=Thesis=

Subject = Original Theories on

a. The mode of production of consecutive abscess
b. The use of the Thymus Gland

Henry G. Wright
The sketches accompanying this paper are carefully drawn from the microscope; they represent figures 1-3-5 and various arrangements of the secreting structure of the Thyroid Gland referred to in the text; (from the calf) (250 to 400 diam.)

Fig. 2. A. Chyle corpuscles. B. Corpuscles of Thymic fluid.

The nuclei seen in some of these cells were rendered apparent by Acetate and (about 800 diam.).

Fig. 7. A. Pale Corpuscles of Blood. B. (1) Acetate corpuscles; (2) ditto distilled by adding water; (3) Action of acetate and on the corpuscles; = C. (1) Sauter's Pot. (2) Ditto after addition of water; (3) The same, heated with Acetate and (about 650 diam.).
Observations on Consecutive Abscess,
embracing an original theory of its
mode of production.

~ H. G. Wright ~
"Thus it happens, when wrong opinions are entertained, that they mutually destroy each other" 
"and leave the mind open to truth" 

Dr. Johnson.
Consecutive Abscesses.

Certain individuals dying in the course of a suppuration, especially when suppressed, frequently present pusulent collections in internal organs; and to the existence of the former condition are these subsequent formations ordinarily ascribed.

It is the object of this essay to prove that such is not, if necessity, a view against which no evidence can be adduced, or an opinion strictly borne out by fact. Suppurations having the apparent origin above stated have variously received the titles of "drop-dead" disease, necrotic or "multiple pelvic abscesses" — they occur in persons possessing a peculiar or idiogenic, predisposition called the supplicative diathesis, when suffering from any extensive external inflammation or injury as burns go, or from operations of any kind even opening a wound; — in cases of suppuration of bone, (though to a smaller extent) — after lithotomy, fistula in ano,
removal of various bones: the resection of a joint, these
frequent collections are not infrequently found, and
while more commonly do they supervene on cases of phlebitis
idiopathic or from any operation on the veins, as venenac-
tion, and on the phlebitis of purpuric fever,—also on
injuries of the head, strangulated hernia's, compound
fractures, and in some specific diseases as glanders
especially,—over drawn animals are liable also to
these abscesses (the blood being excited by diminution
of its fibrous element).

They occur chiefly in the substance of the viscera, but
sometimes also in the cavities of the body, as the interior
of joints, the pleura, peritoneum etc. Their most
frequent seat is in the lungs, next in frequency stands
the liver,—(as 11 in the former to 3 in the latter—base)
they occur also, but much more rarely, in the spleen, brain,
heart and kidneys—and the substance of the skin and
muscle has sometimes exhibited them.—The pleura
Egretation and extravasation is here most evidently seen, — a capillary congestion existing in the early stage which is almost indistinguishable from a small pulmonary afflic- tion, — the edge, however, being better defined in the later absorbed change, although this is but a comparative dif- ference. — In this first stage (egretation & extravasation) the colour of the affected lung is almost black, and uniform; in fact, though usually somewhat better masked towards the centre, — its consistence is tolerable but friable, — its section is smooth, not granular, this latter appearance, however, being produced by pressure. At a later period the uniformity of colour is lost; a fading of the tint, approaching to yellow, being seen at the centre — gradually this yellow colour in- creases and becomes more obvious & distinctive, the con- sistence of the mass failing, being pasty, and becoming semi-fluid. — At certain intermediate stages a vesicular aspect is presented, figured by Dr. Casswell. — The existence of a proper lining membrane to these lumber.
accumulations in the lung is very doubtful, in the majority of cases it would seem that the pulmonary tissue is bare.

There is a tendency to a spherical outline as in the lobular pneumonia of infants, but with a certain amount, usually, of irregularity — the size of these abscesses in the lung varies from that of a hazel-nut to a walnut — in the very densest parts these nodules are of less specific gravity than liquefied lung (base) swimming in water and thus showing an essential difference between the nature of this affection and that of simple pneumonia. — The pus contained is generally laudable, of a deeper yellow than in external abscesses, sometimes gummosus and more concrete at the circumference, sometimes too it contains a small quantity of the broken up lung tissue, — occasionally the liquor pusis is of a dirty adynamic character. — The number of these abscesses may be very great, when they constitute the "Multiple Focal Abscesses" of French writers — 20 to 20 are often found, and thousands have
been asked to sometimes exist. — Both lungs are generally affected, but not always simultaneously, this bi-lateral symmetry being a characteristic of many secondary formations of various kinds. (Dr. W. Budd) The abscesses generally commence in the lower lobes, Grisole states that in 11 cases he met with no exception to this rule; — they are generally seated near the pleura, another common character of secondary formations. The state of the pulmonary elements has hardly been sati— factorily investigated, — sometimes it may be seen that just in the centre of a blackish nodule, seems to follow the direc— tion of a vessel leading to a pulmonary vein. D'Arcy and Cruveilhier state that they have even followed it up to the pulmonary vein itself; — Hasse has further described some appearance of inflammation on the larger vessels, even to (pellicles of lymph on their surface). — The circunjacently— lung tissue is sometimes quite healthy, sometimes a con— gestion (ischaemia) exists, which gradually fines off from the nodular mass, — an oedematous change is occasionally per—
ceptible, and in some cases the substance of the whole lobe appears hepaticized, grey and red, and in some very rare instances, abrasion of the bronchial surfaces is found, the however, being, in all probability due to mere coincidence. The pleura is affected, says Brissol, in only half of the cases, being inflamed and the seat of pleuritic or serous effusion, sometimes containing a considerable quantity of fluid. Whether this the primary or secondary with regard to the affection of the lung substance has been a matter of dispute, but it seems to me very improbable that a lung strongly compressed by pre-existing inter-
pleural effusion should become the seat of papillomatous degeneration.

2. In Liver. The process is here essentially the same as in the lung.—On cutting into the substance of a liver the seat of consecutive abscess a dark brownish or purplish hue is seen in spots (depending on the presence of congestion) alternating with and gradually
giving place to a yellowish or green discolouration; in more advanced stages still the purple tint becomes of a decided yellow colour. Sometimes to these nodules a distinctly lobular outline may be distinguished, but often the defined edge is very indistinct, and finally, the yellow colour is alone seen and an abscess is formed, bounded by a greenish line variable in width, and not constant in its presence.

In the liver these abscesses usually tend to accumulate at the surface, causing elevations of the parenchyma, this character, however, is less constant than in the lung owing to the greater consistency of the tissue. The number present may vary from three to a thousand, and their size from that of a pea's head to a hen's egg. Their form is irregularly rounded, with indentations at the edges. The contained pus is seldom pure, having intermixed with its portions of the proper substance of the organ, causing the 'lees of wine' colour noticed.
By Indian observers - into these abscesses venous have been
hard physically unaltered, coagula sometimes existing
in them. (Buie) The peritonitis is less frequently
implicated when the liver is the seat of disease than
when the lungs are affected.

3d In Spleen. Consecutive abscesses are of comparatively
rare occurrence in this organ, and when existing, owing to the
frailty of its tissues, they are prone to run together and form
one large cavity, - the substance of the spleen being more inter-
mixed than in the lung or even liver.

2d In Brain. Where the brain is the seat, these purulent col-
lactions usually exist in great numbers & excessively ooze
in size, varying from that of a pea grain to the magnitude
of a small pea, which is the more general size. - They
chiefly occur in the grey substance, especially of the surface,
also the corpora striata, Aba Thalami & c.; - the cerebellum
is sometimes affected, the brain, however, being nearly always
simultaneously implicated. - The spinal column has been
to seldom examined to afford grounds for any conclusive statement.

5th. In the Heart - When these abscesses occur they are usually of small size, from that of a pin's head to the size of a sixpence. (Dr. Carswell)

6th. In the Kidneys - Where these organs are affected, the part of their structure which most frequently suffers is the cortical portion and the papillar extremities of the tubule, and here ulceration of the mucous membrane with effusion of pus into the pelvis of the kidney may result - to which I shall have occasion to allude hereafter.

7th. In Joints. There are sometimes found filled with liquefied pus, the synovial membrane disappeared and the articular cartilages laid bare, a very few days sufficing for the work of destruction. In the larger joints such mortified deposits usually occur - the knee, hip, and shoulder in order of frequency - the hand and carpe have also been found affected.
The Eye suffers occasionally - there is witnessed a peculiar staring of the affected organ with increase of bulk, corneal opacity follows the conjunctiva becoming injected forms a bleb. and destruction of the humours and coats rapidly supervenes with pouring out of the contents of the eye.

Implication of the fifth pair of nerves near its root seeming cause especially to give rise to this condition. Mr. Arnett relates a case in which such occurred and where the destruction went on with great rapidity.

If in corneal tissue - an effusion of sanguineous juice sometimes occurs resembling (if not identical with) the humoral collections so rapidly formed in phlegmonous coryza.

10th In the cures - as a consequence of little internal hemorrhages - points of juice have been found - in cases of comparatively long standing when we consider the usually rapid progress of these affections. These consecutive abscesses differ from ordinary
prudent collection in the following points: —
1. They commence in distinct, and more than usually
well-defined, capillary engorgement and extravasation.
2. These engorgements are limited. —
3. Their formation is exceedingly rapid. —
4. There is usually an entire absence of inflammation,
in the general signification of the term.
5. There is a want in the majority of cases, of any notable
local symptoms; pain occurring only occasionally
when the liver or lungs are affected, due probably to the
secondary implication of the pleura or peritoneum before
alluded to, in the joints the pain is usually very severe.
In cases where the brain has been found the seat of
affection no special cerebral disturbance has been no-
noticed, none that would happen if any other organ
were affected per se.
6. The breath is said to exhale a peculiar smell when the lungs
are affected — even before purulent matter actually forms.
But if there be a scarcity of local manifestations, abundance of general symptoms exist as guides to the diagnosis. Thus, if your patient suffering, or having suffered from extreme prostration, a wound, apparently going on well, suddenly ceases to pour out pus, and abundant perspirations, rigors, great prostration, a feeble pulse with hurried respiration, a dusky disagreeable hue of countenance with abdominal tenderness, and diarrhoea exist, then consecutive abscess is surely forming, and even if none of these symptoms be absent, and no suppuring wound or surface discoverable, we may still suspect an abscess to be in course of production, which abscess will have all the characters assigned to the class called secondary. To this point I shall again refer in noticing the evidence against the necessity of pus—either in the blood or pre-existing at all—as being essential to the formation of these collections. Maintaining this opinion, I eschew using, as far as possible, the words "secondary" and "ablastic," but as I believe some antecedent change (to be presently more fully pointed out) to always
The principal views on this subject, which have been alternately proposed, adopted, condemned, and derided, now require notice. I will briefly refer to them, variation and state the chief supporting facts pro and con, what seem to me the principal arguments contra and in their adoption.

1st. The Doctrine of Sympathy, upheld by Richet and Désault, depended on the circumstance that in the liver the production of these abscesses was first noticed, - and injury of the head was the affection in connection with which they were observed to appear, - hence one was considered as an effect of the other, and sympathy between the liver and the head alleged as the proximate cause; - an hypothesis so long exploded requires no comment.

2nd. The Doctrine of Concussion. - This theory owed its origin to an observation of cases similar to those on which the opinion of Richet was founded, but Richerand, who
The may. May not from one
confirm as well as from
injuries feeling my ammunition.
chiefly maintained this doctrine, observed that in all the cases which came under his notice, the primary injury had been concussion, therefore he theorized that the concussion was general, and that the liver was the organ most liable to suffer next to the brain. A sufficient objection to this notion is, that these abscesses in the liver have followed on mere trivial wounds of the scalp, and have appeared when the head was uninjured. Moreover Riquerand's statement of their relative frequency in the liver is incorrect.

2. Consecutive abscesses result from the softening of pre-existing Tubercle. This is also a theory of French extraction. The principal arguments against its adoption are: That these abscesses have been noticed in the lungs of patients who, previously to the injury or operation on which their appearance was occasioned, enjoyed apparently good health, at least in so far as immunity from tuberculosis was concerned. = 3. In cases of consecutive abscesses occurring in the lung, cerebrohepatic,
is not commonly found, nor do tuberculous abscesses exist.

The development of the two affections is different, the abscesses being most frequent at the surface and base, and diminishing in frequency towards the apex, of the lung.

8. Consecutive abscesses are found equally advanced in both lungs, and usually consist of an admixture of blood and pus; the reverse, these two last circumstances form the rule in Phthisis tuberculosa, but still it cannot be denied that in many cases the affections are coincident, and hence the error of the French theorists has evidently arisen.

2. Consecutive abscess dependant on absorption of pus. — According to this view these abscesses are merely little collections of pus translated from the original seat of pyogenic, i.e. that when sequestered (as after amputation) the pus is suddenly transmitted through the veins of circulation to the capillary vessels, there stagnating and causing abscess — on this view, therefore, we find that
the name "metastatic abscess" or "abscess by Translation," is based.

This doctrine seems to have been long ago stated, but has of
late years gained more ground from the strong opinion
entertained by Pelpeau in its favour, who gives the following
arguments in support of the theory:

1. That the formation of secondary abscess is constantly pre-
   ceded by a diminution or suppression of the primary inflam-
   mation.

2. That the ordinary evidences of local and general, of visceral, inflammation, are not observed.

y. That the pus in both the primary & consecutive abscess,
   is identical; how then, he asks, can pus be formed in the
   body without some inflammatory symptoms.

5. These abscesses are extremely rapid in their formation—that
   he thinks to be more easily accounted for by the doctrine of
   translation, than by any other method.

e. Pus
   is sometimes found in the veins, in the right cavities of
   the heart, and in the midst of coagula, on its course to the
   'nive' seat of deposit.
To these several statements I will briefly allude in the order in which they are written; and first as to the Diminution of primary suppuration. This, doubtless, is generally true but seems quite as likely to result from other causes as from the translation of pus — witness the cases in every day practice where the interference of inflammation or other complication, of even a trivial kind, suffices to check the formation of pus on the surface of an otherwise healthy wound or ulcer.

B. The pus being identical. This statement seems hardly in accordance with fact. For numerous cases are on record, and, personally, I can call to mind several, in which, although the pus formed from what is called the primary net of suppuration was laudable, yet that of the internal abscess was not healthy; — if, however, they were always of the same character, it would but little support the theory of Translatabilis — Gouthe found that the irritable matter in pulmonary abscesses varied in character according to the nature of the pus introduced by him into the veins of animals.
The subject of experiment — this appears at first to militate in favour of the opinion of Balfour; but on a little further enquiry we find that the amount injected was 3½ the quantity of pus formed was a pint — it is evident that the hæmatoid drainage could not be the fluid found in the pulmonary abscess — y = The absence of local symptoms is not always noticed — instance the grey is red hæmatoma — and plainly the result of abscesses mentioned by Griesbrecht. — The absence of general symptoms (of inflammation) but tends to prove that there is something peculiar in the mode of production of these formations, this is fully admitted, yet will be alluded to more fully hereafter. = S = The rapidity of formation. That such is true is indisputable, but the formation of pus may occur (without any pre-existing inflammatory deposit) in the course of 22 hours and that to great amount — four hours of ipecacuanha hæmatina is stated to have sufficed for killing the peritoneum with pus. —
1. The pus in veins is. This is no proof of the pus being necessarily in a state of translation; it may be formed where found from the effects of phlebitis in veins, and "if found within the cavity of an artery may be considered to have been formed there." (Dr. L. Runnion) - in many cases the supposed pus seems merely to have consisted of detached fibrin, in clots of which a fluid could be drawn, of which a fluid with difficulty, if at all, distinct to pus, is no uncommonly found in the body, and may with facility be artificially produced. The further consideration of pus in the veins I will defer for a future.) There are several other observations besides those above mentioned, which seem directly opposed to the theory of Jellinek -

2. Visceral convulsive attacks commence (as seen by the naked eye and recorded by Berard) not in infiltration of pus, but as an ecchymotic state. 

3. Pruritic collections in any particular organ are not the only marked characters found existing, inflammation of the meninges of brain, and of the meninges, gangrene of the villi, etc., are not unfrequently ac-
companying affections = y = in a very great number of cases where suppurative action exist, in a wounded surface, when veins are also present, as for instance, in the division of parts to lay open a deep seated abscess, = there con-
secutive pyogenic collections should therefore, according to Velpau's doctrine, be much more common than they really are = S = These so-called metastatic abscesses arise when the original collection is bounded by a pyogenic membrane; in such cases capillary vessels could alone act as the agents of absorption, but their caliber compared with that of a pur cupules, would render the eky of the latter physically impossible. = In reference to this point, I may state, that there are two kinds of cases which seem, prima facie, to support the opinion of Velpau.
1st. Abscesses do sometimes disappear, it is to be presumed by absorption as mentioned by John Hunter - but in these cases, it would seem, that the cupules are reduced to molecules, and, being thus, by this disintegration, rendered innocuous,
are removed, either by the absorbent or capillary vessels or both.  2
not Pusulent fluid, the result of distant abscesses, has been
stated to be sometimes discharged by the kidneys.  An
opinion just broached, I believe, by Paulus Agneta, in
whose time it was held that pus passed from the stomach
and intestines into the bladder through minute openings
in the veins!  And in more recent times M."t;flovow
(Paris) and Mr. Monett (I. India) maintained that pus
from an abscess of the liver may be absorbed and discharged
through the urinary organs, without any direct commu-
nication between the abscess and the bladder. — In the cases
of Mr. Monett, though carefully recorded, the pusulent nature
of the substance discharged in the urine is far from satisfac-
tory proved as no microscopic examination was made;
and Prager states that for seven years he sought in vain
for pus in the urine of individuals in whose removal of
existing abscesses was going on. — Moreover, to admit
This elimination of pus by the kidneys it must be allowed that pus egresses prenchokte, namely, the capillary vessels and that, after entering the circulatin, they pass also through the capillaries of the lungs, which Dalcqimahl has shown to be exceedingly fine, smaller far than the true capillaries, if these difficulties were got over, there will remain others to contend with — namely, that the capillaries come by the arteries to the kidneys have to be separated, with the urine, from vessels too small to allow their passage, and that this has to be effectuated without any appreciable change being produced in the excratory vessels; for that rule is allowed by the anathemizers themselves. Of this doctrine, such thing physical evidence against the fact of pus, as there, eliminated by the kidneys seems to me quite sufficient argument against the possibility of its occurrence, where present in the urine, the production of pus result, in all probability, either to (a) ulceration and evulsion of the vein, the tubuli, to (b) inflammation as inflammation of the pelvis
of the history, of which Bayer mentions cases - or to (e) a
direct communication existing between the abscess and the
bladder. - Moreover it must be remembered that fluids
are excited with the urine so like juis as to be with great
difficulty distinguished from it, without the aid of a
microscope (or even then in all cases). Epithelium in
large quantities, an abundant formation of the phlegmato,
and Lastly the Pseudo Jubulent Inoculc thrown off
by the mucous membrane of the bladder when irritated.
In further consideration of the subject of pyaemia, - fluid
existing unchanged in the blood - the first point especially
worthy of notice is - the various modes by which its entry
has been alleged to be effected or its presence determined.
To the commonly held opinion that on pre-existing phlegm
its production depends - Jelpeau has objected that in certain
cases, where all the evidence of formation of consecutive
abscesses were present - the veins traced from the wound
(combination &c) to the heart have presented no evidence of pus
being contained in them, — and another objection, the converse of the preceding, is the frequency of white blood without any forma-
mation of consecutive suppuration; — against this statement it may be urged that in such cases the communication has been cut off by a coagulum formed higher in the vessel or by a layer of fibrin enclosing the lus. — Dr. Barlow, however, in noticing the character of these abscesses states that, although in some cases such obstruction may exist, others have no such
offspring between the general circulation and the part affected, and the two sets of vessels freely intercommunicate at a distance from the seat of injury.

Mareschal believed the entry of pus to be due to a suction power of the mouths of the vessels, of the experiment of Brunelli seemed to support his view; — he introduced sink into a wound and found that absorption of it occurred, but to effect it he held open the mouth of the vessel; circumstance not occurring in the ordinary condition of the veins of a wound. For, although, as previously remarked, they offer no mechanical obstruction,
In the entry of pus or foreign matter, yet they are far from being sufficiently patent to exert any influence at all approximating to that of suction except, mayhap, in the subclavian vein, which is held open by the deep fascia and under the influence of the respiration (J. D. Perry).

That the entry of pus is not dependent on imbibition through the walls of the capillaries and venous radicles, as held by some pathologists, the experiments of Grussellier seem to afford sufficient proof: - he briskly rubbed mercurial ointment (containing the metal in a state of exceedingly minute division) into dogs, and from its absorption they died in seven days. - Yet no single tissue or fluid presented, or in examination, the remotest physical trace of the Mercury, although abundantly discoverable by chemical tests. - He afterwards introduced a single globule into the circulation and some months afterwards discovered it undestroyed in various tissues of the body.

The lymphatics, supposed by some to be the immediate
agents of absorption, have been examined by Gass"e and we will marked cases of consecutive abscess without the discovery of any pus in them.

The entry of pus by artificial means, of course, not admissible as a mode of introduction in man, the effects produced by the injection of purulent matter purposely reduced by Magendie, who the blood of animals was found by D'Arsonval to exactly correspond to those resulting from a similar injection of mercury by Brunveil and has been, of charcoal powder by Magendie, and of particles of gold by D'Arsonval himself.

Finally, as an argument which appears to me conclusive against the dependence of these consecutive purulent deposits on the presence of any mechanical agent borne by the blood to the part so affected from another similarly suffering, I may briefly trace out the influences which would have to be called into play in its transit. It is evident that, taking the common instance of abscess
in the liver. Suffering wounding of the head, the unblud
product would, when once introduced into the blood, have to
spread itself so as to pass through the lung capillaries, —
next, — (for by no other way would it reach its ultimate des-
tination) thrown into the head's theme propelled down the
artery, it would have to stop short at the cervical axis and
without hesitation, plunge into the hepatic artery, an exer-
cise of intelligence few would impute to an escant
muscle or molecule — nor would its difficulties
come here, for it would have to await its progress before
passing through the capillaries of the liver, otherwise its
long journey would be in vain. In such passage would
surely occur after the diminution in size it must have
undergone to pass through the lung. —
The conclusions arrived at from the foregoing statements seem
so to me to be —

2. That the pus of a consecutive abscess is formed
where it is formed.
The name might be said of the part which is, or is a part of, the atmosphere known as the ground air. Different tests show that there is a different force in that when they are present in the atmosphere.
Some coincident peculiarity has existed, both locally and generally, to give rise to its production.

Hence, statements are negatively discounted by the mass of evidence I have imperfectly glanced at as militating against the various doctrines which have been upheld on this subject; and on them are founded the following propositions as explanations of the mode in which these consecutive abscesses are produced.

Most of the evidences in favour of the hypothesis therein advanced are, of necessity, scattered through the preceding pages and will readily recur to the memory without their unnecessary repetition, so with merely a few explanations to more fully elucidate the bearing of each point I will conclude this paper:

1st. Inflammation, suppurative or otherwise, exists somewhere in a plane unfitted by disease or some apparent cause to combat its morbid influence.

2nd. By the constant striving against an ab-
normal influence they are unable to overcome - the energies of the system, the powers of life, become more and more exhausted; the nutrient fluids (as in all such adynamic cases) being first to suffer denervation.

2nd Those portions of the system which, from their high and peculiar organisation, most require a continuously regular supply of healthy blood are first affected, from two co-operated causes -

a. That the mass of blood is vitiated.

b. That its flow is diminished.

2. th These organs, longer preserving their "vis residens" on account of their highly elaborate structure, and consequently greater vitality, attempt to resist the morbid influence by increased determination - i.e. a species of reaction ensues they become gorged with unhealthy blood, any part congenitally weak, or weakened by previous disease, being specially affected.

5th Unable to withstand the varied agencies thus
brought into play there engorged points become the seat of suppuration, of that low type which characterizes con-
secutive abscess.

Prop. 1st: (Evidence of edoxycracy - now necessity of primary suppuration) Arguments to substantiate

A careful review of numerous recorded cases, and a study of those which have fallen under my immediate notice, seem to me fully to warrant the statement that there exists in every case where these abscesses are found, some pecu-
liarity of constitution; although, perhaps, somewhat ob-
dscerned by other and more prominent symptoms - for instance, in 9 out of 10 cases of amputation there follow-
one of the symptoms significant of the affection under con-
-deration - in the fever and, perhaps, without any ob-
-parent modifying cause, the patient is suddenly pro-
hated and rapidly cut off - Two cases vividly occurring to my recollection may serve to illustrate this - in both was amputation of the thigh performed - in one instance, the sufferer had been emaciated to a skeleton by wasting
disease of the knee before the limbs were destroyed that it might save in the other, a stout and apparently healthy subject, (a London brewer's drayman) met with an accident for which removal of the injured limb was deemed advisable, — in the latter case, the symptoms enumerated as those indicating the formation of consecutive abscesses rapidly set in, and the strong man was laid low, — in the former, a creature with hardly bulk sufficient to form the shadow of his fellow patient recovered without an ill symptom.

It will be seen that in the statement of the above proposition I do not dwell on the absorption of pus into the blood or indeed consider its presence at all essential to the production of these abscesses. — In support of this opinion, besides the various evidence above detailed, as opposed to the doctrine of the unity of pus & its presence in the circulation, it has been remarked by Mr. Arnot, and by Dr. Taylor (in some observations on various cases of pneumonia) that consecutive abscesses sometimes occur when the progress of the original injury & has been asserted
Before the production of suppuration, and in a case the converse of these, related by Sir J. H. Bennett, although no abscesses are mentioned as existing, (and they could not have well escaped the observation of so minute an observer as a pathologist) yet was the blood found loaded with pus.

In addition to these circumstances the actual microscopic evidence of pyemia seems in many cases to be exceedingly doubtful. The resemblance of the pus corpuscles to many products of healthy and diseased action has deceived many and careful observers, among whom may be enumerated Gendrin, Audral, Buonfili, and Mayr, whose decided it to be identical with that found in the softened centers of fibrinous coagula, and which are readily capable of artificial production in such clots; and when so this we add, that an observer bent on discovering the presence of pus could examine very few cell products, healthy or morbid, in which some corpuscles may not be detected, sufficiently resembling the true pyemic formation to satisfy a biased mind.
that has existed there—good grounds seem to be afforded for entertaining an opinion which explains all the phenomena of the production of these inorganic deposits without the undue straining of any physical law—without the violation of any of those established rules which it is the pride of modern science to be enabled to indicate as governing the human frame.

Prop.: 2nd (Exhaustion of vital energies). Granting the existence of the inorganic condition of the system and, a picture, of the blood circulating in the frame, above alluded to, this proposition becomes a mere illustration of the Arabic proverb that "Constant dripping weareth away a stone".

The third and following propositions hardly admit of separate consideration, except, perhaps, in regard to the terms used. In the co-operating causes mentioned as incentives to further change, are included two of the essentials to healthy nutrition as classified by Mr. Paget. — Allowing the plausibility of the
first and second propositions. The situation of the mass of blood could not be denied, — that the freedom of its flow is diminished is mere matter of clinical observation, — the term 'vis resistentia'. I have made use of to avoid cumbersome periphrasis, employing it, of course, in its most extended sense.

5th Part: The intervention of suppuration on a physical condition, such as is here supposed to pre-exist, well accords with the result of actual observation of these abundant collections, as detailed in mentioning their special characters in different organs, and is simply an analogous instance of what has been long known to occur where coagula of blood are formed for the removal of which ordinary absorb-iron is inefficient; some modification of the process, however, being claimed to exist in conformity with the various and peculiar changes undergone by the system at large.
On the use of the
Thymus Gland—
A Theory,—with explanatory remarks.—
by H. G. Wright—
"The human mind is never satisfied with observing and ascertaining facts, and deducing from them those general expressions which are called laws of nature. Man ever strives to account for - to explain, that which he has observed, and although his explana
tions never reach the essence of things, but only enable him to generalise to a greater extent, & to approach somewhat more nearly the 
great first cause of all, still it appears to be a law of his sublunary that he shall never cease from his attempts to explain, by some simple principle, the complicated phenomena by which he is surrounded."

Dr. Gregory
Physiology is a developmental science,—speculative theory becomes demonstrable fact, and from one ascertain fact many superstructures of hypothesis arise; some, founded upon sand, fall; others, based upon knowledge and research, pursue the same course as the fact from which they were deduced, and, histologically proved, assist to build up that structure, on whose summit Truth standing, ever points upwards. Hence is it that the unfashionable mysteries of one age become palpable, in succeeding centuries, to even theotics on the first steps of Parnassus,—like the Peruvian stream, washing indiscriminately the sand, and the gem; how onwards the waters of knowledge, laying bare the stones on their brink,—indifferently the sparkling crystal of science, and the rough pebble of mechanical discovery.—
The subject of the present essay strikingly illustrates this position. — That cloud which hung over and obscured science, in its every department, for long and dark ages subsequent to the period at which Hippocrates first mentioned, and Hierophilus with Euphorbus (some 530 years later) first demonstrated, the existence of the Thymus Gland, led to the promulgation of numerous ideas about its function and uses, visionary as they were curious; the mechanical theories of Galen, Vesalius, &c., and, at a far later period, the vital theories of Harriet, Mantoux, Bollin, and a host of others, — observers, all of them, wise in their generation and well acquainted with the little that they yet comparatively infant state of physiology had to teach. — And so slowly did the chequered rains from the lamp of learning dispel the obscurity that veiled the demonstrable of the minute anatomy of the Thymus (for a looser phrase forth an hypothesis concerning its use, which the more rapid march onwards of discovery since his
time, has shown to be groundless, and which even his
own beautiful preparations fail to support. — Prior
to, and since, the date at which his researches were
published, although many and laboursous have been
the theories advanced, yet to none has the palm of
'belief' been awarded; some physiologists, after
years of patient investigation, have been content with
furnishing a few conjectural hints, while others, little
scrupulous have appropriated, newly dressed, and
just forth as original, — so true is it that knowledge,
the offspring of thought, is often an adopted child.
The failure of so many great minds to satisfactorily
dedicate the subject, would seem, prima facie, to
render presumptuous any labourer of lesser note seeking
the golden ore in the dust, their footsteps have tracked
in vain — and yet is not the inference correct, for
ofttimes a machine which, deficient in one slight
part, sets at nought a great ten thousand, will yield.
wee completed to the hand of a child, twas a mouse, in a box, that fed the enowenced lion.

--- Theory ---

1. At the period of evolution of the human foetus, the upper portion of the body is developed to a very considerably greater extent than the lower, as, during intra-uterine life, the former alone is required for the purposes of existence.

2. After birth these highly-developed portions of the frame, (via lower extremities) take on a rapid genesis to bring them to the relative standard required for the fulfillment of their presently-to-be-allocated duties. This period of increase, during which they grow with greater rapidity than the rest of the body, extending over the about the two first years of
mundane life.

III. The source of production of added portions of the human frame, from its earliest inchoate cellular genesis, is corporeal, — a strong hypothesis hence arises, that the corporeal portion of that fluid which supplies animal potable for convension (or deliver the blood) is the source of elaboration into new definite existence.

IV. — The increase of the lower extremities, referred to in § II, goes on with greater rapidity than any other considerable portion of the body, in a state of health, at any one period of life; — hence the amount of convertible material must be proportionally large, whereas no organ has yet been demonstrated as specially endowed with the power of furnishing such supply. — The thyroid gland, I would suggest, is destined for the elaboration of material to incriminate this great demand. The arguments in favour of such a supposition I will now proceed to state.
What is micrometrical Anatomy? How is it separable from Structural Anatomy?
For the more systematic arrangement of the numerous considerations which the undue theory, embraced in the foregoing paragraphs, admits of, I will embody under the following heads those observations which appear more directly to bear upon, and elucidate, the view above proposed.

1. The structural anatomy of the Thymus.
2. Its localization.
   1. Its microscopic anatomy. 2. Its contortions and destinations.
3. Its comparative anatomy.
4. Its duration, growth, and wasting.

2. The minute anatomy of the Thymus has been very variously described by different authors, partly, may be, owing to the special views each laboured to support, partly to the fragile and delicate nature of its structure, and arrangement of its parts, in the human subject, baffling even the most careful dissections — but, however, of the opinion held by some modern observers would seem to be embodied in
the statement that it is wholly or partially distributed by a highly
organised gemminal, exceedingly vascular, & furnished
with a well-complete capillary network (Sina)—with cerebro-
spinal & sympathetic nervous plexus (Rolphothein) & with
numerous lymphatics, which communicate “partim cum
mammaries, partim cum iis qui ex tenuissime proveniunt”
(Mascagni). There, however, is a lesser definitely stated,
Is terminated, (in the calf) in dermels which form two large
lymphatic vessels on the cranial surface of the gland, and
empty themselves into the jugular veins on either side.
This gemminal membrane is arranged in lobes, divisible
into lobules and aecules, united, and, as it were, string
together, by a delicate ligamentous or areolar tissue;—
these communicating each with a common central reservoir,
and the larger lobules further inter-communicating; the
cavities thus defined containing the special product of
the gland’s secretion. Such is the mode of its discharge
as related by Sir A. Cooper, more recent anatomists,
however, differ somewhat from the statement that a central reservoir, as figured in his monograph, exists. In several directions I have never been able to recognise it, the nearest approach witnessed being an apparently common receptacle to a projecting lota of vessels, which, however, could not be traced further than the base of acute lobule.

The high vascularity of this germinal membrane, as proved by demonstration by the injections of Pringsheim, would point to, surely, that it fulfills some important duty in the economy, in accordance with the law now so generally received, that structures which are engaged in embryonic development, the seat of active vital changes, are generally of the highest organic composition (Paget).

The microscopic arrangement of the ultimate vessels in their limiting membrane I will defer the consideration of, until the localization of the Thymus, and the mode in which it bears upon the subject of the glands of special use, has been briefly pointed out.
There exists, perhaps, no circumstance in the study of the sister sciences, Anatomy and Physiology, which renders their pursuit so enticing as the conviction that, however wonderful be the mysteries with which research may acquaint us, however deep the insight which various ancillary studies may afford,— we shall ever find the knowledge thus attained leading us the more to admire the wondrous foresight of him who “made and loveth all”,— and, a portion, when man, by the power of his intellect, seeks to solve problems in “the Almighty plan” which lie beyond the ken of his outward senses, he should ever bear in mind that beautiful adaptation of a single power to accomplish many,— and to as varied,— purposes, which so distinctly typifies the agency of a higher will.

The Thymus Gland obtains, during fetal life, a function which affords it protection from almost every conceivable mechanical interference with its development, or with the due performance of its function,
- Protected in front by the sternum clavicle, the sternum end of which (namely that which lies over the exit of vessels from into the gland) having a centre of ossific deposit before any other bone, – and guarded behind by the dense fascia so ably described by Sir A. Cooper, – is on either side, & below, in such intimate relation with the heart, large vessels respiratory apparatus, that any displacement or injury of its substance would inevitably, by implicating these, interfere seriously with the frail tenure of infantile life.

Here then would seem the most fitting place for any suggestions, explanatory of the reasons why such a site is occupied by the Thymus, – in offering them I must somewhat anticipate the next heading of my subject, by referring cursorily to the destination of the products of the gland’s vitality. – I have above mentioned my belief that these, when mixed up with the general circulating fluid, are destined for the supplies of
that diminution, while the large amount of fluid in, cut off by the rapidly growing lower extremities, gives rise to. — Such an hypothesis being, in the novice, admitted, the question naturally arises, why is the organ not situated near the parts for whose nutrition it is destined? — To direct response to such a query, I would argue that as the mass of blood has its vitality diminished, so to the mass of blood must the compensating power be applied, and where could this be so directly effected as in the place where the gland is situated? — its contents being mixed with the general circulation at nearly the same period as in after life, receives the edicts of digestion, and being in a similar manner, churned up, as it were, with the fluid in the right cavity of the heart; hence the newly introduced material is mixed with the mass of fluid, instead of being constantly applied to any one part, the beauty of such an arrangement is obvious, or may be illustrated indirectly, or,
may half, I should say analogically, by a fact which, as far as I am aware, has not been previously noticed, and which seems to be a singularly felicitous example, (to paraphrase the famous definition) of 'Phenology teaching by example.' In observing some years since the habits of the Honey Bee, I noticed that the swarms which went forth from the parent hive consisted not entirely of the newly hatched brood, as is usually supposed, but of an admixture of these with nearly an equal amount of the parent bees. The situation of the Thymus gland, immediately between the two pleurae, would seem, of necessity, to in some measure subject it to the mechanical agency of the lung, expanded by inspiration, especially at the first gasp of the new born child, as rendered probable by the large size of the gland in the full grown foetus before the occurrence of respiration, shown by the following comparisons calculated from the table of Ronge's test.
<table>
<thead>
<tr>
<th>Age</th>
<th>Height</th>
<th>Weight</th>
<th>Height of Thymus</th>
<th>Relative Proportion of Thymus to Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fetus</td>
<td>7 months</td>
<td>3½ lbs</td>
<td>33 grains</td>
<td>As 1 to 727¾</td>
</tr>
<tr>
<td>Child</td>
<td>9</td>
<td></td>
<td>240</td>
<td>As 1 to 288</td>
</tr>
<tr>
<td>2 weeks</td>
<td>6</td>
<td></td>
<td>120</td>
<td>As 1 to 382</td>
</tr>
</tbody>
</table>

*(Y.)* On the outer surface of the germinal membrane, of which the gland is essentially composed, lie the capillarv vessels;—from its inner surface are secreted the products of its vitality. — And in the knowledge of this fact is embodied a great step onwards in physiology, for of such an arrangement is the structure of all secreting organs composed, each after its kind:—the wall of the liver cell, and the luminal membrane of the Thymus gland, one, I take it, but modified. — Because of the same thing: the screen as it were, on whose surface, and through whose medium, the effects of the plectus — magonia of nutrition are produced — we can move the lantern; we can know the lamp, but of the power that shifts the slides, and modifies the image thrown upon and through the screen, we know naught save the fact, that the secreted proc—
duerto are individualized, each by its special character; this being, seemingly, effected by an inherent metabolic power in the new-formed cell-gene, distinct from that of mere reproduction, a physical infusium, or its own image — but of the primor mobile by whose influence such changes are wrought, nothing is known, although the evidence of its existence is constantly before our eyes, thus the heart of the embryo, whilst yet a mass of cells, connected by amorphous tissue matter, is seen to pulsate, yet no one can imagine, that the power which regulates its movement is not identical with that which animates its structure when fully elaborated.

The secreting structure of the Rhenus gland is composed of an infinitely fine membrane — in which, under certain circumstances, I believe that a minutely fibrillar structural arrangement may be seen; this membrane forming the periphery of numerous vessels, is the proper seal of secretions of their contents; the mode of its arrangement for this purpose seems to me similar to that sketched in Fig 2 (a) — the membrane
dipping down between the ultimate vessels, the loops thus formed being in all probability (although I have not seen such an arrangement) occupied by the minute ramifications of the vessels from which secretion is effected; I have been led to entertain the above opinion by observing that in a thin slice of the gland's substance, after maceration for some days, a "smoothing off," as it were, of the originally well defined polygonal vessels is noticed, (Fig 3) their dark and well marked outlines gradually joining off into a continuous and smooth membrane of excessively delicate texture, in which the above noticed fibrillar arrangement was observed, this being best seen at the edge of the thin macerated slice, (Fig 6)

A diagram of the mode in which I imagine the above noted "smoothing off" to occur would be outlined in Fig. 6.

With a glass of high power there may be seen, spread over the inner surface of the limbal membrane of each vessel, a vast number of round or polygonal bodies (germinial nuclei) - (Fig 5) - these I believe to be the earliest form of existence of the sulphuric acid found in the fluid of the Thymus. - Thrown off in a manner analogous
To that in which other secreions, as epithelium, are produced:— the occasional absence of these as a part of the membrane, and its consequently bright appearance, (as seen in one or two of the vessels in the sketch (Fig. 5) favouring this opinion:)— moreover, in a slice which had been somewhat roughly manipulated, I noticed an appearance similar to that represented in Fig. 1, (a) where a vessel seemed to be drawn out, as it were, and a neck formed by its peripheral membrane becoming elongated at the situation of its orifice:—

The amount of the contents of the Thymus varies greatly according to the state of the animal's nutrition, and hence the small quantity which is found in post-mortem examinations of the gland in infants,— they consist of a milky looking fluid, exuding when the cut surface of the gland is compressed, and seen on the edge of a section of its substance,—This fluid is a proteinaceous compound, but its small quantity renders minute analysis difficult,— in cases where it has been undertaken, (by Moric and M'Dowler) the glandular substance and contents were
examined in toto. — On microscopic examination of this fluid corpuscles with a granular aspect, varying in size from \( \frac{1}{2500} \) to \( \frac{1}{5000} \) of an inch, become abundantly visible, on them depending the milky appearance of the fluid, — they chiefly resemble the corpuscles contained in chyle, (Fig 2) having the same achor with zYGons, and differing only in their somewhat smaller size. — I have also in several cases noticed the nucleus, indeed visible by acetic acid, to be situated very near the periphery of the cell.

In conformity with these facts the contents of the thynax may be defined as consisting essentially of (2) highly developed cells, filled, in every aspect, for elaboration into the true coloured corpuscle of the blood.

The having of the liminitary membrane of the gland is so unsatisfactory that at no point can any mode of aqueous flux its contents be demonstrated to exist; it may be defined as being (3) a cell-secreting membrane which is peripheral to one or many chord sacs into which it
products are formed. —

On these two definitions (a and b) two adverse opinions are evidently based, of the mode in which the products formed in the gland are borne into the general circulation. — On the one hand, the tissue organization (if such a term may be used) of the corpuscular contents, would seem to indicate that such development was not needlessly undertaken, and that their destination was of more extended range than the mere breaking of them up as soon as fully elaborated, which, on the other view, is the change occurring; this latter opinion being framed on the absence of all visible traces of any proper excretory duct. — Whichever of these be the orthodox doctrine, it does not at all bear upon the theory advanced, — that the products of secretion, in whatever form applied, serve a special purpose in nutrition. — As the opinion I have been led to entertain on this point requires observations to be made which it is at present out of my power to undertake, I will, at once, leaving the "quomodo" as an open question,
suppose the gland's contents forced on into the general circulation: — in the foetus, the blood from which they are absorbed having been previously imbibed by the placenta, they are at once fitted for their purpose, which, at that period of existence, is most probably (in obedience to the laws of development) similar to that fulfilled by them in the lower animals, and which will be hereafter commented on: — when respiration has been established those products are submitted to the agency of the lungs, in a manner, and for a purpose, before mentioned.

Of the further changes which they undergo in their office of administering to nutrition, it lies not within the province of the present essay to even attempt any explanation; — and happily it is so, for such a "verata" question as "whether in the solids or fluids of the body transformation of urine is effected," — with so formidable an array of talent on either side — Haller and the human pathologists — Lichten and the advocates of
solidism, - would require an "avvp propionus" to decide; my own belief tends to the conclusion, that, like the cri-
ticisers of the Chameleon, they "both are right and
both are wrong"; - for the progress of modern physio-
logical research would seem to suggest some such
general considerations as the following, amount the order
in which change of tissue is effected; - viz - That the
Great Power, who rules the presence of a diluent to convert
ingesta into chyme, let it not that power be there arrested,
but will that a similar agency exist to carry the co-formed
chyme through its various stages of chyle, corpuscle, and
tissue, - investing each with a spatial power commensu-
rate to its stage of progress,

"Inmodulate vis, nisique acquirit eundo,"
hence it follows that, - as in mechanics a slight
obstruction suffices to arrest a moving body,
of such obstruction be centrally applied, -
"A pebble in the streamlet seems"

"Hath turned the course of many a river;"

"A dew-drop on the baby plant;"

"Hath warped the giant oak for ever;"

so a slight modifying cause, affecting the primary changes of organising matter, would alter, in toto, the character of its ultimate development.

It would appear, from the researches of Mr. Hutchinson, that the Phymus is not the only organ whose use and adaptation may be supposed to be modified according to the development of the lower extremities;—for we learn from his observations that the vital capacity of the lungs also, is proportioned in a remarkable degree, not to the development of the respiratory apparatus, or other contained organs of the body, but to the height of the frame, which height is chiefly, if not entirely, regulated by the length of the lower limbs;—nor does it seem at all an unwarrantable speculation, that
some relation may exist in the thorax between the lungs and the Thymus Gland:—for different however from the view entertained by Retzius, Inekeil, Arnold, and others, that the latter organ was vicarious to the former,—the observations of Naugted and Becker prove that the greatest activity of the gland is not during the period of quiescence of the lungs, and hence we may suppose, in concordance with the theory I have above stated, that the rapid growth of the lower exhemics exhausting the sufficient material of the blood, an increased secretion from the Thymus is determined.—the vivifying power of the lungs to mould this secretion to a condition fitted for nutrition, is more energetically called into action, and action, we know, determines growth.

8. The Comparative Anatomy of the Thymus.—The condition of the gland, and its relative anatomy, in various animals, has been made the subject of research by Ciedemann, Inekeil, Naugted, and especially
enquiry by Simon:—To trace the different and often conflicting opinions by them expressed would far exceed the limits of my present subject:—As far as relates, however, to the sex to which it is my purpose to refer, a statement of some few of the results of their observations seems necessary—and to one apparently palpable objection to the theory, which must occur in considering the condition of the Thymus in the lower animals, I will at once allude,—namely—that, although in them it has a mode of development, and occupies a site similar to that of thymus in man: yet the ratio between the growth of the extremities and that of the body is very dissimilar. In many animals, however, particularly those which more nearly approach to man, this objection will hardly apply, for we see that a disparity in the size of the extremities of the offspring, for some time after birth, does not then exist, and is, moreover, exceedingly well marked—the slender limbs of the colt, calf, &c. requiring but mentioning
to illustrate this; in those we find the thymus is ex-
ceedingly well developed, its how far the increase of the ex-
hemitits may be influenced by, or influence, the organ, can
be conjectured from the statement of M'Harbon, who noticed
that if a young ox be yoked to the plough, its thymus
rapidly diminishes, and disappears in one, instead
of persisting five, years; — again, it has been observed
by M'Gilliver that in over-driven lambs the thymus
will shrink, and become nearly drained of its contents,
destroying again with rest and nourishment; and, not
without examples, it may be generally shaked, that
in animals in whom free use of the limbs is early
accentuated, the organ disappears soonest; — thus in
the genus Felis, — perhaps the most active of mites —
males, and that in which activity is earliest called
into play — the thymus gland disappears at a very
early age, and in the wild (as T. leo & leopards)
much sooner than in the same species, — the influence
Of muscular action in determining growth, I need
hardly say, would fully explain the wherefore of these
changes—and the early disappearance of the gland
would seem to as plainly indicate that now it
are derived the means of such increase. The con-
clusion of these facts meets half-way the explana-
tion I propose, with regard to the general comparative
anatomy of the Thymus:—it is but to apply in this
case, as in others, the allegory that all existing being
from but links in a chain, whose last and highest
is man;—on this principle, if the power assigned
to the gland as a instrument—secrating agent be
allowed, it may be well imagined that its products,
in the lower classes of animals in which it has been
found to exist, serve to feed, as it were, the systems at-
large;—ascending in the scale, they become destined
to a purpose specially foreshadowing their use in
man, and intende by the growth of the limbs, lastly,
in man himself, their use is seen still more limited, having a similar purpose, this is true, but with regard to only the lower extremities.

The Thymus gland is found only in those animals which breathe by lungs— an explanation of this may, possibly, be that its products require to be submitted to the operation of the Pulmonary capillaries, that certain changes may be there effected, (similar to those which the echoes of digestion ordinarily undergo) before they are fitted to enter the circulation and minister to actual growth.

The existence of the gland is but temporary, like that of man, in all animals with the exception of those which hibernate— the constant presence in the adults of the latter class and its increased during the time of winter labor, has been pointed out by Siedelmann, as also its distension, at that period, with a "chylous fluid" and its subsequent gradual diminution.
in use, the period of hibernation being past, - the
fact seems to support the view I have taken, - in
the body of an animal during its winter sleep,
absorption containing unimpaired, oxygenation
of the blood and nutrition are reduced to a mini-
mum; hence, when spring reinvigorates and
calls anew its energies into play, - a new birth,
as it were, takes place, and a cell formation
is determined as active as that in the new-born
infant, - the Thymus gland being, indeed, de-
ovo, with corresponding activity.

E. The duration, growth, and working of the gland.
The existence of any organ, when considering the functions
it is destined to serve, depends only upon that period at
which its fitness for the fulfillment of such special func-
tion ceases; - hence it may be stated, that the persis-
tence of the Thymus gland continues only till about
the second year of mundane life, - up to an age at
which the child begins to actively move alone, to walk and run unassisted.

The脑子 of its existence while remains in after-life very quickly in amount in difficult individuals, but apparently useful no purpose in the economy, and may be considered as continuing only in obedience to a seemingly universal law, which rules that a body, once produced and organized, shall never again be entirely removed.

The date of origin of the Thyroid is somewhat more obscure; adopting the view of Mr. Goodwin, that it is essentially a highly developed remnant of the blastodermic membrane, it would, of course, be impossible to assign a definite period to the commencement of its growth, unless, indeed, the first existence of the membrane itself in the ovum were considered as such. The first visible sign of the gland's definite presence in the human fetus, as stated by embryologists to occur about the ninth week,
at this period it consists of a simple tube, or "ductus venularis," structure, from which, as growth advances, follicles bud out, and gradually develop to form lobes, the walls of which seem to be again fitted out into a vast number of ultimate secreting vessels, as formerly described; thus the general mode of arrangement of the gland, during its earliest stages of increase, bears a strong resemblance to that of the salivary and other glands. The growth of the Thymus is not uniform, being greatly accelerated toward the termination of infancy, and still more during the early life of the infant. Of the minute changes occurring in the substance of the gland, during its period of wasting, I find but little value, in those cases I have myself examined a perceptible fading of the strongly marked contour of the ultimate vessels, and a greater readiness in the "smoothing out" noticed at a previous stage, was
discernible.

In the life of a human being we can trace a succession of organs which seem, like the thymus, destined to fulfilled a temporary function; thus we may enumerate the vitelline oæ, the umbilical vessels, postflarian bodies, neural plexus vessels, and numerous other instances, in the embryo, as illustrative of this; and after life the thymus, the teeth, the brain, the testicles, mammae & ovaries all serve as examples, and finally, life itself,

"sine meas composere magna",
is, irrespective of physical considerations, equally as much a temporary endowment to fulfill a specific purpose, the universe being our standard of comparison.

In the circulating system, also we find many instances of a power enabling it to receive, when needed, ince-
varying period, similar to that above alluded to in regard to the contents of the Thymus gland; the capability being diminished or lost after the fulfillment of such temporary requirements; as instances, the lacteal secretion, the repair of injuries, the occurrence of the exanthemata, &c. may be adduced.

The preceding theory serves to strikingly illustrate a physiological circumstance of great interest, slightly alluded to in a previous page, namely, the gradual perfectionation of the frame work of man, in obedience to an all-prevading law, a cell or two grows by vital growth alone; no heart, no lungs, by their mechanism to replenish or modify the stream of life; the beautifully arranged order each part of the body progressively perfected, the great Designer "sees that it is good," until, finally, the last part is taken
away— the fabric hands completed.

Thus then have I roughly sketched in the various facts which seem to me most to bear upon the hypothesis I have ventured to put forth; of the meagerness of the outlines I am aware, but will rather leave them in their primitive hardness, than seek to fill in the shading by using the soft pencil of a plagiarist. —

W. J. Wright