Fully appreciating the value and importance of the resolution under which they were appointed, but a majority of the gentlemen constituting this committee not being authorized by the medical faculties of the several colleges with which we are connected to act as their representatives in this matter, and therefore regarding it quite impossible to secure a convention of delegates in the interim of the meetings of the association:

*Therefore, Resolved,* That we recommend to all the medical colleges entitled to a representation in this body, that they appoint delegates, especially instructed to represent them in a meeting, to be held at Louisville, on Monday, the day immediately preceding the convention of the American Medical Association, for the year 1859, at ten o'clock, at such place as the Committee of Arrangements shall designate.

The report was accepted, and the preamble and resolution were passed; after which, several gentlemen claimed the floor, but the president decided that the reports of special committees were in order, the reports of committees on Medical Topography and Epidemics having previously been referred to the Committee on Publication without reading.

Dr. Foster Jenkins, of New York, read a report on the Spontaneous Umbilical Hemorrhage of the newly born; which was read and referred to the Committee on Publication.

**Marriages of Consanguinity.**—Dr. S. M. Bemis, of Kentucky, read an able and learned report on the "Influence of Marriages of Consanguinity upon Offspring."

**Stone contributed to the Washington Monument.**—Dr. John L. Atlee, from the committee appointed at the annual meeting at Richmond, in May, 1852, to procure a stone with a suitable inscription to be inserted in the Washington National Monument, made a final report. It stated that Mr. Haldy, a marble mason of the city of Lancaster, Pennsylvania, had in his employment a young man, Mr. J. Augustus Beck, a native of Lititz, Pennsylvania, who had given unmistakable evidence of genius as a sculptor. At the suggestion of the late lamented Dr. A. L. Pierson, of Salem, Massachusetts, (made at the meeting in New York, just ten days before his death,) the design of the celebrated painting of Girodet Tricoson, representing Hippocrates refusing the presents of the
 Persian king, Artaxerxes, and his invitation to leave Greece, and reside and practise among her enemies, was selected. This was sculptured upon a block of Vermont marble, with the motto, "Vincet Amor Patrice," and the stone is now at the monument grounds. The entire expense was $1,000, of which one half was paid to the young artist. The amount contributed by members individually was $501.30; the balance was voted from the treasury of the society. Accompanying the report was a letter from the Secretary of the Washington National Monument Association, and a resolution of thanks to the railroad companies by whose liberality the stone was brought from Lancaster to Washington, free of charge. The report was accepted, and the resolution was passed.

Dr. Palmer, of Buffalo, read a report, made by Dr. E. Andrews, of Chicago, Illinois, on the "Functions of the different portions of the Cerebellum."

Dr. Campbell, of Georgia, read a report on "The Nervous System in Febrile Diseases," which was accepted, and referred to the Committee on Publication.


Committees for the ensuing year.—Dr. Edwards, from the Committee of Nomination, offered the following list of committees for the ensuing year, which was accepted, and the committees were chosen:

**Special Committee on the Microscope.**—Drs. Holsten of Ohio, Dalton of New York, Hutchinson of Indiana, Stout of California, and Ellis of Massachusetts.

**Special Committee on Medical Jurisprudence.**—Drs. Smith of New York, Hamilton of Buffalo, Crosby of New Hampshire, Purple of New York, and Mulford of New Jersey.

**Committee on Quarantine.**—Drs. Harris of New York, Moriarty of Massachusetts, La Roche of Pennsylvania, Wragg of South Carolina, and Fenner of St. Louis.

**Committee on Surgical Pathology.**—Dr. James R. Wood of New York, chairman.

**Committee on Diseases and Mortality of Boarding Schools.**—Dr. C. P. Mallengly of Kentucky, chairman.

**Committee on the various Surgical Operations for the Relief of Defective Vision.**—Dr. Montrose A. Fallen of St. Louis, chairman.

**Committee on Milk Sickness.**—Dr. Edward A. Murphy of Indiana, chairman.

**Committee on Medical Ethics.**—Drs. John Watson of New York, Dalton of Massachusetts, Emerson of Pennsylvania, Hamilton of New York, and Gaillard of South Carolina.

Dr. Edwards also reported from the Committee of Nomination, the following resolution, in reference to the restoration of Dr. Bailey:
Resolved, That a committee of nine be appointed by the chair to wait on the Hon. Howell Cobb, Secretary of the Treasury, and respectfully to request the restoration of Dr. M. J. Bailey, as inspector of drugs and medicines for the port of New York.

Dr. Edwards followed his resolution by an elaborate and eloquent argument, giving his opinion of the importance of the office of inspector, and urging that it was obligatory on the association to insist on the reinstatement of Dr. Bailey, as one eminently qualified to discharge its duties.

Dr. Tyler, of Georgetown, rose to reply to the remarks of Dr. Edwards, he acknowledged the important service Dr. Edwards had rendered the profession in procuring in Congress the passage of the law for the inspection of drugs and medicines, but when it was proposed to appoint a committee to wait upon an executive officer of government, and dictate to him, he felt that it would be turning aside from the purpose for which this association was organized.

A rather protracted argument here succeeded, in which substitutes were offered for the first resolution, and in which the following gentlemen engaged: Dr. Bolton of Virginia, Dr. Cox, of Maryland, who offered the following substitute:

Resolved, That the appointment of inspectors of drugs and medicines in the various ports of the United States, should, in the opinion of this association, have regard to the essential, moral, and scientific qualifications of the candidates, and not to considerations of personal favoritism or political bias.

Dr. Tyler, of Georgetown, supported the resolution of Dr. Cox as a fair compromise. He believed that the appointment of the committee would transform the association into a mere political machine, and concluded by strongly urging the passage of the resolution offered by Dr. Cox. Dr. Dunbar, of Maryland, strongly opposed the resolution of the Nominating Committee, and asked if it was the duty of that committee to nominate a candidate for inspector-general of drugs at New York. [Laughter.] The discussion of this question here became very general, and rather noisy, the following gentlemen engaging—Dr. Bachelder of New York, Dr. Parker of Virginia, Dr. Wilcox of Connecticut, Dr. Jewell of Pennsylvania, Dr. Wood of New York, Dr. Rodgers of New York, and Dr. Sayer of New York.

The resolution as amended was then carried by a vote of 79 ayes to 52 noes.

Resolved, That a committee of nine be appointed by the chair to wait on the Hon. Howell Cobb, Secretary of the Treasury, and respectfully to request the restoration of Dr. M. J. Bailey as inspector of drugs and medicines for the port of New York—at the same time disclaiming all political considerations.
Dr. Gibbs, of South Carolina, moved that Professor Henry be requested to favor the association with his views on Meteorology, at such time during the session as he may select: carried.

Dr. Campbell, of Georgia, moved that the Secretary place on record an expression of the regret with which this association has learned the death of Dr. Marshall Hall of London, Dr. Claiborn R. Walton of Augusta, Dr. S. W. Granton, Dr. T. Y. Simmons of Charleston, S. C., Dr. J. K. Mitchell of Philadelphia, and other members deceased, since the last annual session: carried.

Vote of Thanks.—On motion of Dr. Phelps, the following resolutions were passed unanimously, the members rising:

Resolved, That the thanks of this association are eminently due to the Regents and Professor Henry, of the Smithsonian Institution, for the ample and convenient accommodations afforded for the transaction of business.

Resolved, That the Committee of Arrangements are entitled to our praise and highest appreciation of their exertions to promote the comfort of the members and best interests of the association.

Resolved, That to the physicians of Washington and Georgetown and the faculty of Georgetown College we accord the homage of our sincerest thanks for their elegant hospitalities extended to the members from abroad, by which the pleasure of their sojourn here has been so greatly enhanced.

Resolved, That we feel assured that the impressions on the tablet of memory received here, in our national metropolis, in this the first year of the second decade of the association, will long remain an evidence of the urbane attentions received, not only from the Chief Magistrate and other public functionaries of our glorious Union, but of private citizens and the community at large.

Resolved, That the manifestations of union of heart and purpose in the action of this session, inaugurate a new era, and call for devout acknowledgement to Divine Providence, and presage, as we trust, not only a bright future for the association, but also as contributing to the perpetuity and prosperity of our great national confederation.

On motion of Dr. Anderson, of New Jersey, it was unanimously resolved that the thanks of the medical association be presented to Rev. Dr. McGuire and his faculty of the College of Georgetown for their very cordial reception and entertainment of the association at the College yesterday.

Dr. Arnold, of Georgia, then exhibited specimens of a new method of medical preparations of some membrane incomprehensible to the reporter, but which was evidently very interesting to the association.

On motion of Dr. Foster, of Tennessee, it was resolved that after 1860, Dr. Hamilton have the privilege of using his report on "Deformities after Fractures," published in the Transactions, for a work which he proposes to publish.
Dr. Campbell, of Georgia, was not aware, until he had just heard permission granted to Dr. Hamilton, that he had trangressed in republishing in a work a report which he had contributed to the Transactions of the association. [Cries of "regret it," "regret it."] He did regret it, and asked the sanction of the society: which was granted.

Dr. Dunbar moved to reconsider the vote appointing a committee to request the reinstatement of Dr. Bailey, and Dr. Morgan seconded it, but as Dr. Parker had been invited upon the platform, the motion was ruled out of order.

Dr. Parker's Chinese Hospital.—Dr. Peter Parker, ex-commissioner to China, was then introduced, and was received with applause. He exhibited some curious specimens of calculi, as the results of thirty-eight operations upon Chinese. They were of various shapes and composition, and weighed from a few drachms up to three, seven, and eight ounces, his description of the operations by which these calculi were removed was deeply interesting, and it was gratifying to learn that out of the thirty eight patients all but five or six recovered perfect health.

Dr. Parker proceeded to state that he has treated in China, at the hospital under his charge, fifty-three thousand cases. Pictures of the most curious cases he had brought to this country, and they were on exhibition in the room below. At no very distant period he hopes to place in a permanent form the results of his labors, with illustrations. [Applause.] Among other cases, he had probably performed upwards of a thousand operations for cataract. On one day he operated in sixteen cases, the youngest being a mere child, and the oldest on old lady seventy-nine years of age. She came, led by a servant, submitted heroically to operations on both eyes the same day, and in a fortnight had her sight perfectly restored. [Applause.] In acknowledging a vote of thanks, Dr. Parker said he had among his patients all classes, from members of the imperial family down to beggars. His greatest difficulty had been to persuade his patients that he could not cure all diseases.

Reconsideration of the Dr. Bailey Resolution.—Dr. Dunbar claimed the floor, and urged the reconsideration of the vote appointing a committee to wait on the Secretary of the Treasury, and solicit the reinstatement of Dr. Bailey.

Dr. Payne, of Virginia, opposed the reconsideration.

Dr. Tyler advocated it, and asked if this association was formed to wait on executive officers, and to dictate to them who they shall remove, and who they shall appoint. Many gentlemen around him, he was assured, had voted for the resolution without due reflection, and he trusted with confidence in their sober second thought. [Applause.] The press and the profession, he felt confident, would denounce this association if it
entered into the wide field of politics. It was instituted to promote the
great cause of science, not to join issue with government. [Applause.]

Dr. Morgan also advocated a reconsideration. He was not a partisan.
Although he resides in Washington, he has no personal acquaintance
with the President or the Secretary of the Treasury, but he was confi-
dent that they would not have made the change without good reason,
and it was not the mission of this association to criticise or to attempt
to change their views.

Dr. Palmer, after stating how little regard he had for the opinions of
the press, inquired as to the present incumbent of the office. Is he capa-
ble?

Dr. Watson, of New York, said that Dr. Bailey had had his circulars
out since his "rotation," and the subject had been twice before the
Academy of Medicine, who have ignored it.

Dr. Burns of Brooklyn, said that he was not a politician, and that he
was a personal friend of Dr. Bailey, but he hoped that the vote would
be reconsidered.

A member from California relates his experience there on a question
as to the superintendent of a lunatic asylum. In his opinion the less
the association had to do with politics, or with expressions of opinion
on political appointments, the better. [Applause.]

Dr. McNulty, of New York, said that the question had been twice
before the New York Academy of Medicine, and twice been voted down.
The present incumbent, whom it is sought to oust, is a German by birth
and education. He can read the invoices in whatever European language
they may be sent, and he makes his own analyses, which it is reported
the ex-inspector did not do.

After some "parliamentary" skirmishing, it was decided to reconsi-
der by a vote of 51 ayes to 32 noes. And, on motion, the subject was
then indefinitely postponed.

The association then took a recess of two hours, for dinner.

Evening and Closing Session.—The association was called to order
at five o'clock, P. M., by Dr. Sutton, one of the vice-presidents, who took
the chair.

The amendment to the constitution, proposed at the annual meeting
at Nashville, had been made the "special order." They were

1st. Amend the third article of the constitution, in relation to meetings,
by inserting after the words "first Tuesday in May," the words "or the
first Tuesday in June;" and also inserting after the words "shall be de-
termined," the words "with the time of meeting." 2d. In article 2,
omit the words "medical colleges," and also the words "the faculty of
every regular constituted medical college, or chartered school of medi-
cine, shall have the privilege of sending two delegates."
Each amendment was separately discussed, and each was lost by a large vote. An amendment proposed at Philadelphia in 1856 providing for the establishment of a permanent secretaryship, was lost by a vote of 53 ayes to 84 noes.

On motion of Dr. Foster, of Tennessee, the secretary was directed to collect all the by-laws, and have them printed in the next volume.

An attempt was made to introduce a motion endorsing the acoustics and ventilation of the new Capitol extensions, but it was ridiculed by Dr. Sayer, and was withdrawn.

Various additional votes of thanks were passed, and, at ten minutes of seven, the association adjourned sine die.

The account of the 11th annual meeting presented in the foregoing pages, we have condensed mainly from the very accurate report found in the Daily Washington Union, adding such passing comments as the performance of the hurried task would allow. Many of the measures therein developed, receive our hearty approval, while others, did we have time and space, would have received from us, comments conveying a far different opinion.

Whatever may be our opinion of the deliberations of the association, all are constrained to admit that it has vindicated its power and influence in the profession all over the land, and the opinion which we expressed some months ago, that "to transgress its wise and benevolent counsels is to suffer loss of position," could not have been more fully verified, than by the results of the session just closed at Washington.

Books, Journals, and Pamphlets received.—We have received a large number of Books, Pamphlets and Journals, besides communications for our own pages, the notices of which, together with almost our entire miscellany, have been excluded by the space devoted to the minutes of the annual meeting of the American Medical Association. We shall endeavor to do justice to these works in our next issue.

Coffee and Lemon Juice in Aque.—M. Von. Holsbeek draws attention to a mode of treatment he has found useful. Infuse an ounce of well-roasted coffee in three ounces of boiling water, and having strained the fluid, acidulate it with lemon-juice. The whole is given at once, five hours before the paroxysm.—‘Presse Belge,’ and Med. Times and Gaz.

Local Application in Eczema of the Face in Children.—Dr. Behrend in a note on the treatment of eczema, recommends the employment of the following combination as a remedy for the numerous scales which frequently cover the face of children:—Cod-liver oil, half an ounce; carbonate of soda, half a drachm. Mix.—Gaz. Hôp, and Dublin Hospital Gazette.
A NEW ANESTHETIC.—The subject of the following letter we deem of such deep interest, in a surgical point of view, that we have inserted it, although we have not space for those comments which its great importance evidently demands. Should electricity take the place of chloroform and amylene, in Surgery, how incalculable will be the result of the experiments here detailed.


Gentlemen,—Having been experimenting with electricity in some of the more painful operations of Dental Surgery, and believing the subject to be new to most of your readers, I send you, in a few lines, the result of my observations made in extracting more than fifty teeth, for different persons, within the last two weeks.

The First Case in which I tried it, I removed seven teeth, all firmly set—five molars and two cuspidati or eye teeth. In extracting the first tooth, too much electricity was applied, and the patient complained of pain from the shock, but not from the removal of the tooth. In the second tooth too little was applied, and the tooth itself gave pain. After this, we were able to regulate the quantity, so that neither the electricity nor the extraction of the tooth gave much pain. Patient not at all nervous, and frequently expressed herself highly pleased with the operation. The feeling experienced during the extraction of the teeth, as she expressed it, was a benumbing sensation about the tooth, which appeared to be attached only to the gum.

Second Case.—Extracted six teeth. Patient somewhat debilitated from previous suffering with her teeth, and quite nervous. Suffered considerable pain during the operation, but would not allow one to be extracted without electricity.

Third Case.—Extracted four teeth. Patient suffered but little pain.

Fourth Case.—Extracted a molar tooth, that had been previously broken, for a highly intelligent gentleman from a neighboring village. He was much pleased with the operation, and was very enthusiastic in his praises of electricity as applied to Dental Surgery.

Fifth and last Case, that I will report at present.—Extracted ten teeth for an elderly lady. Expressed no fear during the operation, and seemed to treat the affair as a mere trifle, which might be attended to any morning, without much inconvenience.

The general expression by those who have tried it, seems to be in favor of electricity in extracting teeth.

In some of the cases mentioned above, the gums were lanced by the same process, by connecting one pole of the battery with the handle of the lancet, while the patient held the other—the hand of the operator being protected by a silk glove.

I would here suggest that electricity may prove a valuable agent in the hands of the surgeon, in mitigating the pain of surgical operations. Who will try it?

The machine in use by myself, at the present time, is the compound magneto-electric machine, the same as used by physicians for medical purposes; but I have no doubt that voltaic or galvanic electricity will answer the purposes of the surgeon, better than the magneto-electric current, as the shocks of the former follow each other in such rapid succession, as to appear like one continuous current, while the latter is more or less interrupted, causing some trembling, and jerking of the muscles.
How to keep Rooms cool in Summer.—Lord Rosse has denied the absurd prediction, that the approaching summer will be an extraordinary hot one. Still, it may be well that medical men should be forearmed with the means of cooling their own and their patients' rooms. A flat vessel filled with water, and on which are floated branches of trees covered with green leaves, is a very pleasant and efficacious means, and is much employed in Germany. The suspension of Indian matting, previously damped, at the open window, tends much to diminish the heat. The matting may be imitated by any kind of plaited glass.

London Lancet.

Pressure in Phlegmasia Dolens.—In relating the case of a young woman who had suffered from phlegmasia dolens, and in whom the superficial veins continued much swollen, M. Trousseau cautioned his pupils against applying in similar cases firm bandages. The deep-seated veins being obliterated, this enlargement of the superficial ones is a necessary consequence, and compressing them by a firm bandage would completely interrupt the circulation of the limb. A moderate degree of pressure, however, is admissible, as giving support to the walls of the superficial vessels, and preventing their becoming varicose.—Ibid, and Med. Times and Gazette.

Death of Dr. R. Q. Dickenson.—We deeply regret that it becomes our duty to record the death of our worthy and now lamented friend, Dr. R. Q. Dickenson, of Albany. The following notice, we (for want of space and on account of its late arrival) have been obliged to condense from a well written sketch prepared by one, who, like ourselves, knew him well and loved him well.

Obituary.—Died, recently, in Albany, Baker county, Dr. Roger Q. Dickenson, aged 61 years.

Dr. Dickenson was born in Spottsylvania, Virginia, and was a graduate of the University of Pennsylvania of the year 1826. He was one of the oldest and most successful practitioners in our State, having been for more than thirty years engaged in the humane and benevolent ministrations of our Profession. Some five years ago he was elected President of the Medical Society of the State of Georgia, the duties of which post he discharged with dignity and honor. None enjoyed the annual meetings more than he did, for his heart and soul were fully enlisted in every measure which could advance and elevate the Medical Profession. The medical men of his own community will feel, sensibly, his loss:—there, he was personally and intimately known. Being the oldest physician in the community, he was revered and honored by them all; his kind and gentle manners won their hearts, and they must feel that, in the death of their elder brother, each has lost an able counsellor—a kind and warm hearted friend.

Albany, Dougherty Co. Ga., May 20th, 1868. S. S. C. . . . . . . . . . , M.D.