Naevus.
its Varieties, Pathology o Treatment.

by

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1886.
Naevus: its varieties, pathology and Treatment.

In choosing for the text of my thesis for graduation in Medicine, the subject of Naevus, an apparently simple and well described morbid condition, I have been guided by the fact, that in the Children's Hospital, with which I am at present connected, this disease is of very frequent occurrence among the out-patients. In the course of private practice also, we are constantly called upon to cure or at least, relieve the deformity caused by its presence. The majority of the patients whose we are called upon to treat for this disease, are infants or children of tender age. The real cause
for better surgical aid is, as a rule, not what the disease inconvenience the little patient in any way, except in rare cases, but the fact that the Naevus is a source of disfigurement, often a very great one, and also, that it is rapidly growing. These two facts, the deformity and the rapid growth, are the real causes of the parent's anxiety for surgical aid. Another cause of anxiety however, especially among the poorer classes, is the idea that these growths eventually develop into Cancer unless removed. This theory of the supposed Cancerous tendencies of Naevi I shall discuss later on in the paper. Naevi are usually congenital, some authors however consider them to be always so. This I shall show is not invariably the case, when treating of
The Causes. This congenital origin has given rise to the term Naevus Mac-ternus, applied to one variety, & in fact originally only included those Naevi which we now include under the term of Cutaneous. The acceptance of the term has now been considerably widened & includes all morbid growths in which the vascular system is in an hypertrophic state, in certain limited areas with is essentially a disease of childhood. I follow this wider meaning of the term & include therefore those growths which have, by some authors been called Erectile Tumours.

It is sometimes said that Naevi occur "shortly after birth". I venture to think that these cases may be explained on the supposition that at birth the
Manifestations.
Nævus was so very small as to escape detection, and it was only after a few weeks' growth, that its presence was noticed.

The manifestations of this disease are most varied. In some cases there is a tiny bright-red spot, called from its seeming resemblance to a spider, Nævus Araneus; in other cases these spots of colour are somewhat larger, fancied to resemble various fruits or objects—such are the so-called Strawberry, Mulberry, Raspberry, or Currant marks; in yet other cases there may be various sized, this figuring splashes of colour, varying from bright-red, through all shades to a deep purple-red or even black—so-called Wine marks. These varieties all belong to the original definition of Nævus Maternus.
Some patients again, are brought for us to see some "lumps", situated on some part of their body, of which swelling may or may not present some abnormal colouration, according to its position in relation to the skin. Those wholly subcutaneous being chiefly colourless, whereas when the skin is also involved, the tumour may present various colourations. These "lumps" as they are termed by the friends may be either very small or of considerable size—some have been recorded of the size of an orange or even larger. As a rule however, they are about the size of a half walnut, very frequently much smaller.

Nævii may occur singly or be multiple.

In one case, I remember to have been recorded in which there were no less than twenty Nævii.
Bryant.

Spurious Naevi.
on the same patient. A curious case is mentioned by Mr. Bryant in the "Medical Times & Gazette" for Feb. 3rd 1872, in wh. a symmetrical Naevus of the size of a sixpence occurred at the external angle of the right eye of each of twins.

The majority of Naevi show a decided tendency to increase; there are however a certain number which are present at birth and which instead of increasing gradually disappear during the first months of life, to these latter the name of Spontaneous Naevi has been given.

In regard to growth, Naevi do not seem to follow any definite rule, for we see them in some cases growing rapidly, in others, after having reached a certain size they may either remain stationary or even begin to decrease & eventually
Disappear. The causes of these sudden and spontaneous variations are not understood. It is a well-known fact that this disease has disappeared after various childhood complaints, e.g., Measles, Hooping cough, etc. This fact has led some surgeons to advise doing nothing to Naevi in the hope that such a happy result may occur. This point I shall have to discuss in the Treatment. Naevi sometimes develop after adult age, either spontaneously or as the result of some accident. I have met with a case of a woman, in whom during her first two pregnancies, a small Naevus developed itself on the face close to the nose. They did not grow, nor was there any complaint but the slightest deformity. This occurred, as Baron Dupuytren in his "Leçons Pratiques" Vol III
Aneurism by Anastomosis.

J. Bell.
article IV p. 223 believes in the possibility of
this & quotes a case in point, of a woman
who had borne children & in whom a
Naevus appeared during the fourth month
of pregnancy.
As a rule the most disfiguring class of
Naevi, those flat expansions of colour
have a penchant for attacking the
Head, face & Neck, they may however
extend to other parts of the body, even
covering half of it. The Tumour-like Naevi
generally occur on the Head or Trunk or
limbs.
There is a vascular Tumour of the Scalp wh.
is sometimes classed with Naevus, but
wh. is in reality quite distinct from it —
I mean the Theurism by Anastomosis
of John Bell. It is evident however from
his writings that some cases wh. he called
Medical importance of Nævus.
Aneurism by Anastomosis are simply either the sub-cutaneous or the mixed form of Naevus. The Diagnosis will be dealt with later.

The great interest which the disease occasions us as Medical men is the fact that we have to consider whether we can. Firstly, cure the Disease entirely. Secondly, in some measure relieve it. In the vast number of Cases of extensive staining we are powerless & the patient is doomed to go through life a marked man. When the Naevus is small or of the Sirmom Variety, there is reasonable hope of effecting a satisfactory cure.

I said before that the great cause for rejecting Surgical aid in this disease was the deformity which it occasioned. But there are Cases in which Naevi
Gross.

Erichsen
are sources of inconvenience or even of actual danger. As examples of inconvenience, may be mentioned small Naevi on the lips preventing free suction in infants; Naevus on the penis, incapacitating for sexual intercourse, as in the Case mentioned by Gross in his "System of Surgery," Vol. ii. p. 840; and also by Mr. Erichsen in his work on Surgery, and many others. As examples of danger may be noted Naevi of the lips rendering an infant unable to suck at all; Naevi in the orbit or neighbourhood, displacing or otherwise interfering with the eye; Naevi which bleed freely and thus jeopardize the life of the patient; &c.

In all such conditions, it must be our endeavour, in some way or other, to remove the disease. This however belongs to the
Internal varieties of Naurus.
Subject of Treatment.
So far I have only spoken of Naevuses as it occurs immediately beneath our eye & hand, but it must not be forgotten that this diseased condition may also occur in the skin & the bones. The Viscerai organs chiefly affected are the liver, spleen, & more rarely the kidneys, & the intestines. The cases occurring in the internal organs are not amenable to treatment & in fact are usually discovered only in the Post Mortem Room. Pulsating tumours of bone have been frequently recorded, in some cases apparently, simply a Naevoid condition, but in others undoubtedly of a malignant nature & very vascular. I. Bell in his work on Surgery, Discourse I p. 459, mentions the case of a woman who had a large Naevus, which occupied the
substance of the perineum, and began to grow inconveniently after her marriage, having previously been dormant.

Gross in the "System of Surgery" already quoted considers that "an internal Haemorrhoidal Tumour is essentially an erectile Angioma, i.e. a sub-cutaneous Naevus. It is difficult to trace the resemblance, for, whereas a Naevus is a collection of vessels increased in size and number essentially occurring in early life, Haemorrhoids on the other hand are simply dilated, hypertrophied veins due to obstruction to the venous circulation in the pelvis & occur mainly in persons who have passed adult life. The tortuosity & hypertrophy being due to, not primary but secondary causes. They belong to the class of Varices, the latter have sometimes been mistaken for Naevus.
Causes of Mucous Membrane Protrusions (Mucous Membrane Protrusion)

Popular Theories:

- **Theories of Castration and Reconstitution**: Historically, the belief that male castration could lead to the development of mucus membranes. This is based on the assumption that castration could disrupt the normal balance of hormones and lead to the development of mucus membranes as a result.

- **Hormonal Imbalance Theory**: This theory posits that hormonal imbalance, specifically a deficiency in male hormones (testosterone), can cause changes in the mucous membranes. This is often linked to the idea that the hormonal environment can affect the health and appearance of the mucous membranes.

- **Genetic Influence**: There is a belief that genetic factors play a crucial role in determining the characteristics of mucous membranes. Studies have shown variations in the genetic makeup of individuals, which might influence the development of mucous membranes.

- **Environmental Factors**: Some researchers suggest that environmental factors such as diet, stress, and exposure to certain chemicals might contribute to the development of mucous membranes. For instance, a diet rich in certain nutrients or exposure to pollutants could alter the mucous membranes.

- **Inflammatory Response**: There is evidence that inflammation can lead to changes in the mucous membranes. This is often associated with autoimmune diseases where the immune system attacks the body's own tissues, leading to inflammation and potential changes in mucous membranes.

- **Functional Anomalies**: Some theories suggest that functional anomalies in the glands that produce mucus might cause the development of mucous membranes. This could be due to an overproduction of mucus or a change in the composition of mucus.

These theories provide a foundation for understanding the complex factors that contribute to the development of mucous membranes. Further research is needed to validate these theories and to develop effective treatments for conditions associated with mucous membranes.
The Causes of this disease as it occurs con- 
generally, are utterly unknown. There is a 
popular belief that those Nævi resembling 
in shape or colour, certain fruits, wines or 
other articles are due to impressions con- 
vveyed to the foetus through the mother, 
who during the period of pregnancy had 
a great desire or craving for the special 
object supposed to be represented by the 
Nævi, and which article she could not obtain, or at least could not obtain 
soon enough to satisfy her craving. Some- 
times we are told that the Nævi re- 
semble some animal or object which 
either terrified or disgusted her during 
her pregnancy, such for instance are 
Nævi, liked to animals, chiefly in the 
Insect world, or to the entrails of Slaughtered 
cattle or poultry. This popular Theory has
been still further elaborated in the statement sometimes made, that the "faint marks" undergo an increase in size and colour during the season at which the particular fruit is ripening. It is almost needless to say that the causes of such increase are to be physiologically found in the body of the patient himself. The explanation is evidently the fact that during Summer Time (The Fruit Season) the greater heat of the Atmosphere causes an increased dilatation of the Cutaneous Capillaries, whence these special Naevi being chiefly if not altogether Cutaneous or Capillary, share in the increased engorgement.

I shall now pass from these popular ideas, merely adding that I am inclined to think that there may be some degree of truth in the statements made by the mothers.
Medical Theories

Callisum.

Batemun.
Though all speculations as to the primitive origins of Nervus are futile, in the least influence our modes for treating the disease, I shall shortly glance at some of the theories, advanced by medical men.

Cattier in his "Systema Chirurgiae Horandi" Vol II p. 201 says that the causes, "potius autem in evolutione primorum flaminum, a nativae, solita via aberrant, uti in alius rebus monstrosis, quercunciae sunt."

Batemau in his "Practical Synopsis of Cutaneous Diseases" p. 227 says "Though the causes are hidden in obscenity, experience proves that irritation or anything causing determination of blood to the part increases the size; thus a bruise or tight hat will excite a mere stainlike
Cazenave o Scholl.

Grues.
mark, or a minute livid tubercle, into that discoid action which occasions its growth."

Cazenave & Schédé in their "Abrégé Pratique des Maladies de la Peau" p. 456 say that it has been thought that Naevi occur in children whose mothers were subject to inflammations of the skin. Grotz in his "System of Surgery" vol. i, p. 196 says, "Some of them are doubtless owing to an arrest of development, dependent upon defective organization of the Germ, others are probably occasioned by irritation of the Nervous Centres, while others again are perhaps due to faulty position of the foetus in the uterus or violence inflicted upon it during gestation."

The majority of writers, quite disregard the causes & enter at once into the description
of the disease & its Treatment.
From the passages quoted it will be seen that the general idea is that the original error lies in the primitive germ of the affected area. Here then, there are three possibilities, the error may lie either in the germ of the (a) vessels, themselves or of the terminal (b) nerves of the part or yet again in the (c) Connective Tissue. This theory of germ-error is a very convenient one to hold in the absence of definite facts. My own theory has always been that the causes were mostly mechanical & acting during foetal life. I explain it by the supposition that the part affected was at some early period of foetal life subjected to some bruising or injury by which the harmonious development of the part was interfered with, either from the direct
Theory of Causation
action of the injury or indirectly through paralysis of the nerve terminals, by which the proper regulation of blood to the part is impeded & the capillaries dilate & hypertrophy, involving in the morbid process neighbouring structures. The manner in which I judge the injury to occur is in one of three ways.

i. From concussion, by which the foetus is suddenly jolted against some portion of the pelvis, or the effects of a blow transmitted through the abdominal walls & returns from without.

ii. From pressure from the Cord, when it forms temporary knots, or encircles a part tightly.

iii. From violent movements of the foetus itself by which it knocks & bruises itself.

I am aware that my theory is un-
fortunately very unsatisfactory in many respects, but I am convinced that if it does not hold good for the majority of cases it certainly could explain the origin of many Naevi. I am also satisfied that some of the cases occurring at various periods after birth owe their origin to some injury inflicted on the child, during its birth. There are cases however in which this theory cannot hold, viz. those occurring as a result of accident or injury in later childhood. In these cases we must be satisfied with the "Vicious-seem" theory. The elements are present o the state of general rapid development of youth are sufficient to account for the appearance o growth of the Naevi. That the condition may exist in a dormant state, ready to be awakened into activity
History of the Disease
we may I think conclude from the analogous cases of the Cancers. These growths as it well known show no symptoms of their presence, very frequently till adult age is past & only when the body has entered the last stage of evolution – viz: that of degenerations & decay. They are then easily roused into a state of activity by slight accidents or irritation. I regret that I must dismiss the subject of Causation of Naevus with nothing better than theories for definite facts, so far as I am aware, there are none.

The History of Naevus may be said to date from the earliest times, this statement applying to the stains & spots occurring in the skin. Not only medical but general authors, have mentioned the
Ciero.

J. Petit

J. Bell
disease, thus Cicerio pays "Et Macula corporis, Naeveus." The other variety however viz. the sub-cutaneous or tumour-like Naeveus, did not receive much attention or in fact was not recognised as distinct vascular growths till J.S. Petit in the 18th Century first described them as "Loupes Variqueuses." We know now that they differ essentially from the Varicose condition.

To John Bell however who in the end of the last & beginning of this century wrote memoirs on the subject, belongs the credit of having given the first detailed account of these tumours, which he called "Aneurism by Anastomosis." He erred however, as his writings & plates clearly show, by including under this term not only the true Aneurism by Anastomosis, but also the Venous Naeveus.
Murdock, Travers, Lawrence
Birkett, Project etc.
Dupuytren, Roux, Velpeau
Bérard, Virchow, Billroth, Kaposi
The Aneurism by Anastomosis proper is a distinct disease & does not fall to be considered with Naevus. Since Bell's time the subject has been fully studied by many surgeons both in this country & abroad. Among English Authors may be mentioned the names of Wardrop, Travers, Lawrence, Birkett, Papet &c. Among Continental writers I may mention, Dupuytren, Roux, Velpeau & Bénard, who wrote a memoir "Sur le traitement des tumeurs érectiles" in 1841. Among the Germans are Virchow, Bilroth, Napozi &c.

The methods of treatment proposed or tried for this disease, sufficiently indicate its frequency of occurrence, the anxiety for its removal & in some cases the difficulty of its accomplishment. In peacetime however that the anxiety for its removal is due to
Description of Naïrus.

Derivation.

S. Cooper.
The deformity occasioned & not often to any inconvenience.

I shall now pass to the discussion of the various varieties of Naevus.

It would be desirable to consider shortly the opinions of one or two authors on this point. What is a Naevus?

According to its derivation, Naevus (or Gnaevus) is a natural mark, spot, or blemish. The term now includes all growths in which the vascular system is greatly in preponderance.

S. Cooper in his "Dictionary of Practical Surgery", 1838, thus defines Naevus: "A mole or congenital mark, thickening or excrescence of the skin. Naevi comprehend all the stigmas spots or deviations of a part of the skin from its normal state, which are congenital. Al-
J.Bello Dupuytreau

Baltimore.
though they are exceedingly diversified, all of them may be arranged under two principal kinds: one consisting of congenital alterations of the colouring matter of the skin, the other of vascular productions or hypertrophies of the skin, often of a new growth or tumour the texture of which was compared by John Bell to Dupuytren to the erectile tissues naturally existing in various parts of the body. Hence the latter structures are now frequently termed erectile tumours."

Dr. Bateman in his "Practical Synopsis of Cutaneous Diseases" p. 324 agrees with this description when he says "Some of these are superficial or stain-like spots & appear to consist of a partial thickening of the Rete Mucosum, sometimes of a yellow or yellowish-brown, sometimes of a bluish liquid
or nearly black colour—two the tense.
Spili has been more particularly appropriated
Others again exhibit various degrees of thickening
elevation or altered structure of the skin
itself or consist of clusters of enlarged or
contorted veins freely anastomosing or
forming little sacs of blood. These are sometime
spread more or less extensively over the
surface, occasionally covering even the
whole of an extremity or one half of the
trunk of the body; sometimes they are
elevated into prominences of various
forms or magnitude."

Mr. Erichsen in his "Science of Surgery"
says under this disease are included those
various affections termed, 'Mother's Marks,' 'Erectile Swarms' or vascular growths that
it appears to consist essentially in an
excessive development of the vascular tissue.
of a part, & differs greatly as to its nature, cause & treatment."

Mr. Holmes in "Surgery, its principles and practice" p. 340 says, "Capillary & Serous Tumours are called Naevi......... The obvious difference in surgical anatomy between Naevus & other congenital tumour consists in the large size & great number of the vessels in Naevus......... Some pathologists regard Naevus as congenital fibrous tumours, in which the different arrangement of the fibrous stroma has necessitated a corresponding enlargement of the vascular channels. According to this theory the vascularity is secondary to the tumour formation, but I consider that the great characteristic of the Naevus is its error in vascular development & subsequent hypertrophy in regard to quantity of vessels."
Mr. Humphrey in his lectures on surgery objects to the term erectile tumour, for the prominent variety of Naevi, "because" he says "Naevi have not the power in themselves of engorging themselves like true erectile tissue, any increase in their size being due to increased blood pressure determination of blood to the part or obstruction to the venous outflow."

Sir James Paget however in his "Lectures on Surgical Pathology" vol 1 Lecture IX answers this objection to my mind fully & clearly by saying "that the power of true erectile tissue to fill itself, depends as much on the accessory structures, such as the muscles & nerves, as the tissue itself, that in Naevi the erectile tissue is present but the accessories the muscles & nerves are imperfect or only partially present."
Various Names for the disease.

Boyer
Grace
Alibert
Germans.
Another objection that has been urged against
the term eretic tumour is the fact that
Naevi are essentially a disease of infancy
and childhood, in their primary state innocent
whereas the true eretic tumour, generally
occurs in later life and is often of a malignant
nature.
Thus we see that there is a consensus of
opinion in regard to this disease as one
of the vascular system—peculiar in the
fact that it occurs at a time of life
when diseases of the blood vessels are
extremely rare.
Naevi have received very various names
according to the fancy or idea of various
writers; by Boyer "Tumeurs Variquences" or
"Foyumeurs Sanguines"; by Graefe, "Venae Stauatae";
by Alibert, "Haematoectes" (Dima, d'yeux); by
the Germans "Blutschwämme"; and various
Pathology of Naevus.

Corné Rauvier
other names, some of which I have already mentioned in previous pages. This brings me to a consideration of the classification, the characters, physical & anatomical, of Naevi.

Naevi belong to the class of morbid growths termed Angioma, or may be divided according to the classification of Cornil & Ranvier in their "Pathologie" (Manuel d'Histoologic Pathologique) t. ii. ch. vii.

as follows:

I. Simple Angioma,
   Including Cutaneous Naevi & Telangiectasis

II. Cavernous Angioma
   Including the sub-cutaneous & mixed varieties.

I may mention here that at one time all
Fungus Haematoedes.

Division of the Subject.
Naevi and Aneurism by Anastomosis were included under the term "Fungus Haematomatos", a term which is fundamentally wrong for they are in no way "fungous" even when ulcerated.

For the purposes of description, Naevi may conveniently be divided according to one of two plans depending on whether we have regard to,

i. The nature of the vessels composing it

or ii. The relation of the growth to the skin

If we elect to follow the first plan we shall have three subdivisions viz:

a. Chiefly composed of Arteries & Arterioles

b. Chiefly composed of Capillary Vessels

c. Composed of both Veins, Arteries, & Capillaries

The venous system however largely predominating.
The Cutaneous Naevus.
If we follow the second plan we shall also have three subdivisions viz: 

1. The purely Cutaneous Naevi 
2. The sub-cutaneous Naevi 
3. The mixed or Cutaneous-Sub-cutaneous.

I shall in this paper follow the second plan - consider the Naevus in relation to the Skin, my reason for so doing being that the Treatment depends not only the vascular constituents, but upon the position of the growth. 

I pass now to a study of the anatomical peculiarities of these growths.

I. The Cutaneous, Capillary or Superficial Naevi.

This variety belongs to the class of diseases termed in Mortal Anatomy Simple Angioma or Telangiectasis and includes
Pigmented Naevi or Moles
all those spots & splashes of colour, imperfections & peculiarities in the appearance of the texture of parts of the skin, which are popularly supposed to arise from impressions conveyed to the foetus, through the mother. Boyer in his "Traité des Maladies Chirurgicales," t. ii. p. 291 says of this variety "L'ne, que nous appelons conséntiales, parceque les enfants en portent le germé en venant au monde."

Under this first division, we find two sub-divisions included by most authors:

1. The cases of simple pigmentation of the
   Retzi Mucous & varying greatly in its
   shades from red to black. They do not
   however often show any decided vascular
   appearance; if they increase, they do so ex-
   tremely slowly & lastly they in some cases
develop into Sarcomata—generally melanotic.
True cutaneous Naevi.
Not a few of them are covered with a thick crop of hair, hence called moles from the similarity to that animal. They do not strictly belong to my subject, so I shall dismiss them merely stating that, if desired, they may safely be removed by an elliptical incision or if prominent by a circular ligature, of silk or horsehair.

ii. The cases due to some irregularity in the size or arrangement of the superficial capillaries of the skin, by which an abnormal quantity of blood, finds its way to a remains in the affected spot. Lassus in his “Pathologic Chirurgica” e. p. 474 says they are due to “probably some organic malformation of the skin whose natural texture is wanting & a plexus of vessels, substituted for it. A deformity
Bérard
rather than a disease."

These Naevi are usually quite flat, but associated with them may be a certain amount of thickening of the skin, causing them to have a raised appearance, or they may even be associated with the next variety in which case they present the appearance of tumours. The surface is often granular. Capillaries may be seen ramifying on the surface. They are soft and often distinctly warmer than the surrounding parts. Rarely there may be a certain indistinct throbbing, but never pulsation, when this latter appears to exist Bérand in the paper already quoted refers it to the presence of an underlying arterial trunk. They all increase in colour and tension during effort or emotions. This statement also applies to those Naevi
Deprance, Desaith, J. Bell

Bilbroth.
existing in women, which during menstruation undergo these changes or may even act vicariously to the uterus. Cases have been recorded by Desfosses, Desault John Bell & others. Bell mentions one who bled every six weeks, another who, for a year or a half acted in place of the uterus

For the anatomy of Vævus I shall quote Pitha or Billroth.

Billroth in his "Pathologic Chirurgicale," p 718—says,

1. Telangiectasis (from τήλειατίς, far; τελειον, a vessel of ἐκτασία, a dilatation), is the most frequent form. This neoplasm is completely composed of capillary and very small dilated tortuous vessels. It shows itself sometimes under the form of a tumor, at others of a flat red spot
in the skin, according as the production of new vessels or the pure dilatation predominates. They occur almost exclusively in the skin. In colour they are of a dark cherry red or steel blue hue, in size they vary from a pin's head to a grain of hemp-seed. One meets frequently with a variety which is neither a tumour nor a spot, but a large discoloured surface. Examination shows that they are composed of little lobules of the size of a grain of hemp or even of a pea, or if these lobules be examined microscopically after injection or other methods of preparation, it is found that this lobulated configuration is due to the small vascular systems, of the sebaceous glands, of the hair follicles, of the sebaceous glands of fat lobules which are all distinctly in the skin equally affected by these systems.
Pitha o Billroth

Sites of occurrence.
give to the eye the appearance of lobules. The colour is due to whether the capillaries of the superficial or deep layers are involved. In general this vascular vegetation does not pass beyond the subcutaneous connective tissue."

Pitka Billroth in their "Handbuch der Chirurgie" Band ii Abtheli Chp. LV §271 p.254. say "The flat simple Angioma may grow to a considerable size, substituting itself by its growth for the proper tissue of the skin, whose papillae & glands it destroys." again in § 273 "The flat angioma are almost always congenital, hence the name "Mutter- naul"...... In later life their origii is seldom observed."

The Sites chiefly favoured by these Naevi are the Head, Face, Neck, Arms, occasionally
the back, nails & organs of generation. In my own experience the Head & Face have been most frequently affected.

There is a very common variety of this Naevus, termed the Naevus Araneus, from its spider-like appearance. It may consist in either a small central vesicle or point of bright scarlet, from which the dilated capillaries may be seen spreading out. They are usually very small & in the great majority of cases show no tendency to increase in size. They may occur at any time of life, & I mentioned previously p. 7, a case of a woman in whom they made their appearance during pregnancy.

My theory of their formation is that there has been a rupture of one or more Capillaries, the little effusion of blood below the Skin acts as a slight cause of irritation, thereby
Course of Naevus.

The Subcutaneous Variety

Wardrop.
leading to determination of blood to the part, that this temporary dilatation of the capillaries then becomes a constant condition.

In its subsequent course the Cutaneous Nævi may follow one of three Courses It may i Remain quite stationary
ii Disappear
   a Spontaneously
   b As the result of some irritation ulceration or gangrene
   iii Increase rapidly in size.

II The Sub-cutaneous or Venous Nævi.
The term sub-cutaneous was first applied to this variety by Wardrop in a paper read by him in the Medico-Chirurgical Society in 1818 in which he says "I shall
Pathology

Sub-divisions
Denominate this Species of Tumour, Subcutaneous Naevus."

They belong in Morbid Anatomy to the class of Cavernous Angiomata. They interest us as surgeons from the fact that they are more serious growths than the former variety, often causing great inconvenience, if not actual danger from their presence, either as a result of their position or from Haemorrhage due to some injury or disease. Further they are mostly amenable to treatment, either 'in situ' or by extirpation.

Authors describe three sub-divisions under this head viz:

1. The Arterial which however is strictly the Aneurism by Acastonofis of John Bell.
2. The Cirsoid Aneurism of other writers.

At one time there was a confusion between
This Aneurism & Naevus, but the two con-
ditions are distinct, for the Aneurism by
Anastomosis is in the first place Arterial
Secondly the blood is contained within
the greatly hypertrophied & convoluted
arteries, it does not permeate a spongy
issue as it does in the Naevus. In
Aneurism the arteries are laid with their
convolutions more or less parallel in the
affected part, & feel like a bundle of
worms. Its favourite site is the Scalp.
I shall quote John Bell's description from
wh. it will be evident that he was not aware
of two conditions distinct one from the other
in his work on Surgery. Discourse XI p. 489. He
days "I have reason to believe that it
(Aneurism by Anastomosis) sometimes originates
from so slight a cause as a tight hat or
a trifling bruise. It frequently begins in
adults in pure, half- or sound skin, where no spot or mark nor tendency had ever been observed. The marks children are born with are often superficial stain-like spots, which never change except that their colour becomes occasionally deeper. But sometimes these spots are also defects in the substance of the skin; they are a species of aneurism or they create a tendency to this disease of almost imperceptible stainlike spots of the skin they grow to dangerous bloody tumours which require extirpation.”

His explanation is as follows, he says “when a set of cutaneous vessels first enter into this diseased action a few of the extreme arteries in the skin itself are originally at fault & commence an increased action, which draws the
arteries of all the adjoining parts into sympathy with them. The arteries behind them convey more blood & push it on rapidly, these larger arteries begin to feed the disease, while the central group thus supported by the arteries behind acts powerfully, the Tumour begins its pulsations - like a "Punctum Saliens" forms vessels as it were by enlarging those small branches which were not visible before."

Hernettry in his "Surgical Observations" p.236 says "There can be no doubt that the repletion, distension & consequent enlargement of the dilated vessels, depend upon a kind of inflammatory action of the surrounding arteries, for if that be wanting the mark ceases to enlarge, & if present it increases in size, in proportion..."
Latta.

Lassus.
to the degree of inflammatory action?"

β. The Venous or typical Naevus. This is the class to which the 'lumps' as described by mothers, belong, which may vary in colour, being natural or bluish according to the depth below the skin. As a rule they are seldom larger than a walnut, but Mr. Latta in his System of Surgery, Vol. ii chap. 22, mentions one in a child 2 years old which weighed 14 ozs, which at birth was only the size of a bean. Lassus in his "Pathologische Chirurgie" & i p. 479, records one as large as a man's head. They may occur on any part of the body, the larger ones however selecting as a rule the trunk or limbs. They occur very frequently on the head. There is a large formidab...
Physical Characters
looking one which sometimes grows in connection with the anterior Fontanelle but which may be removed without any danger by the ordinary means to be afterwards described.

Physically these tumours are generally smooth or roundish or oval, more rarely lobulated. To the feel they are softish, doughy or inelastic, subsiding considerably under pressure, but refilling on the removal of the pressure. When the tumours contain cysts or are partly consolidated as the result of some inflammation, this power of compressibility will be modified. They increase in size on tension during efforts, such as coughing, crying, struggling; as the result of emotions; or in fact of anything which causes increased blood pressure.
Cyst formation
The superjacent may or may not be involved in the Naevoid condition. Vesicles are frequently to be seen passing from their circumference into the neighboring parts in a radiating way. It is sometimes said that there may be a sense of fluctuation in the tumor, but this can only depend on the presence of a cyst within the Naevus. The rationale of this cyst formation is not definitely understood. It seems to me to be due to the fact that either the entrance to one of the dilatations becomes occluded or that one of the "cells" in some way or other becomes cut off from the general blood current, the colouring matter of the included blood becomes absorbed or a serous or hemorrhagic fluid re-
places it.
They are usually congenital, but as regards growths, seem to be somewhat capricious. Some never increase at all, some do not increase for years perhaps then may do so rapidly; some grow for a certain time and then remain quite stationary, lastly others may disappear instead of growing. M. Baffet, Allier, Moreau, others quote examples of this last fact.

Anatomical structure.
Mr. Wardrop in a paper on "Some observations on one species of Nævus Maternus, with the case of an infant, where the Carotid artery was tied," in the IX vol. of the "Medical-Chirurgical Transactions," March 17, 1818, says "The structures of the different Tumours
which have been classed under the general name of *Naevi Maltonii*, have not yet been satisfactorily described."

In the xxx vol. of the above society's transactions will be found a description of this growth by Mr. Birkett, to which I shall quote as it differs in no degree from all other later descriptions. He says, "The growth consists of the following elements:

1. Capillary vessels of vessels of larger size.
2. Epithelium.
3. Areolar unviting or fibrous tissue."

The description was formed from the examination of one, which had been excised entire; it was therefore undisturbed in its relations. He found that it was lobed, each lobe having a distinct capsule, which at its neck becomes
intimately blended with the fibrous tissue of the true skin. Strong but delicate bands intersected the lobes in all directions. In some lobes the bands seemed to have a definite arrangement, a dense well-defined central point existed from which the bands passed off in a radiating manner to the investing sheath. The interior of the lobes presented on a transverse section a reticulated character. The cells composing them communicated freely on all sides so that air could freely permeate the whole lobe; but the lobes did not appear to communicate with each other. The various septa were composed of delicate fibrous tissue covered by epithelium. In regard to the most important part the vascular arrangement, the structure more nearly
resembled the Corpus Spongiosum penis than any other tissue of the body. Each lobe was supplied by one or more distinct arteries, which dividing into capillaries ramified on the Septa & were lost there. He did not make out clearly how the veins commenced. Upon injecting these structures they appear as one mass of blood vessels, or if they are cut into, blood seems to flow from every point.

In his "Pathologic Chirurgicale" p. 718 Bilbrough says:

"...The sanguineous cavernous or venous cavernous tumours when it is extirpated is recognized by the naked eye from the fact that the surface of section is almost exactly like that of the Corpus cavernosum penis. It consists then of a reticulated, dense, white resisting tissue..."
which may be opened or closed, including in places clots, red or decolorized or even little calcareous concretions termed 'Pheboliths.' To conceive of the condition before extirpation you have only to imagine these spaces filled with blood. It is often limited by a kind of cyst or again it may gradually merge into the surrounding tissue losing its character.

The microscopical examination of this reticulated tissue, which is sometimes made up of delicate threads at others of mem-
brauniform capsules, shows there trabeculae to be made up of the remainder of the tissues in which the tumour occurs. The internal wall of the spaces is lined, in most cases, with fusiform cells (endothelium of veins). This tends to prove that we have primarily to deal with dilated veins.
Viechow, Esmarch & Caudral

Varbrop.

Nélaton.

Hérand.
Nerves, muscular & elastic fibres have been found in the trabeculae of Venous Aneurisata. According to Virchow, Esmonde & Andral these tumours communicate with the Venous system by narrow veins, or in other cases with arteries, in which latter condition a pulsatile throbbing may occur. In regard to pulsation it is now admitted that it does not occur in Naevus but belongs to the Circuid Aneurisum. Warndrop in the paper quoted denies the existence of distinct pulsation, but says there may be 'universal throbbing'. Nélaton in his work on Surgery Vol. i p. 335 says that there may be 'pulsation or a bruit,' but that these two symptoms are very rare. Biard denies pulsation altogether, except the Naevus be situated above an arterial trunk. This symptom of Pulsation was
At one time considered diagnostic of the
Cerebral Aneurism, S. Cooper in his "Dictionary
of Surgery" however, discards this symptom
because he says:

1. There is no proof of the alleged circumstance
2. The blood that escapes is arterial.

As an example he mentions having once
made an exploratory puncture into a
tumour in a child's back, which was
neither discoloured nor pulsated so when
the rapidity of the bleeding showed its
true nature.

The colour of the blood escaping from a large
Naevus is certainly brighter than venous
blood, but this is accounted for by the
fact that more blood goes to the part than
is required for its nourishment hence a
portion remains unoxidised causing the
brighter hue. It is a curious fact that the

Original Causes.

Billroth
vessels entering the tumour retain their own normal calibre, till or almost till they enter the growth, then suddenly dilate. This accounts for the safety of extirpation in some cases.

The original causes leading to this variety are not definitely agreed upon. Billroth in his work already quoted gives out two hypotheses:

1. It is admitted that these cavernous spaces form in the connective tissue that they communicate with the vessels.

The opinion has been advanced, that in these cavernous spaces, blood could be formed out of the circulation torrent by the transformation of cells of connective tissue, into blood corpuscles, the trabeculae increasing by their proper growth. This
Theory has not many advocates.

It is thought that little bladder-like dilatations form on the veins, very close together, that gradually, by mutual pressure, their walls become absorbed to give rise to the cavernous condition. I am inclined to believe that this is the mode of formation in some cases.

Speaking on this subject of cancer, Baron Dupuytren in his "Leçons D'Alais" Vol. III article IV p.203 says: "Dans quelques circonstances ils paraissent le resultat de la dé-\jénerescence d'un tissu naturel, et de la dilatation de sa transe capillaire; tandis que chez autres personnes ils semblent former de véritables organes nouveaux développés entre les autres..."
parties: dans le premier cas ils se con-
sfondent de toutes parts avec les tissus sains,
dans le second ils les écartent, les compriment,
et en restent distincts par une enveloppe
celluleuse assez sèche qui exerce sur leur
circumference."

It will thus be seen that he considers it
may arise either from a dégénération or
a neoplasen, in the affected area.

Pitha Blitworth in their work already re-
ferred to, p. 258 put forth two theories.

They ask: In this form of Angiome does

i. The blood make new channels for itself

ii. Does a new growth cause new vessels to

spring up in it?

Virchow believes that in the neighbourhood
of the Cavernous Tumour, granulation

tissue occurs that this new tissue grows
blood vessels to itself which become dilated cause the surrounding tissue to atrophy through which then the cavernous structure remains.

The cells or dilated spaces intercommunicating all through the tumour, are considered by some writers to be simply dilated veins. Forster in his "Surgical Diseases of Children" p. 211 says Naevi differ from ordinary tumours in the fact that the vascularity is the source of the tumour not as in simple tumours the result of the organisation.

Results.
Naevi like all other tissues are liable to certain accidents or degenerations, e.g. inflammation, ulceration, sloughing or gangrene. They may also become as before.
Cancerous Tendency.

Connection with other growths.

Necrotic Elephantiasis.
stated, the seat of cyst formation, + Mr. Caesar Hawkins thinks this process may occur as in other tumours. That gradually by the absorption caused by mutual pressure they are opened into communication with one or more of the veins or of the saes communicating with the veins. Mr. Cooke believes that it occurs as I maintain or stated previously by shutting off of one or more dilatations of the vessels from the blood current.

Rarely these growths may develop into Cancer of the hype usually of Melanotic Sarcoma. A Naevoid Condition may be found associated with other tumours or conditions, for example, Sarcoma, Lipoma, Myxoma & Epithelioma.

It is also present in the Condition termed Naevoid Elephantiasis, as in cases relating

* see Lance, Apr. 17, 1886, p. 769.
Gross.
Jayrer.
Results in debilitated states.
Wardrop.

Low Vitality of Naevi.

Leberlo Schuck.
by Grot, in which it occurred in the foot,
and by Sayre in a case of Elephantiasis Scroti.
In debilitated conditions of the system, or
during severe illness, the Naevus may
undergo a process of ulceration or even
gangrene. Wardrop mentions a case in
which gangrene occurred spontaneously
but which eventually healed up.
The reason why they are subject to
these changes is that all Naevi are
of a lower vitality than the surrounding
tissues, this is due to the slowness of
the blood current.
Blows or other injuries may cause a Naevus
to rupture. In cases of young infants
such an accident might prove fatal from
the loss of blood.

Naevi according to Sebert & Schultz are
Diagnosis.

S. Cooper.
more frequently present in girls than in boys. My own small experience does not give any marked result, the cases being about equally divided.

The Diagnosis of Naevus is in most cases quite simple, but in some cases they present great difficulties. In the cutaneous or mixed varieties there can be no difficulty. The wholly sub-cutaneous forms however sometimes are mistaken for other growths, e.g. The case before quoted of S. Cooper, it may be mistaken for a fatty tumour or myeloid Sarcoma. Page thinks that those cases which are reported to have become dangerous were in reality very vascular Medullary Cancers. There is a tumour which occasionally occurs near the root of the nose which is sometimes mistaken for
Meningocele.

Exploratory puncture.
Naevus, with a fatal result, I mean those cases of Meningocele. Removal is not however always fatal, for I have heard a surgeon state that one such had been removed for a Naevus of Brain matter found in it, and no bad result followed. These cases require great care in arriving at a diagnosis. In nearly all doubtful cases an exploratory puncture would clear up the case at once. In cases where there is a possibility of the tumour being Cancerous care is especially needed because though injury is of no great importance, but often beneficial to a Naevus, the converse is the case with malignant disease; any irritation or rough treatment would in all probability only precipitate the fatal end.
Treatment.
I now pass to consider the subject of Treatment.

The modes proposed or practiced for the relief or cure of this Disease are legion. Each new operator thinks it necessary to invent a new method or at least to modify already existing plans. Why there should be this desire, I do not know for all Naevi may be treated satisfactorily by one or two well established methods, which have stood the test of time or experience. The great points to keep in view in considering which plan we shall adopt are well put by J. Cooper Forster in his "Diseases of Children" p. 216: "The principles by which the treatment of Naevus is in all cases to be guided is to secure their total annihilation with the least amount of danger suffering or subsequent disfigurement." Further on
Practical divisions of Naevus.
he sums up his experience by saying, "There is a plan which is applicable to all kinds of almost every place that is removal by ligation."

In respect to treatment, all cases fall under one of three categories according as they are:

i. Actually dangerous or likely to prove so

ii. Inconvenient but not at all dangerous

iii. Disfiguring simply.

Among those actually dangerous or likely to prove so, may be mentioned such Naevi as suffer repeatedly from Haemorrhage either spontaneously or as the result of ulceration, especially in weakly Subjects Naevi of the lips or jaws in infants preventing suction; certain Naevi in the region of the orbit, which cause displacement,
Inconvenient

Deformity
or interference with the functions of the eye &c.

Among those accounted a source of inconvenience, are those in various parts of the body hindering or impeding the functions of a part, for example on the fingers, penis or vagina; painful Naevi &c.

Under the third class are those which are a deformity, are strictly included all Naevi, but I here apply the term only to such Naevi as are in exposed parts through our treatment attacks them in any position.

All the varieties of Naevus of the tumour nature & the purely Cutaneous kinds when limited in extent are amenable to treatment, it is only those extensive
Expectant Run.
most disfiguring expanses of colour for which we can do nothing. Position influences our treatment considerably, for a plan which would be rapid or efficacious on the trunk would not be applicable perhaps on the face, if the resulting scar should be large. These points I hope to bring out in the course of the paper.

The question is sometimes raised, whether it is necessary to operate at all? The advocates of this expectant plan base their theory on the fact that in some cases Naevi have been known to disappear spontaneously or as a sequence to some fever or other illness. Though such a fortunate termination may occur it is rare, so my argument is that if the Naevus be growing or this
Basis of Methods.
expectant plan be adopted, no result following, we are then called upon to treat a much larger Naevus, with the probability of greater scarring than if we had operated while it was smaller. I certainly strongly advocate immediate action, however small the Naevus is, the smaller the better. I feel convinced that it is the proper line of treatment. Should a Naevus remain stationary & the patient not be anxious for an operation then there is no harm in temporizing, but if the Naevus showed the slightest tendency to increase, I should unhesitatingly recommend its treatment.

Before actually entering into the description of the methods of treatment, it would be well to consider what is the basis of the several
Coagulation.
plane to what it is desired to accomplish. All these methods belong to one of five classes, strictly speaking only four for the fifth is of such rarity that it may be disregarded.

I. Those methods which aim at coagulating the blood in the Naevus in order to avoid the scars of other modes. Under this class are included the following:

1. Cold or astringent applications
2. Compression of the Naevus
3. Compression or division of neighboring vessels
4. Ethylate of Potassium
5. Electrolysis
6. Astringent injections
7. Elastic ligature
8. Ligature of main trunks.
Adhesive Inflammation

Destruction
II. The induction of adhesive inflammation in the Naevus. In this class the following varieties may be mentioned:

i. Acupuncture
ii. Scleros
iii. Incisions
iv. Vaccination
v. Caustery

2. Actual Caustery
3. Thermoc - Caustery
7. Galvanic - Caustery
ii. Needling the Naevus
iii. Tattoviy.

III. Total destruction of the growth. Under this class we have:

i. Causties of all kinds
ii. Ligation of the Naevus
Excision (ablation)

Amputation.

Cold fascioparlis.

Serratus
IV. Removal of the growth 'in loco' as by:
   i. Eraser
   ii. Sharp spoon
   iii. Excision

V. Amputation of the limb affected.

Each method will require separate consideration, though many of them are now seldom used.

Commencing with the first Class we have:

i. Cold & Astringent applications.

It was Abnerelly who proposed this plan of treating Naevus. I can hardly believe however that he seriously believed any good would result from it. He does mention a case which he thinks was cured in this manner, but my own conviction is that, the Naevus would in any case have disappeared spontaneously.
Comprehen...
That, therefore, the cure was a coincidence
I confess my inability to understand
how these external applications could
affect such a vascular growth as a 
Narve,
Cold certainly does cause a contraction of
the normal cutaneous vessels, but when
these vessels are enlarged to excessive, I
do not believe that this reflex action
occurs to an extent likely to cause
Stagnation, and subsequent Coagulation
of the blood. I believe it is merely used
by those who are unwilling to operate
and wish the patient to fancy something
is being done for him. It is practically
an obsolete method.

11. Compression of the Narve.
This method is also practically obsolete.
The great objection to its use is the fact
That the time required for its cure, in the recorded successful cases, is very long. Again one essential to success is the presence of some lony basis upon which the compression may be made. This fact of course limits its application greatly. The pressure must also be applied over the whole surface of the Naevus. Mr. Abernethy used to advocate this plan with the addition of cold, Lawrence however considered it quite useless.

One case is recorded in which a child had a Naevus in the upper lip which was cured by the mother compressing the base for seven consecutive hours! Boyer mentions the case of his own grand-daughter who had a Naevus on the temporal region which was cured by means of pressure from a pad or bandage.

Rouse in his "Journey to London".
Division of vessels.
after three years' use! Dr. Arnott used to recommend a spring pad. In the great number of cases in which Compression has been tried it has failed. It will thus be seen that it is not a method much in favour.

iii. Compression or Division of Neighbouring Vessels

We may pass over the Compression of neighbouring vessels, merely stating it has been practised. In regard to the Division of surrounding vessels, it has been proposed to make a circular incision round the Naevus, with the intention of cutting off a great part of the blood supply, then allowing the Naevus to divide and carry the wound to granulate. But as the Tumour is very frequently supplied by vessels deep down at its base, the process seems
to be useless & painful. Lawrence mentions a case where, for a painful Nævus of the Ring-finger of the right hand, which had not yielded to other means, he made a circular incision down to the bone through all the soft tissues except the flexor & Extensor Tendons. The result was most successful. It is only in very rare cases that this method finds an application.

iv Ethylate of Soda. This process was introduced to the profession by Dr. B. W. Richardson, as a result of his experiments with alcohol. The theory of its action rests on the fact that alcohol has the power of coagulating albumen. When first introduced very great results were expected of it, but unfortunately it has not borne out these hopes. In his own
Rules for application
hands it seems to have been fairly successful, but not so in others. The probability is that his rules have not been strictly carried out. He lays down his rules very definitely as follows: "To ensure success it is necessary to have a pure ethylate solution, to make the application without any poultice or water dressing, to allow the crust to loosen of itself before removing it, if it adhere, take off what is loose and apply the ethylate to the parts, if the crust is depressed place with needles and apply the ethylate — use no force to remove the crusts — never apply water or poultices or slabsly let patient sit treatment do as to keep up the effect until the growth is entirely destroyed."

It is said to be a painless application, this is not in all cases true. It leaves no scar
Electrolysis
for this reason may be tried on Naevi exposed parts. I should mention that it is principally applicable to the Cutaneous varieties. But however satisfactory it be, one great disadvantage is that, the treatment must extend over several weeks. After the first application of the Ethylate the crust does not peel off till during the second week, till then nothing more can be done, sometimes five or six or more applications are required to effect a cure. I do not personally care for it at all, but it is certainly deserving of trial in some cases.

\textit{Electrolysis}, this method is sometimes very successful though I have seen cases in which it was quite ineffective. In certain cases it is used as a preliminary,
Method of application
to induce a certain hardening of the Naevus previous to excision. It is applicable to

to cases of Naevi in the face, where it is necessary to avoid scarring. I have now

a boy under observation who was operated on by a surgeon unsuccessfully. It is a

Naevus involving all the inner angle of the left orbit & side of nose is wholly sub-
antaneous. The plan of applying Electrode is as follows: one or more needles connected

with the Negative pole of a battery, of 10 to 15 cells, are inserted into the Naevus

& the Positive Electrode closes the circuit by being moistened & placed on the body

in the neighbourhood of the Tumour. The current is allowed to pass for five,

ten or fifteen minutes at a sitting. The sitting usually requires to be repeated.
The blood coagulated Causes a hardines
Injections
of the tumour, bubbles of hydrogen gas escape
at the point of puncture & the Naevus is partly
erupted as seen to become of a reddish
or dirty whitish colour, showing that the plan
is succeeding. Many failures are recorded
because sufficient care is not taken with
the minutiae of the treatment. I do not
favour this method at all, though it is
deserving of a trial if there is no immediate
cause for haste.

vi. Astringent Injections. These consist
in injecting into the Naevus by means
of a hypodermic syringe, one of the
following drugs
a. Ammonia
b. Album
γ. Perchloride of Iron
δ. Jarrow.
This method has met with varying success but is one which I should be exceedingly cautious in using as it is far from being free from danger. There is considerable risk of the point of the syringe entering a vein thus causing death. If possible I should certainly say avoid this method altogether especially in Naevi on the head, face or neck. Mr. Carter advises either ligature or acupressure during the injection, so I think this is a very wise precaution.

In regard to the use of Ammonia I find a case reported in the "London Medical Gazette" for December 30th, 1837 in which the injection of dilute Ammonia into a Naevis over the angle of the jaw was followed in one minute by the child's death. I do not find this drug is at all often used.
Carter.
I find that Henn has been in some cases used, but not very successfully. But of all drugs the one most frequently used has been the **Perchloride of Iron**. With its use I find the records of several sudden deaths in the *Medical Times & Gazette* June 18th 1864.

Mr. R.B. Carter mentions a case of sudden death after injection of five minims of the Perchloride. In another case of sudden death it was found that the point of the syringe had entered the facial vein of the right heart was found full of coagulated blood. Other cases ending fatally are recorded from Sweden, Australia, & elsewhere. It has been said that one minium of the Perchloride can coagulate an ounce of blood. It will be seen that this method requires careful consideration & is not to be undertaken rashly. The
Piazza:

Fayrer

E. Walton
Amount injected ought to be small, not more than two minims at a time, repeated if necessary.

Dr. Piazza has devised a formula for these growths consisting in "Distilled water 0 Perchloride of Iron, of each 30 parts, Chloride of Sodium 5 parts," of this he injects three minims into each puncture. The salt is supposed to lessen the irritating qualities of the perchloride.

Injections of a saturated solution of Iannin with a few drops of hydrochloric acid were used by Sir Joseph Fayrer in a Naevus in the lip, it discharged but eventually was completely cured. "Clinical Surgery in India" p. 362. Also by H. Walton for Tumour of orbit "Lancet" 1838 p. 612. Would not use injections myself at all.
Signature of Maine Truxes.

Hardenp.
Elastic ligature was proposed by Dittl. I have no experience of it, but certainly should never be inclined to practice it. It must be very painful & inconvenient.

Ligature of Main Trunks. This mode has frequently been tried, but it is obvious that it is only in extreme cases where all other means have failed that recourse is to be had to such an heroic mode of treatment. It has been used chiefly for those cases occurring in or involving the orbit. French & English writers both mention cases. In the IX Vol. of The Medico-Chirurgical Society's Transactions, Mr. Wardrop in "Some observations on one species of Neuralgia with the case of an infant where the Carotid artery was tied" gives an account of a case needing
This extreme measure. The patient was an infant six weeks old & the Naevus extended from the temple to the angle of the jaw & was of the size of half an orange.

It was not successful. M. Velpeau in his "Leçons Males de Clinique Chirurgicale" t. iii p. 437 1842 mentions a curious case of a man who had a tumour in each orbit the peculiarity of which was, that pressure on the right Carotid caused a cessation in the throbbing of the left orbital Naevus & vice versa. He tied the right Carotid & the left tumour disappeared, the right one also diminishing for a time, but gradually again regaining its previous volume, but the left was permanently cured. The Carotids have also been tied for Naevi of the cheek, the nasal fossae & temporal region, with varying success.
Nilaton

Lawrence.

Chelms.
Murray tied both Carotids for a growth on the summit of the head, but without success, as it had to be excised after all. Nélaton sums up the cases suitable for operation in his "Pathologische Chirurgie," as follows:

1. In the hope of obtaining a complete cure.
2. To arrest Haemorrhage or to prevent it when imminent.
3. As a preliminary operation, as in a case of M. Roux, who cured a case by compression having previously diminished the volume of blood by ligation of the artery.

In the case previously mentioned of a painful Naevus of the index finger, Lawrence heat previously tied both the Radial and Ulnar arteries without effect.

Chelius of Heidelberg tied the Crural Artery...
Acupuncture.

Lallemand

Bérard
for a Naevus (Blutschwannen) in the knee, but did not cure & he afterwards amputated the leg.

We pass now to the second class in which adhesive inflammation is set up.

1. Acupuncture. Laennec and was the first to suggest the introduction of anatomical pins into the Naevus or which were to be left there, till they had caused inflammation. He reported cures, but M. Bérard once inserted as many as fifty pins into a Naevus with no result. He then conceived the idea of injecting some irritating liquid in the course of the pins e.g. the Acid Nitrate of Mercury, but he found that the Naevus sometimes floughed & occasionally even symptoms of Mercurialism occurred.
Selon
ii Setons. This is simply a modification of 

[Illegible text] comprising or passing one or more threads, either simply or impregnated 

[Illegible text] with irritating matter. Though producing 

[Illegible text] the same effects as needles, the threads are 

[Illegible text] owing to their flexibility, less inconvenient. 

[Illegible text] This method has been a great deal used 

[Illegible text] and has been pretty successful. In cases of 

[Illegible text] large Naevi in positions where ligatures 

[Illegible text] or caustics are unavailable they answer 

[Illegible text] very well. The process is a slow one, but 

[Illegible text] has the advantage of not causing much, 

[Illegible text] if any, scarring. This plan is often used 

[Illegible text] in large Parotid Naevi. It is however in 

[Illegible text] my opinion a somewhat doubtful plan, 

[Illegible text] for in many cases no result whatever 

[Illegible text] follows their introduction. It may be tried 

[Illegible text] in small tumours on the face, where a 

[Illegible text] rapid cure is not essential.
Mesieurs

M. Nilaton

Félicitations
I incisions. I shall pass over this method, as it has been tried by merely stating Mr. Nellator's opinion that it is "Infaile et Dangereux." It is not to be used at all in my opinion & seems to be simply a relic of barbarous ages.

Vaccination. Most authors include this among the modes of treating Naevi, but I find from inquiries & personal experience that it very seldom succeeds, perhaps because this is due greatly to faulty modes of inoculation. The essential to its success lies in the fact that the patient must not have been previously vaccinated. The question has also been raised, whether in successful cases. The patient is protected against Small-pox, as well as if the introduction of the lymph
Milton

Rules to ensure success.
had been made in sound healthy tissues
I do not see why it should not be pro-
tective. The result of vaccination is a
general constitutional effect, with a
local manifestation: *one can hardly
doubt, when it does take, that the virus
reaches the blood or so, the result should
be protective. It is applicable to the Cutaneous
Nævi principally, to these small ones.
In large Nævi inoculations are sometimes
made in several parts of the growth. There
is certainly no harm in trying it, but
I prefer other modes. Nélaton in the
"Union Médicale" 1857 No. 63 in a paper
dealing of Vaccination of Nævi, lays
down the following rules as necessary for
success:

1. The subject must not have been previously
   successfully vaccinated.
The cicatrizations must not be made in the ordinary way with the lancet, as in these cases the vaccine is instantly washed away by the blood. The method he recommends is to impregnate fine pins with lymph and to plunge them into the growth, allowing them to remain there a certain time. He mentions a case of a large Parotid Naevus in which he used a modification of this plan successfully; he passed pins into the Naevus and over them he slipped very fine Cannulae with dvas the pins, loaded them with lymph and then re-injected them through the Cannulae. The Cannulae were to prevent the formation of scars at the point of entry of the pins from vaccine inoculation. One of the punctures however became circumscribed in spite of the
precautions. In a clinical lecture by Sir William Fergusson in the "Medical Times & Gazette" May 28th 1871. Speaking of this plan, he says it is "quite a mistaken piece of weak silly surgery more fitted for a chamber dissertation than for practice in the theatre—a practice which has very seldom done any good to the patient or has when so performed not seldom failed in securing the far higher object which the vaccinator should have in view." Even authorities are divided in their opinions as to its efficacy. Though proving that it may effect its purpose, other methods are I think to be preferred.

V. The Caution

A actual caution. This method
little
may consist in pushing red-hot wires into the growth, or some other instruments but as may be easily imagined this mode does not readily commend itself either to surgeon or patient, it is too gross & recalls phenomena of mediæval surgery. Despite of this in the "Medical Series of Gazette" for June 9th, 1883, little of New York describes his method of using red-hot appliances. He uses an ordinary Shoemaker’s awl, which he heats to redness in a small spirit lamp & then plunges into the Naevus at the junction of the Skin & Morbid tissue, he pushes it deeply inwards & downwards well to the base. He repeats the process all round the Naevus. He says that though the child cries during the process, the pain does not
Thermocautery
Last any time afterwards. I think that it is quite unnecessary to use this rough plan, when either of the two following ones can be practised.

β Thermo-Cautery. In this case the heat is applied by various shaped points of platinum. The heat is kept up by means of vapour of spirit passed through the handle of the cautery. In using it, it is advisable to diather the skin of the tumour, and then to pass the point in & to destroy the base of the growth. Great care is required in order to avoid burning parts which are near. I have seen considerable disfigurement caused by the cautery, being drawn along the nose on its withdrawal from the
The needle cautery is sometimes used. In one case of a Naevus of the inner canthus of the eye in a child in which owing to the little patient's struggles it could not be applied with safety, the operator had recourse to the means of the.

Galvano-Cautery, he passed two pieces of silver wire like Jetons through the Naevus & attached their ends to a cell, thus causing great heat in the wires, for a few seconds. The process was applied several times in the intervals the wires were left in the Naevus & twisted together. This was done to avoid the repeated insertion of the wires. This mode of operating has many
Middeldorpff.

A. Haas
Maas.

Middeldorpff.
advocated, one of whom is Professor Middendorff of Breslau. There are several ways of applying the electrical current: (1) You may insert pins through the tumour and then twist the wire round them. (2) You may pass one or more platinum wires into the Naevus so that when the current is passed through them in till suppuration occurs. (3) Porcelain current. Although in his "Treatise on Medical Electricity" gives a table by Maas of 130 cases of Naevi treated by these means, chiefly by Professor Middendorff, the results the figures are interesting from the fact that they show a good result in nearly all the cases, I shall quote them at length. The loop was used in 39 cases, the
Wires in 12, the Porcelain Pattent in 19. Other forms. 63. The results were 112 Cases, a complete cure.
11 Improved
3 Died
4 Result not known.

It will thus be seen that very good results were obtained, so it is a mode that might, I think, be more frequently used, with advantage. The great drawback however is the necessity of having a battery always at hand. In a hospital of course this should cause no trouble but in private practice there are readier means which prove quite as effectual.

vi Needling the Nerves, This consists of passing cataract needles into the
Tattooing
Naevis o tearing up the vessels as thoroughly as possible. It was advised by Marshall Hall. It has a great advantage in the fact that if successful there is no scarring to speak of. If not done thoroughly it is very apt to fail. I have no personal knowledge of this method, but would not be inclined to try it.

VII. Tattooing. It has been suggested in the coloured Naevi that this plan would help to relieve the deformity caused by the dark purple colour. I fail to see that any good end can be gained in this way.

We now pass to the Third Class of agents viz. Caustics & Ligatures.
Curiosities

Nitric Acid.
Acetic Potash.
Cauteries of all kinds. Under this head are included almost all the substances which have the power of destroying tissue, among those which have been used are the following:

Nitric acid
Canstic Potash
Chloride of zinc
Vienna Paste
Acid Nitrate of Mercury
Corrosive Sublimate
Corrosive Collodion
Nitrare of Potash
Arsenical paste
Tartar Emetic

Of all these without doubt the best for superficial Naevi, the Nitric Acid is the best. For the mixed kind if Canstic is used at all, the Canstic
Method of applying the Acid.
potash is preferable. The method of applying the acid is very simple. For the very small Naevi — Naevi Aranci & others — I use a common wooden match pointed slightly & dipped in the acid, then pressed firmly into the spot & rotated until the whole of the redness has given way to the yellow colouration of the acid. For the larger Naevi, I use an ordinary piece of firewood, cut at one end more or less nearly the size of the Naevus to be operated on. This is dipped into the acid & applied firmly on the growth. Great care is necessary that none of the growth is left, for it would require a further application & it is better to do it at once thoroughly than to repeat an operation which is painful to the child.
Acid nitrate of Mercury
Corrosive Sublimate
afterwards I touch the spot with a little sweet oil & apply a small piece of lint. Nothing further is needed. I have used it in many cases with the greatest success, & feel sure that for the special varieties of Vævi which I have mentioned there is no better method. Of the other agents I cannot speak personally. The Caustic potash is an old plan & according to various authors, a painful one. The mode of applying it was to rub it in firmly & to cause a considerable slough.

The Acid Nitrate of Mercury is said to cause extensive sloughs & the Corrosive Sublimate has caused in some cases severe symptoms of mercurial poisoning. In the "Medical times of gazette" April 24, 1858.
Cosmofild

Corrosive Collection

Mangenot

Nitrate of Potash

Arsenical Paste

Krug & Ziesel

Tartar Emetic
Cousfield uses Corrosive Colloction (corrosive sublimate 1 part, Colloction 8 parts). The eschar falls off in 10 to 14 days, there is no suppuration, no pain, scarcely any cicatrix. In very small Naevi one painting is sufficient. In the same journal for the year 1857 p. 269 M. Mangenot is stated to have used Nitrate of Potash on a Naevus on his child, successfully, also in 4 other cases. The moisture of the part & then rubbed well in the powdered Nitrate, a bulla formed at the part the Naevus disappeared.

Technical paste has been used but it can cause death.

Kriesgiesel have according to themselves used with success a plaster containing Tartar Emetic made as follows...
Point for Decision.
Tartar Emetic 9 grains, Emplastrum Adhaerivm 31.

The true practical point to decide is not however, how many & varied drugs can be used to destroy Naevi, for every Naevus Can be used. But which is the most convenient & least troublesome? I think there can be little doubt that the Nitric Acid answers these requirements fully. Experimenting in Naevus may serve some good end, but when a substance has proved the best of prolonged use it is known to succeed as well, if not better, than any other & be easily managed, then by all means use it - better to deal with a certainty than with uncertainty.

I now pass to the consideration of the next
Li sature.
Frequency of its applicability.

Reasons for preference.
useful practicable of all the methods of treatment viz.

**Surgery.** I may state "in limine" that this is the method which in nine cases at least, out of ten, I use in the treatment of Naevus.

My reasons for its preference are that (1) it is almost universally applicable to the tumour varieties (2) it is, in most cases, rapid & certain (3) the apparatus necessary are few simple & lastly it is not very painful, if properly managed.

It has been said that this method is a painful one, a slow one & that in large cases suppuration is apt to occur & to be prolonged. In my own experience I have found none of these supposed inconveniences & disadvantages. Only in
one case do I remember to have seen.

The healing process somewhat prolonged.

It was the case of a large Naevus at

the bend of the elbow in the left arm

of a very fair child. Owing to the size

of the Naevus a complicated method

of ligature had to be adopted & after

The separation of the though a sup-

purating surface was left which however

yielded readily to cleanliness & Boric

powder. There was after it had completely

healed only one peculiarity about

the scar & that was, that it became

covered over completely by a growth

of fine down-like hairs. The health

of the child in no way suffered at

any period of the treatment.

As I have stated I use the ligature in

all cases of the sub-cutaneous & mixed
varieties. Very often we have considerably to modify our plan of ligation to suit individual cases, but the principle in all is the same — constriction or complete strangulation of all the vascular supply of the Naevus. In all cases up to about the size of a cherry or even larger the single ligation will be found sufficient in flatter or larger growths we require to supplement the ligation with transfixion with pins, in order for the compression to be effectual. In the wholly subcutaneous Naevus, it is sometimes advised to direct off the skin over the Naevus before applying the ligation, in order to save the skin. In such cases I should prefer to use the subcutaneous ligation of the growth which I have also found to
Neurus fortunae.

Erichsen.
answer very well. It is said that in some cases the whole Nævus o super-
junct skin thong to that the result is practically that of simple ligature. I have not had this accident occur to myself. Ligature
may be safely applied to Nævi in any position— even in those occurring occasionally on the fontanelle. The ordinary plan of transfixion and ligature may be used or if Mr. Trieksen suggests for additional safety a small incision may be made in the skin at the circumference of the growth & a threaded probe passed through the base of the Nævus & made to project the skin at the other side— it is then cut down upon the thread drawn through. The
only danger in these cases is the
risk of wounding the meninges or
brain itself, but I think a careful
operator would not be apt to do
either.
In regard to the statement that the
process is painful, I may say that
the patients very frequently do
not even cry & certainly never do
after it is completed. The tightening
of the ligature in some cases appears
to cause some pain, which rapidly
subsides, if the ligature has been
thoroughly tightened. This last
fact is essential to complete success
should the ligature be loosely tied
the parts swell & become swollen &
sluggish looking - whereas if thoroughly
applied the Varix dries up & shrivels
Erichsen.

Multiplicity of methods.
more especially if the precaution has been taken to puncture the Naevus in several places during or after the ligature is applied. This I consider makes a material difference in the rapidity of the cure. I have not seen any constitutional effects result from the operation. Mr. Erichsen thinks he has seen death follow the ligature of a Naevus on the lip, due to absorption of putrefaction. I have seen no bad consequences whatever in my cases.

The varieties of places recommended for ligaturing Naevi are endless. Each operator describes what he considers to be the best knot. I would be vain to commence a detailed description of all these modes.
My own method
If the principle of the treatment is understood there will be little difficulty in applying the ligature in some suitable form to any given Nævus. I shall briefly describe the method I follow in ligaturing Nævi, which I have found successful.

In all cases of tumour-like Nævi, 
also flattened ones of the mixed variety, I transfixed the Nævus with a pin, varying in size according to the size of the Nævus - inserting it & also bringing it out, at the junction of the growth & the healthy tissue. I then pass a needle charged with a double thread at right angles to the pin & draw it through & divide the double thread. I then strangulate each half of the Nævus, by tying the two
corresponding ends of the threads under
their respective ends of the pin. These
knots are tied as tightly as possible, as
an additional guard I tie the
ends under the points of the pin further
away from each respective knot.
Thus not only strangle each
half separately but also the whole
Nævus 'in toto.' I then insert the
point of the pin into a small piece
of cork, pass a narrow strip of plaster
under each extremity, prick the
Nævus freely—when the oozing has
ceased—cover the whole with a large
piece of plaster. Nothing more is
required till the next visit in two
or three days—when I remove the
pin & ligatures. & the parts are then
purified till the slough falls off.
which it generally does in about five days. The further treatment consists in the application of Boric lotion.

In regard to the pins used, I think it matters little what their form is. The larger Naevi I restrain with long lance-shaped pins - the small ones with fine steel pins. Any pins however will answer the purpose.

The ligatures I use are silk, of varying thickness - this I usually have waxed but this is also immaterial.

The cork on the end of the pin I use instead of cutting off the point, the plaster to prevent the cork ahead of the pin from pressing on the skin. The piece of plaster over all is to prevent rubbing or friction of the Naevus, or anything catching & displacing the pin.
Subcutaneous injection

My own method.
In some cases where the Naevi have been flat, it has been necessary to slightly incise the skin round the Naevi, in order to form a groove in which the ligature may lie. The sub-cutaneous ligature is the same thing only in this case the skin is not strangulated only the Naevi structure. The method of performing it is as follows. Thread a curved needle with a long and thick silk ligature. Insert the needle through the skin at the junction of it the growth, pass it subcutaneously for a quarter of a circle, draw it out, reinsert it at the point of exit as as near it as possible and carry it round again for another quarter circle and draw it out, repeat
This for the third or fourth quarters it will be found that the needle emerges at the original point of entry. The ligature is then drawn tight, the growth strangulated completely. A piece of plaster is then put over it and nothing more is done. In three or four days the ligatures are cut or withdrawn. The part poultriced consequently for a day or two when it is found that the tumour has almost entirely disappeared. There may sometimes be a little suppuration, but everything can be kept sweet with a little Boric acid. I have used this method successfully in Naevi on the head. Finally I may mention that large Naevi which are not suited for
The single ligature, may be dealt with in sections.

Such has been my treatment hitherto, so I see no method which commends itself better to me or is more efficacious. I am satisfied that if properly carried out, the plan of ligature is the best & simplest method which can be used.

All the elaborate knots & varieties of ligature which have been devised by ingenious operators I have passed over altogether because, they all have for their end strangulation & I hold that this can be equally well accomplished by the simple knot. Simplicity where efficient is in all cases the best mode of operating.
Érasur.

Sharp Spoon.

Kapow.
The Fourth class includes the means by which the Naevus is removed "in toto." Erase. This method is rarely used or may be passed over altogether.

ii Sharp spoon. Napoly in his "Hautkrankheiten" 1883 says that flat marks or little Naevi can, by means of the sharp spoon, be removed. It is not a plan which I should be inclined to try. It would require chloroform or other anaesthetic as the process must be very painful. I take it that he only suggests such a plan might be used but does not advocate it.

iii Excision. John Bell originally recommended this method, and most
foibly laid down the rule that the operator was to cut out the Naevus or not to cut into it. In many cases the operation is perfectly simple & safe, but in some a fatal result has followed the attempt. In small circumscribed Naevi the attempt could be quite safely made, but I believe ligation to be the best means. The plan is not much used, but Mr. Teale excised some cases of Parotid Naevi successfully, but according to his account the operation was not only formidable in itself (leaving in one case half an inch of the jugular Vein) but the result was also sometimes unfortunate (paralysis through division of the facial Nerve). All this would be avoided either by the sub-cutaneous
Amputation of limb.

Summary of results of treatment.
lijature or by section. Excision is only used in rare cases.

Farnanx Jordan introduced a method of piece-meal excision which has no advantages whatever as far as I can see.

Baron Dupuytren used to prefer this method, "Ablation?"

Under the Fifth Class is included the rare & scarcely ever used method of Amputation of a limb so affected. It is extremely rarely that it is necessary to resort to such extreme measures.

In summing up, I think it will be found that nine out of every ten cases can be treated by either of the modes I advocate, the purely cutaneous
by Nitric Acid or the mixed of tumour like Naevi by Ligature, either simply or sub-cutaneously.

Fins

Mordon Paterson, (Brazil), M.A. M.B. Ctie.
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