

CASE 15.—Obvious lesion in intestinal tract; author's case. Duration of disease two and one-half months; patient resided in San Joaquin Valley five months. Extent of disease: Abscesses with caries of the adjacent bone in the right supraclavicular region, left sternoclavicular articulation, left supra-spinous fossa, dorsum of right hand, right ankle, mediastinal glands, peribronchial glands; general involvement of the peritoneum with enlarged mesenteric glands, ulceration on right thigh, left forearm and over right zygoma, on chin.

CASE 16.—J. B., male, aged 28. Family history good; no tuberculosis.

*History.*—Patient has been two and one-half years in San Joaquin Valley; he worked on irrigating ditches near Fresno. Patient consulted his physician, complaining of general malaise; had no acute symptoms at any time. He has been treated for malaria; large doses of quinin having been administered without effect. He had had a sluggish punched-out ulcer on left wrist; red, with jagged edges; bathed in thin greenish pus; this had partially healed and broken down several times.

*Examination.*—Under the left clavicle he had an ovoid tumor 4x6 cm., slightly fluctuant and showing no signs of inflammatory process externally; another larger swelling of similar character appeared on the seventh, eighth and ninth ribs in the left parosternal line. On aspiration these tumors contained thin greenish pus loaded with coccidia-like bodies; these had a double contoured capsule but no budding forms; some of these bodies contained spores; with granular protoplasm. Owing to the patient's departure for Oregon, no cultures were made. The patient died in Oregon.

*Remarks.*—Three years after the first appearance of the ulcer on the wrist, a local physician who attended him in his last illness diagnosed the case as acute miliary tuberculosis. Autopsy showed the lungs to be studded with what appeared to be miliary tubercles and no further examination was made. No *Plasmodia malariae* were found. The blood showed an eosinophilia of 12.5 per cent. The tumors had been diagnosed in Fresno as benign fatty tumors.

Since reporting the above cases, I have found two more cases in the service of Drs. E. R. Bryant and H. G. Gates of Los Angeles. The conditions presenting were as follows:

CASE 17.—K. N., Japanese, aged 28. Examined July 10, 1906. Employed as a track worker by the Southern Pacific Railway in the San Joaquin Valley for some months preceding his entrance to the hospital. His first symptoms were pain in the neighborhood of the ankle joint, with swelling and redness. Later cervical adenitis. All the lesions suppurated and were treated surgically and healed in from seven to ten days. In a few weeks further abscesses developed in the neighborhood of the former ones and on the face. None of the abscesses was found to connect with the bone. Cultures from a fresh abscess were made and showed the organism characteristic of coccidioidal granuloma. The patient ran a slight fever.

CASE 18.—T. C., Greek, aged 24. Lived in California three years and in San Joaquin Valley eighteen months. Examined July 10, 1906. Initial symptoms began about June 15, 1906, with pain in the left axilla simulating pleurisy. Shortly after there appeared a breaking out on the forehead and scalp, pustular in character. The skin lesions became covered with a thick crust, a cough developed and the patient ran an irregular fever and lost steadily in weight. On examination it was found that the crusts covered small ulcerating surfaces, and when removed a few drops of pus exuded. There were irregular areas of consolidation in the lungs, and loud, moist rales everywhere. Diagnosis was not confirmed by culture examination, but the skin lesions were quite characteristic and the lung condition not to be accounted for by tuberculosis or bronchopneumonia of the usual type.

#### SUMMARY.

Specimens of foot amputated by Dr. S. J. Gardner (Case 10) and autopsy specimens of Case 15 with cultures illustrating the morphology of the organisms of

oidium coccidioides and blastomycetic dermatitis (obtained through Morrow from cultures sent him of the Chicago cases) were all destroyed by fire, although I had sets of cultures in three parts of town. The pigs also were destroyed before any definite facts were elicited.

Site of initial lesion:

Skin	5
Internal (chiefly lungs)	12
Unknown	1
	18

Residence in San Joaquin Valley:

Positive	14
Negative	1
No history	3
	18

Only one patient is known positively to be alive (Case 10) with local lesions in foot which was promptly amputated. There was no recurrence two years later. Two patients can not be traced. The majority lived less than one year and in all the patients with internal lesions who could be traced the disease was acute from the time the internal lesions began. The disease in California seems to be confined to the lower half of the San Joaquin Valley and has occurred chiefly among men working on railroad construction or irrigating ditches. The patient in the Sacramento case handled raw hides. No case has been found in women. The pericardium and heart alone have escaped involvement in the list of parts affected by the disease. The dissemination in the human being seems to be through both blood and lymph channels.

### THE NATURE OF HERPES SIMPLEX, WITH A CONSIDERATION OF ITS DIAGNOSTIC AND PROGNOSTIC SIGNIFICANCE IN VARIOUS INFECTIOUS DISEASES.\*

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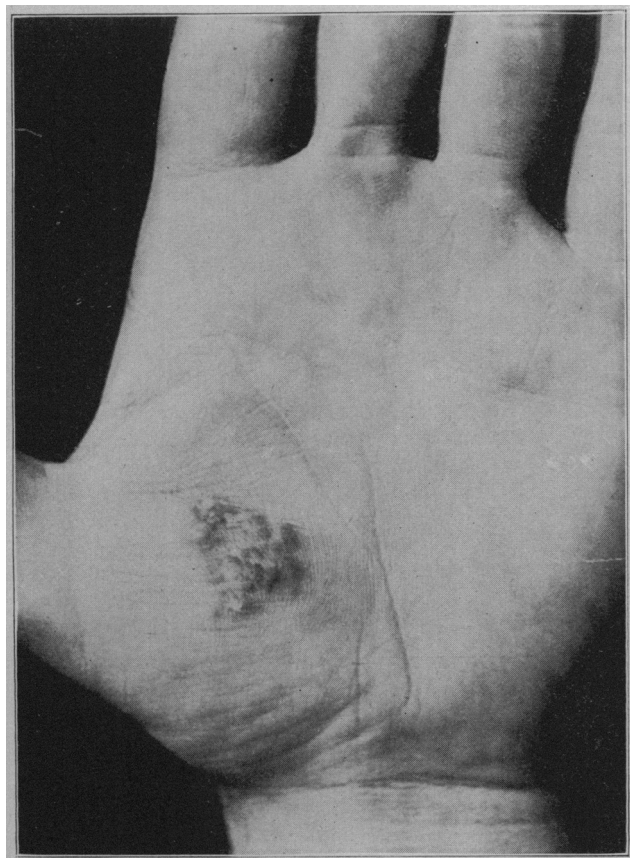
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There are many features of resemblance between simple herpes and herpes zoster, but there are also strong points of dissimilarity. In extreme cases of herpes, particularly about the face, it is sometimes difficult to distinguish between the zoster and simple forms. The clusters of firm vesicles on an erythematous base are identical in both. Histologically, the lesions in the skin and those in the affected nerve structures are practically the same in the two varieties. Thus far simple herpes might almost be regarded as a circumscribed abortive zoster; but there are other differentiating clinical features. The most important is the tendency to recurrence in simple herpes, contrasted with such a rarity of second attacks in herpes zoster as almost to suggest an immunity conferred. Indeed, second attacks of true zoster are no more common than second attacks of measles or scarlet fever. Head and Campbell met with only four cases in 400 cases of zoster. There are certain patients who are so subject to facial herpes that they suffer eight, ten or more attacks a year. In herpes zoster, moreover, there is more pain and the eruption follows in a general way the area of distribution of nerves. In elderly patients neuralgia may persist for weeks, months or years after the disappearance of the eruption.

\* Read at the meeting of the Medical Society of the State of Pennsylvania, September, 1906.

PATHOLOGY OF BOTH FORMS OF HERPES.

Many years ago Barensprung suspected that herpes zoster of the trunk was caused by some lesion affecting the sensory spinal ganglia. Subsequent study has proved the correctness of this shrewd conjecture. A number of careful autopsies in persons who had suffered from herpes zoster have demonstrated gross structural change in the ganglia on the posterior roots of the spinal cord. The most important work on this subject has been published by Head and Campbell, who made autopsies on 19 patients who had recently or remotely suffered from herpes zoster. The acute changes found in herpes zoster consist in (1) extremely acute inflammation with exudation of small, round, deeply staining cells, (2) extravasation of blood, (3) destruction of ganglion cells and fibers, (4) inflammation of the sheath of the ganglion. The changes are always in the posterior roots, the anterior roots being normal. Herpes zoster, according to



A single patch of herpes simplex on palm of hand due to trivial cause. Similar patches are seen in meningitis of both the epidemic and tuberculous types.

those investigators, might be justly spoken of as an acute posterior poliomyelitis analogous to the acute anterior poliomyelitis causing infantile palsy. The only cranial nerve in whose distribution herpes zoster occurs is the trifacial, and similar changes to those found in the spinal ganglion have been found in the Gasserian ganglion. As early as 1871 Wyss<sup>1</sup> described structural alterations in this ganglion in a patient who died in the early stage of supraorbital herpes zoster. Sattler has also found changes in this ganglion in trifacial zoster.

These findings are of importance in discussing the etiology of herpes facialis and its relation to herpes zoster, for in the former affection practically identical

changes in the Gasserian ganglion have been found. W. T. Howard,<sup>2</sup> in an important contribution, gives the result of two carefully performed autopsies on patients dying of pneumonia, the one complicated by herpes zoster and the other by herpes labialis.

In the first case, a woman 63 years of age, died of double pneumonia. This patient had a well-marked herpes zoster in the mid-dorsal region of the left side in the spinal root ganglion (11th dorsal) corresponding to the area of the herpetic eruption. Pronounced changes were found consisting of congestion and hemorrhages in the capsular and interstitial tissues. At one site of the ganglion was cellular infiltration and destruction of a few ganglion cells; furthermore, amylaceous and hyaloid bodies in another portion of the ganglion.

The second case was one of croupous pneumonia in a man 41 years of age, who died on the sixth day of the illness. Two days before death a well-marked herpes of the upper lip and nose appeared, more extensive on the left side. The following changes were found:

Congestion of the veins about the origins of the superior maxillary branches of both Gasserian ganglia. Hemorrhages into the capsule and tissue, with interstitial cellular infiltration and compression and degeneration of the ganglion cells near the region of the superior maxillary branch of the left Gasserian ganglion. A few small areas of cellular infiltration in the same part of the right Gasserian ganglion. Marked congestion of the veins of the neck and brain and of the cerebral sinuses.

Councilman, Mallory and Wright<sup>3</sup> found acute inflammation of the Gasserian ganglion in cerebrospinal meningitis from extension of infection along the nerves.

ETIOLOGY OF HERPES ZOSTER AND SIMPLEX.

Both forms of herpes are due to a variety of etiologic factors. Though diverse in character, they all produce an intense irritation or actual inflammation of ganglia or nerve fibers. Exposure to cold or wet and sudden checking of profuse perspiration may act as causes; injury or pressure on a nerve trunk may produce herpes zoster. Herpes zoster has frequently been produced by the administration or accidental ingestion of arsenic, the drug setting up a neuritis. A number of dermatologists regard herpes as an infectious disease and quote epidemic prevalence of the affection in support of this view. Epidemics of herpes simplex are also occasionally observed. Zimmerlin<sup>4</sup> reports an epidemic of facial herpes occurring in the wing of a hospital at Basle, in which 16 out of 30 cases appeared in physicians and nurses.

Among the cases of herpes zoster and herpes simplex observed in the Polyclinic Hospital, I have never noted any particular evidence of epidemicity nor have these affections been more prevalent at any particular season of the year. We have treated 146 cases of herpes zoster and 83 cases of herpes simplex. These occurred in the following months:

Herpes Simplex.		Herpes Zoster.	
January	10	January	13
February	8	February	5
March	6	March	12
April	7	April	11
May	7	May	8
June	10	June	16
July	14	July	19
August	6	August	10
September	5	September	13
October	10	October	12
November	4	November	16
December	6	December	11
Total	83	Total	146

2. W. T. Howard: Amer. Jour. Med. Sci., 1903, p. 255.

3. Mass. State Board of Health Reports, 1899.

4. Correspondenz Bl. f. Schweizer Aerzte. March 15, 1883.

1. Wyss: Archiv. für. Derm. u. Syph., 1872.

An important etiologic factor is age. Childhood and early adult life are the ages at which most cases of herpes simplex and zoster occur. Fifty-five per cent. of the cases of herpes simplex and 48 per cent. of the cases of herpes zoster developed in patients between the age of 10 and 30 years.

#### HERPES IN INFECTIOUS DISEASES.

The occurrence of facial herpes, or, indeed, simple herpes anywhere on the cutaneous surface, is often of great diagnostic value in differentiating certain infectious diseases. The study of the incidence of this condition in various infectious processes shows that herpes is peculiarly related to certain diseases and forms an important part of their symptomatology. In certain other specific febrile disorders herpes occurs with great infrequency and even rarity.

*Herpes in Croupous Pneumonia.*—Many writers have indicated the great frequency with which attacks of herpes develop in the course of croupous pneumonia. It is said ordinarily to occur between the second and fifth days of the disease, although it may appear earlier or later than this period. Most writers state that it occurs in from 12 to 40 per cent. of the cases, and these figures are approximately correct. In 1,863 cases, most of which were collated by E. F. Wells,<sup>5</sup> herpes was present in 30.6 per cent. These cases were observed by ten physicians in various parts of both continents, and may, therefore, be accepted as indicating the general incidence of herpes in this disease. In some localities and in certain epidemics, wide variation in the frequency of herpes has been observed.

Hermann, for instance, noted herpes in 65 per cent. of 40 cases of pneumonia, whereas, in other epidemics, this symptom has been present in as low as 13 and even 7 per cent. of the cases. Concerning the prognostic value of herpes in pneumonia, reference will be made later.

Below is appended a table showing the frequency with which herpes has been observed by various writers:

#### HERPES IN CROUPOUS PNEUMONIA.

	Per cent.
Bleuler <sup>6</sup> .....	43
Drasche <sup>7</sup> .....	40
Volkmann <sup>8</sup> .....	13
Geissler, <sup>9</sup> 421 cases .....	43
Hawkins, <sup>10</sup> 220 cases .....	16
Hermann, <sup>11</sup> 40 cases .....	65
Rall <sup>12</sup> .....	34
Kissel <sup>13</sup> .....	100
Lebert <sup>14</sup> .....	13
Scheef, <sup>15</sup> 44 cases .....	20
Speck, <sup>16</sup> 50 cases .....	18
Shapira, <sup>17</sup> 173 cases .....	29
Short, <sup>18</sup> 286 cases .....	20
Townsend <sup>19</sup> .....	7
Waller, <sup>20</sup> 81 cases .....	47
Wunderlich, <sup>21</sup> 50 cases .....	50
Ziemssen <sup>22</sup> .....	50
E. F. Wells, <sup>5</sup> 498 cases .....	26

*Herpes in Cerebrospinal Meningitis.*—In cerebrospinal fever, herpes is a symptom of great diagnostic

value; although it is generally stated that herpes is more common in croupous pneumonia than in any other disease, statistics do not seem to bear out this assertion, as will be seen from the subjoined table:

#### HERPES IN CEREBROSPINAL MENINGITIS.

	Per cent.
Tourdes .....	60
Leyden .....	75
Friis (Copenhagen) 54 of 107 cases .....	50
Jaffe (Hamburg) .....	41
Councilman et al. (Boston, 1897), 35 in 111 cases .....	31
Average .....	52

In the above reported figures, herpes was present on an average in 52.2 per cent. of the cases. As is true of other diseases, the incidence of herpes in cerebrospinal fever varies considerably in different epidemics, but the fact remains that it is a most common manifestation of the disease. The erythematous and petechial eruption which has given to the disease the name of spotted fever is less frequent than herpes, and in some countries, as, for instance, Germany, is of great rarity. Herpes, therefore, may be regarded as the most frequent cutaneous symptom of cerebrospinal fever, although it is not its most characteristic eruption. Given a patient suddenly ill with headache, retraction of the head and herpes, and we have a strongly suggestive picture of an oncoming cerebrospinal meningitis. Herpetic vesicles are not limited to the face alone, but occur on the neck or distal portions of the extremities. I recall seeing one patient in whom a patch of herpes was present on the last phalanx of the thumb. I have also, however, noted the appearance of herpetic vesicles on the finger in a case of tuberculous meningitis. Herpes accompanying very mild disturbances may likewise be circumscribed to the hand as in the photograph here reproduced. Herpes occurring in the course of cerebrospinal fever does not differ from ordinary herpetic attacks. Patches are at times more extensive, but frequently are quite limited as regards area covered.

*Herpes in Malaria.*—Malarial fever comes third in the group of diseases in which herpes is a prominent symptom. Griesinger<sup>23</sup> observed herpes in 117 out of 390 cases, or about 30 per cent. Kelsch and Kiener<sup>24</sup> believe it to be present in one-third of the cases. Its presence is of great value in diagnosis because of its comparative rarity in typhoid fever, a disease with which malaria may frequently at the outset be confounded. Herpes may occur in malaria during the cold or hot stage, or, indeed, at any time in the course of the disease.

*Herpes in Influenza.*—It is not rare for herpes to develop in the course of attacks of influenza. The German Collective Investigation Committee found this symptom present in 6 per cent. of the cases collated. Curtin and Watson<sup>25</sup> found herpes zoster more common than herpes labialis. In about 6,000 cases of influenza, they observed herpes zoster six times and mention the fact that eleven cases were reported by two other physicians. "Herpes labialis was rare, differing in this respect from malarial fever."

*Herpes in Typhoid Fever.*—It has long been noted that herpes occurs with great infrequency in typhoid fever; indeed, to such an extent is this true that some writers erroneously allege that it does not occur at all. Osler's figures on the subject enable us to judge of the

5. E. F. Wells: THE JOURNAL A. M. A., May 26, 1894, p. 767.

6. Bleuler: Inaug. Diss., Zurich, 1865.

7. Drasche: Canstatt's Jahrb., 1860, vol. ci, p. 207.

8. Volkmann: Inaug. Diss. Erlangen, 147, p. 17.

9. Geissler: Arch. d. Heilkunde, 1861, p. 115.

10. Hawkins: Lancet, April 1, 1893.

11. Hermann: Lungenentzündung Münch., 1880, p. 36.

12. Rall: Pneumonie, Eulenberg, 1852, p. 159.

13. Kissel: Klinik d. Brustkrankheiten, Tübingen, vol. i.

14. Lebert: Inaug. Diss. Erlangen, 1887, p. 33.

15. Scheef: Inaug. Diss. Tübingen, 1882, p. 38.

16. Speck: Inaug. Diss. Marburg, 1870, p. 30.

17. Shapira: Inaug. Diss. Würzb., 1877, p. 58.

18. Short: Inaug. Diss. Würzb., 1884, p. 58.

19. Townsend: THE JOURNAL A. M. A., Dec. 1, 1888, p. 789.

20. Waller: Op. cit., S. 4.

21. Wunderlich: Inaug. Diss. Tübingen, 1858, p. 59.

22. Ziemssen: Pleuritis u. Pneumonie, Berlin, 1863.

23. Griesinger: Traité des Malad. Infect., p. 50.

24. Kelsch and Kiener: Quoted by Mannaberg, Nothnagel's Spec. Path. u. Ther., 1890, 11, 130.

25. Curtin and Watson: Climatologist, Feb., 1892.

infrequency of its development. Among 1,500 cases of typhoid fever, herpetic outbreaks were found in 20 patients, or a little more than 1 per cent. of the cases. In the Johns Hopkins series of 829 cases herpes was served in 29 patients, or 3.5 per cent. D. J. M. Miller<sup>26</sup> recently observed 4 cases of herpes among 250 cases of typhoid fever examined. Many of the older writers maintained that even when all the characteristic symptoms of typhoid fever were present a case must be regarded as this disease, if herpes labialis developed. Some modern writers refer to herpes as negatively pathognomonic of typhoid fever. Certainly this symptom is so uncommon that the development of herpes in the course of a febrile attack would tentatively negative the diagnosis of typhoid fever. In acute tuberculosis and in typhus fever, both affections which may come into differential conflict with typhoid fever, herpes is occasionally observed.

*Herpes in Relapsing Fever.*—The occurrence of herpes in relapsing fever is likewise uncommon. Semon,<sup>27</sup> in an epidemic of relapsing fever in Berlin, observed only four cases of herpes in 160 cases of the disease.

*Herpes in Other Diseases.*—Concerning the frequency of herpes in the acute exanthematous diseases, no published figures are available as far as I have been able to ascertain. Herpetic outbreaks are of great rarity in smallpox. Among over 3,000 cases of smallpox that I have seen, I have observed but two cases of herpes; I am unable to present any figures in regard to the frequency of herpes in scarlet fever. I do not think, however, that this manifestation is so rare as in smallpox. From a general impression that I have received I should estimate that herpes occurs in about 3 per cent. of the cases. In diphtheria attacks of herpes are also occasionally observed.

#### THE PROGNOSTIC VALUE OF HERPES.

Many writers have insisted that the development of herpes in certain infectious diseases, notably pneumonia and malaria, is of distinct value in enabling one to forecast the outcome of the illness. In what manner the appearance of a few fever blisters becomes the harbinger of a favorable development of the disease and ultimate recovery can not be explained. The herpetic attack is sometimes regarded as analogous to a critical chill or discharge, but the time at which the herpes develops in the course of many illnesses precludes such an explanation. The extent to which herpes may be regarded as a symptom of favorable omen in pneumonia and malaria can not be justly estimated at the present time. Most authors, however, attribute to the development of this symptom a favorable prognostic significance. Osler, in speaking of herpes in pneumonia, conservatively says: "It is supposed to be of favorable prognosis, and figures have been quoted in proof of this assertion." The opinion that herpes was a favorable indication was believed many years ago. Hebra, the great Vienna dermatologist, did not share this view. In 1866 he wrote: "Observation teaches that this form of herpes is neither of good nor of bad augury with reference to the probable outcome of the disease which it accompanies." If we rely, however, on the statistics published we can not fail but be impressed by the remarkable discrepancy in the mortality of cases of pneumonia associated with herpes and those without this eruption.

Geissler presents strong evidence of the prognostic significance of herpes in 421 cases of pneumonia studied by him. Of 181 patients with pneumonia, with herpes, 17, or 9.3 per cent., died; of 239 without herpes, 70, or 29.3 per cent., died; 159 patients were over 30 years of age; of those, 50 had herpes and 10 patients, or 20 per cent., died; 109 had no herpes, and of this number 58 patients, or 53.2 per cent., died.

Sir Dyce Duckworth believes that herpes is a good sign in pneumonia, usually occurring in cases in which a well-defined crisis develops on the sixth day. Cases that are grave and prolonged with deferred crises usually do not present it.

In malarial fever, herpes is likewise alleged to constitute evidence of an early and favorable outcome of the disease. Dr. Arthur Powell, at whose hospital service in Assam, India, more than 100 patients with malaria are seen daily, states that the development of herpes is invariably an evidence of the cessation of the attack. He says: "If during an attack of remittent or intermittent fever, a patch of herpes breaks out on the lips, face or elsewhere, I always look on this as a sign that the malarial attack is over. In all my experience, I have never met a case to negative this theory, which I thought was well known by our profession." This may be true of malaria in India, but in this country herpes occurs often early in the course of malaria and in attacks that do not promptly cease after its appearance.

That herpes has any prognostic significance in cerebrospinal fever I can not from my experience with this disease believe, although some writers contend that it has. Tourdes is of the opinion that herpes is a symptom of good omen. Figures, however, do not appear to bear out such a contention. In an epidemic in Copenhagen, the mortality of cerebrospinal meningitis accompanied by herpes was 32.3 per cent., while in cases without herpes it was 35.5 per cent., too slight an increase to be significant.

Another form of simple herpes to which reference has not been made is herpes genitalis. This is often regarded as occurring reflexly from genital irritation. As Fournier, Bergh and Unna have pointed out, it is much more common in prostitutes than in married women; furthermore, it frequently follows gonorrhoea and other venereal infections. It is not improbable, therefore, that, in the majority of cases, it may be of infectious origin, as are most, if not all, of the cases of facial herpes. Genital herpes commonly exhibits the same tendency to recurrence as is observed in some cases of facial herpes.

It would appear, therefore, that apart from traumatism to nerve structures most cases of herpes—herpes zoster, facial herpes and genital herpes—are of infectious origin. The probabilities are that a toxin or poison is absorbed which has a special affinity for nerve tissue, particularly for the cells of sensory ganglia. It is not necessary to assume that this poison which might be termed an "herpetoxin" is the result of any one specific micro-organism. While two of the diseases in which herpes is a prominent symptom (pneumonia and spotted fever) are of diplococcic origin, as is likewise gonorrhoea, the third disease, malaria, is produced by an entirely different form of parasite. Just as rashes indistinguishable from that of scarlet fever may be produced by a variety of toxins and drugs, so may herpes be produced by certain toxins, and herpes zoster may be caused by arsenic. In the one instance we have an erythrogenic toxin or drug, and in the other a herpetogenic

26. International Clinics, iii. series 16.

27. Semon: Jour. of Cut. and Vener. Dis., 1884, vol. xi, p. 146

toxin or drug. That pneumonia, spotted fever and malaria should be so frequently accompanied by herpes and typhoid fever, smallpox and other exanthemata so rarely, can not in the present state of our knowledge be explained. It certainly seems reasonable to attribute the herpes to some peculiar quality of the associated toxin.

It must, of course, be remembered that some persons are peculiarly subject to simple herpes, accompanying coryza, gastric disturbances and other mild indispositions (see illustration). In such individuals there may be an unusual susceptibility of the nerve tissue to the action of toxins which in other persons might produce no herpetic outbreak. Certainly the well-established association of herpes with the three infectious diseases mentioned can not be explained on the basis of personal idiosyncrasy, for it is too well demonstrated by the extended observation of experienced clinicians in all countries.

In considering the diagnosis of a disease in which herpes develops, it is well, however, to obtain from the patient or his relatives some history as to the previous occurrence of herpetic attacks.

#### CONCLUSIONS.

1. Herpes zoster and herpes simplex—both the facial and genital varieties—while not clinically identical, are closely related. The histology of the cutaneous lesions and the observed changes in the nerve structures examined appear in all to be practically the same.

2. It is highly probable that the vast majority of all cases of herpes of the various types are the result of the action of a toxin. This proposition necessarily assumes the infectious origin of herpes.

3. The frequency of herpes simplex in certain infectious diseases and its rarity in others is evidence that the toxin must possess certain peculiar qualities in order to exercise a selective affinity for sensory nerve structures.

4. The toxins producing herpes simplex and herpes zoster are in all probability not the result of the action of any specific micro-organism. This is certainly true of the former and by analogy may be assumed to be true of the latter disease.

5. The three diseases in which an "herpetogenic" toxin develops with a fair degree of constancy are pneumonia, spotted fever and malaria. Its frequency in these diseases and its comparative rarity in typhoid fever and many other infectious maladies make its appearance a symptom of considerable diagnostic import.

6. In view of the tendency of certain individuals to recurrent attacks of facial herpes from slight indispositions the fact as to such a history should always be elicited before according to herpetic outbreaks the diagnostic value referred to.

**The Model Medical Society Paper.**—There is no doubt, says the *Jour. of the Minnesota State Med. Assn.*, that the model paper for a medical society or a medical journal is something very different from the average paper now prepared. To define what shall be a model is difficult, but it is possible to name some of its characteristics. It must contain something that will add to the general fund of medical knowledge, and while this something may be contained in a paragraph, it may need a setting to give it clearness and emphasis. Proper brevity is necessary both to maintain interest and to enhance its value. Definition or clearness of outline must be a characteristic of everything one writes. Combine these qualities in a subject of interest to the profession and we shall approximate a model paper.

## SOME UNUSUAL OCULAR MANIFESTATIONS OF ARTERIOSCLEROSIS.\*

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#### OPTIC ATROPHY.

The first anatomic demonstration of the pressure effects on the optic nerve of sclerosed vessels at the base of the brain was made by Michel<sup>1</sup> in 1877. This case is unique inasmuch as the resulting ocular disturbance was bilateral choked disc which Michel explained by assuming pressure on the lymph spaces of the optic nerve.

From time to time since the publication of this case others have appeared in literature, but it remained for Otto<sup>2</sup> in 1893 to present a large enough series of cases to permit of conclusions being drawn as to the nature of the gross and minute anatomic changes and of their possible clinical manifestations. In 11 of this group of 20 autopsies there were more or less marked changes in the form of the optic nerve consisting of a flattening and a subsequent atrophy of the nerve fibers, primarily centrally situated but later extending above and below, while in the two wings of the nerve thus formed the position and the relation of the nerve fibers remained normal. He concludes that the atrophy is a pure pressure one without inflammatory phenomena and that this atrophy may progress in an ascending and descending direction. He suggests that clinically simple slowly progressive optic nerve atrophy occurring in the aged may have this origin. In a subsequent article (1901) Otto<sup>3</sup> adds 4 cases of sclerosis of the carotid and ophthalmic arteries the findings in which confirmed the original as to the nature of the atrophy and the varying location corresponding to the position of the affected vessels. In all of these cases, so far as it was possible to determine, related ophthalmoscopic and functional changes were absent.

In 1891 Bernheimer<sup>4</sup> reported two interesting cases. In one the nerve was divided into two unequal longitudinal parts by the pressure of the sclerosed carotid and ophthalmic arteries on its ventral surface. In the second case the optic nerve was furrowed on its *dorsal surface* at the point where the dural sheath begins. He expresses the view later again set forth by Otto. He attributes the absence of clinical symptoms to the fact that in these cases the ophthalmic artery coursed parallel with the optic nerve fibers within the optic canal to its exit into the orbit; and that notwithstanding the marked changes, there could be no influence on the conductivity of the nerve. When, however, the ophthalmic artery takes a right angled tangential course relative to the long axis of the nerve, the fibers must be destroyed by the pressure and produce an atrophy corresponding in degree to the depth of the furrow.

In 1902 Liebrecht<sup>5</sup> added 7 similar cases, all studied from an anatomic standpoint. From a consideration of these and the previously reported cases he finds that the most frequent seats of injury to the optic nerve through arteriosclerosis are: first, within the fibrous portion of the optic canal by imbedding of the ophthalmic artery into the nerve parallel to its long axis; the second is at

\* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. Arch. f. Augenheilk., vol. xiv, p. 39. Türck's case (reported much earlier) was one of compression of the optic nerve by the artery pushed upward by a tumor.

2. Arch. f. Psych. u. Nervenk., vol. xxv, p. 559.

3. Arch. f. Augenheilk., vol. xliii, p. 104.

4. Arch. f. Ophth., vol. xxxvii, p. 37.

5. Arch. f. Augenheilk., vol. xlv, No. 3.