THE DIFFERENTIAL DIAGNOSIS BETWEEN LOCALIZED NEURITIS, RHEUMATISM AND SOME OTHER CONDITIONS THAT GIVE SIMILAR SYMPTOMS:

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The object of the study which led to this paper, was a more definite classification of the means of differentiating pain in the extremities. Only as a matter of convenience, and to bring the discussion more in line with the work of this section is neuritis made the central idea. Excluding pains in the extremities due to obvious local disease, there are a large number of cases in which a conclusion as to a cause is only to be reached by study and analysis. In this we must consider neuritis; we must discuss and determine the scope of rheumatism and gout, and we must attempt to give neuralgia a definite place. Of the causes in the central nervous system locomotor ataxia may serve as a type, though neurasthenia must be considered. A final class of pains will include those due to blood conditions, such as anæmia, the products of disordered digestion, malaria and infectious diseases.

Pain.—Of the nature of pain itself we are quite in the dark. Its perception is a function of the nervous sys-

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tem, but how to draw the line between ordinary sensation and pain we are unable to say. As an accompaniment of inflammation it is most common, but we have pains without inflammation as neuralgia and we have inflammations without pain, as often occurs in inflammation of the mucous membrane. It is this indefiniteness of our knowledge of the occasion of pain that makes it so hard to classify these different local pains, especially those that are not dependent upon an ascertainable inflammatory state.

This question of the meaning of pain is one that so far has not given itself to very scientific investigation. In fever we have learned to measure height, duration, and even distribution to various parts of the body. In the very nature of things, pain being a subjective sensation, we have not been able to compare intensity with any known standard, nor have we been able to define quality with any degree of accuracy. In spite of the attempts so far made we are reduced to a few comparisons. We roughly estimate pain as slight, moderate, severe, intense, and so on into the superlatives, but each adjective is subject to the personal equation, habits of speech, and the susceptibility to pain of the patient. Pain is mobile, shifting, or darting, or it is fixed in one spot. As to quality, we use such adjectives as dull, boring, lacerating, pricking or crushing, our favorite adjectives being those which describe some form of injury. As to duration of pain we are better off. We can define pains as constant or intermittent. We might record accurately its duration, the time of day during which it is present, and its relation to attending circumstances, such as weather, certain forms of exercise, ingestion of food, etc.

It is conceivable that by and by we may have charts upon which all these things can be recorded and reduced to mathematical curves. The intensity and character of pain it will always be difficult to classify, but may we not discover means whereby we can produce "physiological" pains of a certain character and a certain degree of intensity, so that the patient can compare the quality and severity, and give us an idea as to its comparison with the pathological pain? For instance, a certain degree of pressure on the supraorbital nerve would produce a unit of pain which we could reproduce in ourselves if necessary, and in that way obtain a very clear idea of just what our patient was suffering. Severity
can be judged with a fair degree of accuracy by the effect it has upon the routine life of the individual; whether it is severe enough to prevent sleep or the ordinary occupations of life, or to cause vomiting.

As a foundation for the study of pain in the extremities it is necessary to have more than an indefinite idea of the anatomy and physiology of the structures of which they are composed. Physiology is nearly synonymous with function. Disease may or may not cause pain; it may or may not interfere with function; but it will almost always do one or the other.

Neuritis.—Not a great many years ago diseases of the peripheral nerves were little thought of. Since they have been recognized they have attracted a good deal of attention. So much so that just as in old times physicians thought of most pains as rheumatism or gout, so the temptation is now for the neurologist to explain many painful conditions by pre-supposing the existence of neuritis.

Neuritis is a common cause of a unilateral pain in the arm or in the leg, generally the result of traumatism or constitutional disorder, as alcoholism, syphilis, or of the gouty or rheumatic diathesis. It is characterized by its fixedness, its distribution to the territory of particular nerves, by the accompanying tenderness of the nerve trunk, absence of fever, and by the pain being worse at night. In addition to this other functions of the nerve may be interfered with. In diagnosis a good deal must depend upon the distribution of the symptoms as to whether or not they correspond to the anatomical distribution of a particular nerve, and upon the application of certain tests. Pressure upon the nerve trunk at the point where it is inflammed gives pain at the point of pressure, and increases the pain which previously existed in the area of distribution of the nerve. Numbness and tingling are frequently present over the areas of distribution of the terminal fibres of the nerve. Hyperaesthesia may be very marked and paralysis may be present when the nerve effected is a nerve of motion as well as of sensation. Muscular tenderness, as a symptom of neuritis, is one of a good deal of importance. It is more apt to be found in the beginning of acute cases, but may persist throughout the course of a chronic case. The low grade local neuritis, which we have in mind, is essentially a chronic condition. Its origin may be often obscure, or it may be traced from some slight injury.
Neuritis is not an uncommon condition as complicating the advanced wasting stages of tuberculosis and diabetes. In a good many cases of tuberculosis it goes on to toe drop and wasting of the legs. But in wasting diseases there is also a more obscure form of neuritis, which is sometimes very troublesome, affecting a single nerve or branch and being an occasion of much suffering. Examples of localized neuritis due to the pressure of inflammatory products, or new growths, are very common in surgery. Perhaps the most trying of these is the extremely painful condition which sometimes follows in a hand and arm that has been the seat of a severe cellulitis.

The onset of certain forms of neuritis is extremely hard to understand. Why it is that a person exposed to a slight draught develops a severe attack of facial palsy, the severity of the disease being entirely out of proportion to the apparent cause, is mysterious. May it not be that there is a deeper cause, such as rheumatic poison, circulating in the blood, and that the local chill has been the occasion of its disposition at a particular point, or else we may suppose that for some reason that particular nerve has been weakened, and rendered liable to inflammation. The pathological anatomy is well-known to differ in different forms of neuritis. In the more chronic and localized forms it is the connective tissue of the nerve that is mostly involved.

Rheumatism.—By the object of this paper (classification of indefinite pains) we are excluded from the pleasure of drawing pictures of well-marked cases. We hope to extend the scope of rheumatism to the fullest justifiable limits rather than restrict it. Rheumatism in its chronic and sub-acute forms does not confine itself to the fibrous structures of joints, but is prone to involve the intermuscular septia, the aponeuroses and the muscles. It has been the fashion to call muscular rheumatism myositis, but for our present purpose we include this in rheumatism. Rheumatic pain is very liable to be worse at times. It is affected by temperature and weather. The joints are very liable to show inflammatory signs, and are apt to be affected in succession. When so affected there is stiffness, especially after resting. The pain of muscular rheumatism at the outset is apt to be severe. It is affected by movements of the muscles. The pain is elicited by stretching the muscles by passive motion. Its distribution corresponds to that of the muscles, and
pressure on the affected part gives relief. It is a transient affection as a rule, though frequently enough is it more chronic.

All cases of subacute rheumatism carefully observed show slight rises of temperature. Indefinite stinging pains in middle-aged people suggest gout. We may suppose their cause as due to the sudden precipitation of minute particles of urate of soda in the tissues, which after remaining for a short time may be re-dissolved. Our diagnosis must depend upon concomitant signs of the gouty diathesis.

Neuralgia.—Neuralgia is uncommon in the extremities. The pain intermits and when absent there is no tenderness of the nerve trunk.

Disease of central nervous system.—In posterior sclerosis pain may precede other symptoms by many years. The pains are severe and momentary, usually in paroxysms, but may be continuous. They sometimes distinctly follow the course of nerves. They are commonly felt severely in the neighborhood of joints. There is some relief by pressure.

Neurasthenia.—The pains of neurasthenia may occasionally present difficulties. The tendency is to attribute too many of these pains to this cause. Occasionally very bad blunders are made, and it is only upon the supervision of paralysis, or the discovery of some other serious condition that the mistake is discovered. One experience is enough to make one very cautious. Very early in my medical studies I had the opportunity of observing the case of a man who complained chiefly of a severe pain in the chest. From many concomitant symptoms and circumstances it was thought that the man was a malingerer. There were absolutely no abnormal physical signs. The man was treated with very little consideration, and finally passed from observation. A few months later I encountered the same patient with a pulsating tumor of the thorax due to aneurism which finally ruptured into the pleural cavity. At the autopsy the bodies of several of the vertebrae were found eroded. This case, seen as a student, made a very profound impression, and from that time on lead to a different interest in the study of the meaning of indefinite pains.

Pains due to blood condition.—The general aching of the extremities due to blood conditions is usually easily diagnosed by the exclusion of local signs. Those due to disordered digestion often have a definite relation to
the ingestion of food. The pains at the beginning of infectious diseases are accompanied by fever. In chronic metallic poisoning producing pains, there are usually other symptoms present.

**Differentiation.—Neuritis and articular rheumatism.** The differential diagnosis between neuritis of a severe well-marked type and well-marked cases of rheumatism or gout ought to be easy, but the class of cases of which so many are seen in dispensaries and private practice with localized pain in a limb, rather persistent in character, require a careful study of the attending conditions to make up our minds whether the nerve is primarily affected by a neuritis, or whether the nerve is simply giving expression to the pain caused by the disease of the tissue to which it is supplied.

However, mistakes of observation between neuritis and rheumatism are not confined to these mild cases. They may occur in the severest type of cases while first under observation. I recollect a case, the history of which I mean to look up more definitely, of a patient who was discharged after a number of weeks from a prominent hospital as a case of chronic rheumatism. This patient was admitted under protest to another similar hospital where attention was especially attracted to the case by the appearance of a bed sore. The man presented the typical appearance of a case of chronic rheumatism with the disability that often follows in old cases. However, a more careful analysis of the case led to the belief that it was a case of multiple neuritis, of gradual onset and obscure origin. The diagnosis was subsequently confirmed, and a complete recovery took place after a considerable length of time. This case is quoted because the mention of the subject of this paper has been the occasion for the remark that any one can easily tell the difference between neuritis and rheumatism.

In his work on “Diagnosis,” Musser says, “I have had the pains of neuritis attributed to rheumatism of the phalanges, tarsus, and ankle, until paralysis of extension took place; and neuritis of the circumflex mistaken for shoulder-joint disease. Multiple neuritis is attended by pains that may be located in the joints by the patient, but whether local or general neuritis, the joints are never swollen, tender or painful on movement by the hand.”

**Neuritis and aponeurotic and muscular rheumatism.—**In the former pain is less diffused, is felt more at points, and
these are along the course of nerves, and the pain is worse at night when quiet in bed. In the latter pain is diffused over the muscles and aponeuroses and one part is not much more painful than another. The pain is increased on movement, but is diminished by quiet and warmth in bed. The muscle is primarily the seat of the pain which is much increased by passive extension and relieved by pressure. In neuritis there is little pain on extension, but great tenderness to pressure.

Neuritis and neuralgia.—Neuralgia is comparatively rare in the extremities. The differentiation must rest chiefly upon the fact that the pain of neuralgia intermits, while that of neuritis is much more persistent. Between the attacks of neuralgia there is not the same tenderness of the nerve trunks, and during the attack the tenderness is more general in its distribution over the area supplied by the nerves. Of course, in neuralgia we never have changes in the muscles due to wasting of the muscle fibres.

Neuritis and pain of central origin.—Pains of central origin are nearly always bilateral. They are increased by motion. The diagnosis must depend upon corroborating symptoms.

Sprain.—A fixed pain may be the result of sprain or other injury. It should not be forgotten, however, that a slight injury may determine the fixation of a general rheumatic irritation in the injured part. A sudden attack of muscular rheumatism, while making a motion, may be mistaken for a sprain.

Conclusion.—The character of pain, although of some importance, is not of great diagnostic value, for the same quality and severity of pain may arise from various causes, and in different individuals the same cause varies almost indefinitely in producing pain.

In questioning a structure to locate a disease we examine it for tenderness of part or the whole of the structure. We test its function to ascertain whether it is impaired or carried on with pain. But structures have more than one function, and when we have indicted an organ we expect to convict it by the additional evidence of the impairment of other functions. Thus in the pain of neuritis we expect usually to find sensation impaired where presided over by the affected nerve.

The best diagnosis is always by exclusion. It is important to bear in mind in the diagnosis of all painful affections that neuritis may be the cause, or that a com-
plicating neuritis may account for part of the symptoms. Most symptoms express themselves through the nervous system, hence the importance to the general practitioner of a knowledge of the peripheral nerves, as it is also necessary for him to appreciate the mental phenomena of the sick. To sum up the points we wish to make in the diagnosis of chronic indefinite painful affections of the extremities—we must approach them with an open mind, realizing that pain may have its origin in the nerve itself, in the tissue to which the nerve is supplied, or it may be of central origin. In our examinations we must not only examine the joints and muscles as a routine practice, but we must examine by palpation the nerve trunks. We must obtain accurate histories because much light will be thrown upon the case by knowing whether the pain has remained stationary in one place or whether it has jumped from one spot to another. A stationary pain is strong evidence of neuritis. Again, we must study the distribution of the pain as to whether it corresponds closely to the distribution of some particular nerve.

A recent writer says, "Our tendency to classify cases under various heads will be for the most part inversely proportional to our clinical insight. The difficulty is not to see the resemblance between different classes of cases, but to stipulate the points which differentiate them. It is by this faculty alone that medicine has advanced."

In the preparation of this paper I have consulted the works of Gowers, Starr, Dana, H. C. Wood, Osler, the article on rheumatism in the Twentieth Century Practice, and articles in various periodicals.

**Diagnosis of Tubercular Meningitis.**—Dennig (Centrallblatt für innere Medicin, March 16, 1895). In cases of meningitis where, in spite of all present symptoms, the diagnosis remains in doubt, D. recommends making a lumbar puncture and withdrawing the spinal fluid for bacteriological investigation. In the author's case such a puncture was made, tubercle bacilli in large numbers were found, and successful inoculations practiced on guinea pigs.  

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