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THE VISCERAL LESIONS OF THE ERYTHEMA GROUP.*

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In December, 1895,† I published a series of eleven cases characterised by—

I. Polymorphous skin lesions: (*a*) acute circumscribed œdema; (*b*) urticaria; (*c*) purpura; and (*d*) ordinary exudative erythema.

II. Polymorphous visceral lesions: (*a*) local serous or hæmorrhagic exudate in the walls of stomach or bowels, causing (1) crises of pain and (2) hæmorrhages; (*b*) acute nephritis; and (*c*) certain rare pulmonary and other lesions.

III. Infiltration of synovial sheaths, peri-articular tissues, and arthritis.

It would have been better, as some of my dermatological friends suggested, not to have described the cases under the name erythema exudativum multiforme, the term which has been used to designate the so-called pure type of polymorphous erythema, but it was really very difficult to find a name under which to group the cases. Duhring has suggested that the majority of them should be regarded as purpura rather than erythema, but in only Cases 6, 7, and 11 was purpura the sole lesion, while in the remaining cases there was exudate (either serous or hæmorrhagic or both), with swelling.

In the following communication I shall give the subsequent history

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† *American Journal of the Medical Sciences: cf. Brit. Journ. of Dermat.* Vol. VIII., p. 55.

of Case 2 of the first series, details of seven additional cases, an analysis of the symptoms of the whole series, and shall then discuss briefly the relations of certain members of the erythema group of skin diseases.

I will first call attention to the extraordinary series of symptoms presented by Case 2, the condition of which was reported on to the end of 1895. Briefly summarised: in his tenth year this lad had severe attacks of colic, a very barking cough, and one attack of urticaria. In his eleventh year he had colic with an outbreak of urticaria and purpura; later a well defined localised œdema on the back of one hand, marked signs at the apex of the right lung, and an enlarged spleen. In his twelfth year he had one severe attack of colic, and the pulmonary features became more pronounced. In his thirteenth and fourteenth years he began to present the picture of emphysema, and the pulmonary symptoms were dominant. In his fifteenth year he had pronounced emphysema, dilatation of the heart, and pericarditis, of which he died. So far as the skin lesions in this case were concerned, successive physicians in the series of attacks might have diagnosed urticaria, purpura with urticaria, angio-neurotic œdema, and well defined exudative erythema.

CASE 2 (of Series 1, continued).—W. E. B.* *Colic with urticaria in tenth year. In eleventh year attacks of colic, urticaria with purpura, angio-neurotic œdema, exudative erythema, enlarged spleen, cough with local signs at right apex. In twelfth year colic, enlarged spleen, cough. In thirteenth year colic, cough. In fourteenth year pulmonary symptoms dominant, signs of emphysema. In fifteenth year emphysema well marked, broncho-pneumonia, pericarditis, death.*

Good Family History.—No rheumatism; healthy, well grown, active and intelligent; no serious illness; fairly good digestion.

Tenth Year (1893).—Attacks of severe colic, of such intensity that he would roll on the floor. Several attacks of epistaxis. In the summer of 1893 an attack of urticaria. In the latter part of the summer a very barking cough, suspected to be whooping-cough.

Eleventh Year (1894).—First seen by me, March 10th. Well nourished boy, a little pale; no skin lesions. The spleen was enlarged and extended in the parasternal line nearly to the level of the navel. There was moderate anæmia, 4,000,000 red blood corpuscles, hæmoglobin about 80 per cent. The urine was normal. At the right apex and in the right upper axillary region there were medium sized moist râles; no change in the percussion note. When I first saw the case I was completely puzzled. The enlarged spleen, with a slight anæmia, raised the suspicions of some primary blood affection, but the cough, which had been an important feature, and the localised signs at the right apex, suggested with

* The early history of this case is given fully (Case 2) in the paper referred to.

the anæmia, the onset of tuberculosis. The sputum (which was muco-purulent) was examined carefully, but no bacilli were found. In the middle of April the cough became much aggravated. Throughout May he improved very much. In the middle of the month he had slight pains about the knees, and on the 18th there were one or two bluish stains of fading *purpura*. On May 22nd, when I saw him, he was in the midst of an attack of *urticaria* and *purpura*. This, with the colic, gave me a clue to the possible nature of the case. Early in June he had an œdematous swelling, without redness, on the back of the left hand, like the ordinary lesion of *angio-neurotic œdema*. On June 6th both ankles were swollen, and the skin of the legs presented the remains of *purpura* with *urticaria*. On the back of one hand there were patches of *erythema with exudation*. The spleen was smaller. The patient had a good summer. I saw him October 30th, and he looked very well. The râles had disappeared at the right apex.

Twelfth Year (1895).—March 9th. He had been at school and very well through the winter. Last night he had a very severe attack of colic. He had a good deal of cough, and there were numerous piping râles at the apex of the right lung. The edge of the spleen could be felt. There were no skin lesions. Early in June the cough became very much more troublesome, with severe paroxysms at night. Over the apex of the right lung in front and behind the percussion note was of higher pitch. There were numerous moist râles over the whole infra-clavicular, mammary, upper axillary, and suprascapular regions. The breath sounds were harsh, not tubular. The spleen could be felt a full hand's breadth below the costal margin. Throughout the summer he remained very well. On October 21st the spleen was only just palpable. The cough, which had almost disappeared, had recently returned. The right apex had become much clearer; there were a few râles in the right lower axillary region, and also in the left lower mammary region. He had not been a mouth-breather and the nostrils were wide and normal.

Thirteenth Year (1896).—This was marked by only one attack of severe colic in April, of great intensity, requiring morphia for its control. He went north for the summer. In October he had a recurrence of the cough, more severely perhaps than ever before. It was chiefly nocturnal, though sometimes of such severity in the morning that he would vomit his breakfast.

Fourteenth Year (1897).—January 22nd. He looked well and had grown. I had not seen him for nearly eight months, and I was much impressed with the change in the shape of his thorax, which had become more rounded, looked like a typical emphysematous chest, and the neck muscles stood out prominently. The resonance was impaired on and below the right clavicle. There were a great many coarse, mucous râles in front and behind at right apex, and the breath sounds were harsh, and had lost the breezy quality. Expiration everywhere was somewhat prolonged. The left lung was clear. He had had no fever. For the first time since I had seen him the edge of the spleen could not be felt. I was impressed with the condition of the lung, as the local signs at the apex seemed so pronounced. Dr. Futcher reported that the sputum, which was muco-purulent, contained no tubercle bacilli. The urine showed no change. He spent February and March in North Carolina, with great benefit. The cough disappeared entirely, and he came back looking very well. He had grown and thriven in every way. Though he was free from cough, there were very well defined signs in the lungs, numerous crackling râles at both apices, most extensive on the right side. In the

right axillary region there was a friction sound. The summer was spent at Martha's Vineyard. He had no cough, gained in weight, had a good colour, and a good appetite. In October, November, and December the condition of emphysema progressively increased. I saw him again December 18th. There was elevation of the chest during inspiration and the neck muscles stood out prominently. Expiration was everywhere prolonged at the right apex. There were numerous bubbling râles, very similar indeed to those heard on the occasion when I first examined him. There were piping râles on expiration at the left apex. At the bases of the lungs the breath sounds were clear and breezy.

Fifteenth Year (1898).—During February I attended the patient with Dr. Lockwood for two weeks in a severe attack of diffuse bronchitis with areas of broncho-pneumonia. The temperature ranged from 101° to 104·5°, and for two days he was very ill. The heart was not affected. The fever gradually subsided, and he convalesced very slowly. The attack left him with a very weak, feebly-acting heart. In April he was able to go to Pinehurst, where he remained for a month, and returned in much better condition. In May, shortly after his return, he became very short of breath. There were signs of advanced emphysema; the percussion note was very low on the right side, the heart dulness was obliterated and there were loud, piping râles with inspiration and expiration. He passed very restless nights, and would frequently have to sit up in bed for hours at a time. During the last week in May dropsy began—swelling of the feet and legs, which gradually increased, and in the first week in June ascites. The pulse was very rapid and feeble, and there was a systolic murmur at the apex. The urine was scanty, but contained neither albumin nor tube casts. On June 16th Dr. Lockwood detected an acute pericarditis. On the following night he was very restless, and could only breathe comfortably with the head held far forward. On the following day when I saw him there was a very loud pericardial friction over the whole cardiac region. He was much cyanosed. The pulse was extremely rapid and irregular, and he died that night.

SECOND SERIES.

CASE 12.—Neurasthenia; dilatation of the stomach; colic for two years at intervals; exudative erythema; leucocytosis.

Berta L., aged 24 (Hospital No. 18,151), admitted December 19, 1896, complaining of pain and soreness in the abdomen. She had been a very nervous girl, and had had a good deal of uterine trouble. For four years she had had dilatation of the stomach, for which she had used the stomach tube. She had lost much in weight.

The patient was extremely neurotic, and impressed us as a case of very severe neurasthenia with dilated and depressed stomach. She was thin and sallow, the face pigmented. On admission she had a most extreme grade of dermatographia. The slightest scratch was followed by intense erythema and sometimes urticaria. Two days after admission, on the morning of the 22nd, she had an extensive erythematous rash over the face, arms, and thighs. Upon the skin of the thighs and arms there were large raised red areas in places diffuse, in others isolated, like big wheals. In the afternoon she had a violent attack of abdominal colic without nausea or vomiting, which lasted for about half an hour. The temperature on admission was 102°, and for four days ranged from 99° to 102°. She had no chills.

There was considerable increase in the area of splenic dulness. The leucocytes were 13,450. There was no albumin in the urine; no tube casts. On questioning the patient, she says that for two years she had been liable to these attacks of colic, which came on with great suddenness. This was the first one in which it had been associated with any skin lesions. The erythema persisted for about two days and then disappeared. It did not extend to the face or hands.

CASE 13.—*Attacks of colic every week or ten days for six months; on admission typical lesions of erythema exudativum multiforme; high fever; improvement; recurrence; pains in the joints; arthritis in one joint of finger.*

Ruberta F. B., aged 49 (Hospital No. 19,713), admitted June 14, 1897, complaining of pains in the hands and a skin rash. There was no rheumatism in the family.

Personal History.—She had had the ordinary diseases of childhood and once urticaria. No rheumatism. When twenty-six years old she had severe diarrhœa with bloody stools; was ill five weeks. She has had six children. In November, 1896, she was operated upon successfully for an ovarian tumour.

Present Illness.—One week after the operation she had an attack of severe abdominal pain, limited to the epigastrium, which came on very suddenly. While in hospital she had three attacks, all requiring morphia. Since dismissal she has had an attack every week or ten days. Twice she has had two attacks in a week. She has had no vomiting, but she is always slightly nauseated. The intensity of the pain is such that she cries out at the top of her voice. She always has fever with the attacks. The pain comes on, she says, "as suddenly as one could blow out a light," and leaves her just as quickly.

On June 3rd she had a slight chill, and has not been well since. On the morning of June 12th she noticed a few small red papules on the left hand. About 2 P.M. she had a slight chill, followed by fever, with sudden pains about the joints, and an eruption appeared in many regions of the body. Her eyes became red and painful. On the 13th the eruption became more raised and confluent. She had considerable pain at the onset, no vomiting, but some nausea, no diarrhœa.

On admission she was a well nourished, stout woman; conjunctivæ deeply injected; temperature, 104.5°; tongue coated. The skin presented most extensive lesions of erythema multiforme. Face and neck presented many raised, red, infiltrated areas, some of which were surmounted by small vesicles. On the legs and thighs there were deep red blotches, the smallest about 1 cm. in diameter, the largest about 2 cm., raised and in places looking like erythema nodosum. On the hands and forearms the rash was infiltrated, the spots less red than those on the legs and face, and surmounted by large, clear vesicles. On the hands there were large, confluent, indurated, deep red areas, which were capped in places with hæmorrhagic vesicles. The first phalanx of the right forefinger was swollen, deeply cyanotic, and surmounted by many vesicles. The skin of the thumb of the right hand presented a few hæmorrhages. The fingers were excessively tender. It was noted as an interesting point that with the extensive lesions on the hands there was no tenderness or swelling of the epitrochlear glands or of those in the axillæ.

During the first two days the temperature ranged from 102° to 103°. The rash persisted; many of the infiltrated areas on the hands and arms became capped with small blebs, the contents of which in places became purulent. The hands and fingers were greatly swollen. The legs showed fresh outbreaks of erythema;

no vesicles. The edge of the spleen was palpable. There was no involvement of the heart. The temperature fell on the 19th. Fresh crops appeared on the 17th and 18th, and on the former date she complained of much soreness in the joints. Unfortunately the urine chart was mislaid.

CASE 14.—Man aged 57; from twentieth year every few months attacks of nausea, vomiting, and abdominal pain associated with outbreaks of urticaria; no hæmorrhages from the mucous membranes; final attack with purpura and urticaria; much vomiting and profuse and fatal hæmorrhage from the stomach, with blood in the urine and the passage of blood from the bowels.

This very remarkable case in a physician, aged 57, I saw on May 31st, 1898, with Dr. Wilkins. He had been a temperate man, of good family history. He had worked hard, and had been singularly free from diseases, except the one to be described. He had never had rheumatic fever.

From his twentieth year he had had attacks of urticaria of the greatest intensity. As a young man they occurred at long intervals, but during the past five years he has rarely passed three months without an attack. Each one was associated with nausea, vomiting, and great pain and tenderness in the epigastric region. The eruption usually appeared in broad patches, and covered almost the entire surface of the body. It persisted from the outset to the close of the attack, which lasted usually from a week to ten days, or even two weeks. After the outbreak the vomiting and pain would subside, but the urticaria would persist. Subcutaneous or mucous hæmorrhages did not occur until the last attack. No microscopical examination of the urine was made until the summer of 1897. For the past two or three years the attacks have been associated with great depression of the circulation. The temperature rarely rose above normal. In July, 1897, Dr. Wilkins found albumin and tube casts in the urine, and detected marked sclerosis of the peripheral arteries.

Dr. Wilkins, who attended him for years, said that it was impossible to appreciate the intensity of the attacks without seeing them. The nausea, vomiting, and abdominal distress, the itching of the skin, and the persistence of the attacks for a week or ten days, made his life wretched; yet he bore up bravely and attended to a large practice.

The final attack began April 25th, and followed the usual course until May 1st, when it was complicated with a bronchitis. On May 20th he went to Atlantic City, and while there, May 26th, for the first time he vomited blood. He returned home May 30th, and at 1 A.M. on the 31st he had a profuse hæmorrhage from the stomach.

I saw him on the morning of the 31st with Dr. Wilkins. He was well nourished, but looked pale and sallow. On the left ear there was a small tophus. The tongue was clean, but presented on the right margin two spots of hæmorrhage, one of which had broken and was oozing blood. Beneath the skin of the arms, trunk, and legs, were many bluish-black subcutaneous hæmorrhages. On the back there were at least a dozen, ranging from 2 to 5 or 6 mm. in diameter. On the outer surface of the right thigh there was a localized solid infiltration of both skin and subcutaneous tissues, forming a hæmorrhagic nodule the size of a walnut. On the radial side of the left arm there was a very extensive fading ecchymosis. On different parts of the body there were small petechiæ. The apex beat was outside the nipple line. There were marked hæmic murmurs. The urine showed a

moderate amount of albumin and a few tube casts. The radials were sclerotic; pulse a little rapid.

On Wednesday, June 1st, he became very much worse. He had epistaxis; the purpuric spots increased; he had vomiting of blood, hæmorrhage from the bowels, and blood appeared in the urine. He became very feeble, and died early on the morning of June 2nd. There was no autopsy.

CASE 15.—*When a lad one attack of hemiplegia with aphasia lasting for a week; within a year five or six attacks of transient hemiplegia; history of migraine in 1896, and a mild attack of rheumatism; angio-neurotic œdema of the upper lip; outbreaks of urticaria; in 1897, attack of abdominal colic, with pains in the legs and an outbreak of purpura and urticaria; in 1898, hæmaturia and albuminuria.*

C. A. R., physician, aged 29, a large, robust man, weighing above two hundred pounds, consulted me February 10, 1898, and gave a long history of himself, of which I give an abstract.

From childhood, indigestion. When 12 or 13 years old, after a hearty breakfast, he had right hemiplegia and aphasia, which lasted for a week or ten days. Within the year he had five or six attacks of hemiplegia, each successive one less severe, and not accompanied by aphasia. From that time until the present he occasionally feels a numb, tingling sensation in the side. In 1893 he had lumbago of a severe type. In 1895 a severe attack of *grippe*. At this time he began to suffer badly with attacks of migraine, which he has had at intervals for some years. In 1896 he had a mild attack of rheumatism, confined to bed only two or three days. In February, 1897, while in New Orleans, he had a sudden attack of swelling and pain in the feet. About the same time he began to suffer with soreness at the ends of the fingers. The upper lip would frequently swell, and he would have outbreaks of urticaria, associated with darting pains in the legs of very great intensity. In May, 1897, after exposure to a draught when heated, he had an attack of great soreness in the right iliac fossa, supposed to be appendicitis, temperature 102°, with some colic. While convalescent from this he had another remarkable attack of pain in the calves of the legs. They became so sore and tender that he could only walk with a cane, and was afraid that abscesses were beginning to form. Associated with it, however, there were large wheals of extravasated red blood. On May 26th he had another attack of nettle-rash.

When I saw this patient in February, 1898, his general condition was good, he had no arthritis, and there were no signs of appendicitis.

In May, 1898, the patient had a chill, followed by hæmaturia and albuminuria, which had disappeared by June 1st. With this there was a return of the pain in the right side.

The doctor writes: "I am convinced that this attack of nephritis is only a part of my old trouble."

CASE 16.—*For three months, attacks of pain in the abdomen, with vomiting; swelling of the joints; purpura; recovery.*

Harry L., aged 11, applied at the Out-Patient Medical Department March 23rd, 1899, complaining of indigestion, pain in the stomach, and vomiting.

Family History.—Father and mother living and well; one sister living who has indigestion; one brother died of dysentery. No members of family have suffered with rheumatism.

Personal History.—He was delicate as a baby. Has had measles, chicken-pox, and whooping-cough. When 9 years old he had some stomach trouble of doubtful nature.

Present Illness.—In January, just about two months ago, the patient was taken ill suddenly with pain in the abdomen and vomiting; the attack was attributed to the food which he had eaten the night before. The symptoms persisted for nearly a week, and the patient could only retain diluted milk. The pain came in paroxysms of great severity. From this time the patient has been ill off and on, frequently having had to remain in bed with the attacks of pain, and particularly if he took any extra food. He has been weak and nervous, and has lost in weight. During the first attack in January an eruption was noticed on the legs, and at this time one ankle was considerably swollen, and later one knee.

When seen March 23rd, he was just recovering from an attack. He looked pale and weak, and a little anæmic. There was nothing of note in the examination of the chest. Neither the spleen nor the liver was enlarged. The abdomen was not swollen, nowhere tender on pressure. On both thighs and legs there were recent purpuric spots, varying in size from a pin-head to a split pea. They were not raised. The left ankle still looked a little swollen. The right knee was slightly flexed and still a little stiff. The urine showed no trace of blood or albumin.

The blood coagulation time was three minutes. He was ordered Fowler's solution, and the mother was given very specific instructions with reference to the diet of the patient.

April 10th.—The patient has improved very rapidly. He has had no gastrointestinal symptoms, the joints are now quite well, and the purpuric spots have disappeared completely.

CASE 17.—*Following influenza, in January, attacks of arthritis with cramps in the abdomen and an outbreak of urticaria; eight attacks between January and May; during stay in hospital, swelling of wrists and back of hand; erythema; urticaria, spontaneous and factitious; no purpura; recovery.*

Geo. K., aged 18, admitted to Ward F, May 17th, 1899, complaining of pains in the joints, shortness of breath, and pains in the abdomen.

Family History.—Father died of an accident. Mother is living and well. There are two sisters and one brother. No similar troubles in the family. No rheumatism.

Personal History.—Measles and mumps when 7 years old. Never ill again until last summer, when he had chills and fever, but, on inquiry, there is no history of any definite chills. In December he had an abscess on the back of the hand. In January of this year he was ill with influenza. He has worked hard for a year making confectionery. He does not use alcohol or tobacco. His general health has been excellent; he has never had rheumatism or chorea.

He has always bled easily, from the nose, and last year, during the very hot weather, he bled almost every other day.

Present Illness.—While in bed in January with what was called the influenza the patient had swelling and pain in the feet and hands. He has not been able to work since the middle of January, except for two weeks. During the first week in January he noticed on his legs and on the arms "lumps" like those following the bites of insects, about the size of a quarter of a dollar (2.5 cm.) in diameter. They burned and itched, and gradually disappeared. As many as a hundred came out

in a crop together. With this there was some swelling of the arms and legs. At the same time he had attacks of cramps in the abdomen. He has had in all about eight of these attacks since January. They were usually very severe, causing him to cry out, and he was doubled up in them. He has noticed that he has been short of breath for nearly a month. He has had no fever.

Condition on Admission.—The patient was a well nourished, healthy-looking young man. The tongue was clean; pulse regular, 80, of good volume.

The arms looked natural; no pain or swelling about the shoulders or elbows. The right wrist was somewhat swollen and painful. Both hands were swollen; looked a little cyanotic, cold, and were slightly tender on pressure; there were no urticarial wheals. No swelling over the metacarpal or phalangeal joints. There was slight tenderness of the right knee; no swelling. There was no purpura.

Heart.—The maximum impulse was in the fifth interspace, outside the nipple line. There was no thrill. At the apex there was a loud, rough, blowing murmur, propagated into axilla, and heard distinctly over the whole back of the chest. At the aortic area there was a rough systolic murmur of less intensity than at the apex. The spleen was not palpable. There was no fever. The specific gravity of the urine was 1.107; no albumin, no tube casts.

May 18th.—On the backs of both arms I noted a slight erythema with a few wheals of urticaria. They were present also on the outer side of the left thigh. Over the back of the left hand there was a swelling without special redness. The patient had improved very much.

On May 23rd he complained of pain in the first phalangeal joint of the left ring finger, which was reddened and swollen, not tender. There were two urticarial wheals on the right forearm, and one on the left. Factitious urticaria was readily produced. The blood coagulation time was four minutes fifty seconds.

May 26th.—The patient had a severe attack of colic to-day at 12.30. It passed off in a few hours. There was no rise in temperature. The abdominal pain persisted at intervals for a few days.

On June 4th the dermatographia was not so marked. There were still some urticarial blotches.

June 9th.—The patient had been up and about. The joint pains had subsided. The urticaria still came out at times about the joints.

June 19th.—Condition very good. Patient discharged. During his illness this patient had no purpura.

CASE 18.—*During first year swelling of knees; from second to seventh years frequently recurring attacks of pain in the abdomen with vomiting and with swelling of the knees, but no skin rash; following vaccination, attack of great severity with extensive lesions of erythema, purpura, and urticaria; melæna; recovery; recurrence of the skin lesions; enlargement of the spleen.*

Barbara P., aged 7, admitted to Ward G, March 28th, 1899, complaining of pain in the abdomen and high fever.

Family History.—The parents are living and well. There are three brothers and three sisters. No history of rheumatism; no similar cases have occurred. It seems in all respects to be an exceptionally healthy family.

Personal History.—The child has had measles, mumps, chicken-pox, and whooping cough. When three months old she had swelling of the knees, which the doctor called acute inflammatory rheumatism, and which lasted on and off for

five months. No other joints were affected. The condition has recurred occasionally. She never had any breaking out upon the body; never had bleeding from any mucous membranes. Since her second year she has had at intervals of a week or two gastro-intestinal attacks, characterised by vomiting and severe cramp-like pain about the navel, which would cause her to cry out. The attacks lasted for one or two days. At times during these attacks the legs would become swollen to the ankles, and the knees were tender, the left always worse than the right. They were never reddened. The mother, who seems an intelligent woman, was questioned very carefully as to these attacks, and gave always the same account. She was positive that not a month had passed since the child's second year without an attack of this cramp colic and vomiting. She has never noticed any blotches or redness of the skin.

Present Attack.—Three weeks ago the patient was vaccinated, and two days later was unable to go to school on account of loss of appetite and pains in the limbs, which lasted for two or three days, and have recurred at intervals. She had no cramps, no vomiting. The present attack dates from four days ago, when she began to have fever and vomited a good deal, chiefly the food she had eaten. With this there was much pain in the abdomen. The left leg became swollen from the knee down, and a dark eruption appeared upon the skin of the legs in the form of dark brown spots about the size of a quarter of a dollar (2.5 cm.) in diameter, raised and capped with small blisters. The spots were painful. The next day the eruption had faded, but other red spots came out about the knees, and yesterday they appeared on the back and elbows. The pain has persisted during the past four days, and she has vomited at intervals. The mother says it is the same sort of painful attacks that she has had so frequently.

Present Condition.—Dr. Fitcher dictated the following note: The child is fairly well nourished. Lips and mucous membranes are of a good colour. The teeth are discoloured, but not decayed. The tongue is coated with a slight brownish fur. Pupils equal and of normal size, react to light and on accommodation. Pulse, 108, of fairly good volume and tension, regular in force and rhythm. Vessel wall not felt. Temperature on last admission at 10.30 last night was 99.5°, since when it has not been higher.

On left upper arm is a very large scab, the result of vaccination sixteen days ago. The skin is slightly reddened and infiltrated about the crust. The glands in the axilla slightly enlarged. Over the right elbow are a number of slightly elevated papules which are somewhat hæmorrhagic in character. The redness does not disappear on pressure. There is one small hæmorrhagic papule on the left elbow-joint. Over the right knee-joint are a number of purpuric spots. Some of these are about three-quarters of a cm. in diameter. A few pin-head purpuric spots over left knee-joint. There are no urticarial wheals on the body. Vaso-motor skin reflex active, but no factitious urticaria. None of the joints are swollen, nor are any of them painful this morning; no stiffness of the cervical muscles. Post-cervical glands slightly enlarged: left epitrochlear gland distinctly enlarged and easily palpable: inguinals very slightly enlarged.

Thorax.—Well formed and symmetrical. Lungs clear over fronts and backs on auscultation.

Heart.—Point of maximum impulse visible and palpable in fourth interspace, 4 cm. from mid-sternal line. Impulse forcible; no thrill. Cardiac dulness not

increased. Auscultation—first sound very loud and booming at apex; both are clear at aortic and pulmonary areas, and of normal relative intensity. No murmur in vessels of neck.

Liver.—Is not enlarged.

Abdomen.—Looks natural, symmetrical. Respiratory movements present. General abdominal tenderness. The pain is most severe in the umbilical region; no localizing symptoms in region of appendix. Patient says it is a little more tender in the right than left iliac fossa. There is no muscular spasm. Spleen not palpable.

March 30th.—Her temperature is normal. There is a diffuse erythematous rash over the right cheek and the lower jaw, and a few discrete erythematous raised patches on the neck. The redness does not entirely disappear on pressure. On the upper and lower lips are small patches of a cherry-red colour, which partially disappear on pressure. No pain or swelling of the joints. Blood cultures made by the usual method negative. The urine has a specific gravity of 1.027, no albumin, no tube casts.

March 31st.—There are a few new purpuric spots over the left knee-joint. Those on the right knee and right elbow are gradually clearing. She still complains of pain in the region of the navel. On examination there is a little blood in the stools to-day.

April 1st.—Tongue still very heavily coated. Over the left elbow there is a fading crop of purpura. On the right elbow there is patch of erythematous infiltrated nodules of a deep red colour, capped with dried vesicles. On the right knee I noted that there were several infiltrated patches looking like purpura urticans.

April 2nd.—Patient cries if the abdomen is touched. There are a few fresh raised purpuric spots on both elbows.

April 3rd.—Fresh purpuric spots in both gluteal regions, many of them slightly elevated.

April 4th.—Fresh spots on knees, elbows, and buttocks. Yesterday the child complained much of pain. She still vomited occasionally after taking food. A few flecks of blood in the stools.

April 5th.—Fine small purpuric spots appeared since yesterday on the left elbow. No abdominal pain to-day. The heart sounds are quite clear.

April 6th.—Yesterday the child began to pass more blood in the stools. During the night she had several evacuations of bloody mucus and of a thin bloody fluid. She had slight pain in the abdomen. She has had about a dozen small stools this morning, all with blood and mucus.

At the bend of the left elbow there appeared since yesterday subcutaneous hæmorrhages from 5 cm. to 2.5×1.5 cm. in diameter. They are tender to the touch and resemble recent bruises. A number of smaller patches are scattered along the extensor surfaces of the forearm. Fresh purpura about the left elbow.

April 7th.—Patient does not look so well this morning. Complains of severe pain in the abdomen. She looks a little anæmic from the intestinal bleedings, which continued throughout yesterday and last night, but are less frequent to-day.

April 9th.—She had seven stools in the past twenty-four hours; fluid, greenish-black, with a small amount of thin fluid blood. Very little abdominal pain.

April 10th.—Fresh hæmorrhages on both surfaces of the forearms, a few on the

right hand. Bruise-like ecchymoses on the palm of the right hand, and a large one on the left.

From the 12th the patient improved. There were a few fresh purpuric spots on the 14th and on the 16th, on which date too there were noticed several small ulcers over the tongue and inner surface of the right cheek.

April 22nd.—The patient has been doing remarkably well. On the 29th she was discharged.

Blood.—A very careful study of the blood in this case was made by Dr. Gwyn, of which the following is a summary:—

Red Blood Corpuscles.—On admission they were nearly 6,000,000 per c.mm. After the hæmorrhages from the bowels they were reduced, but did not fall below about 4,800,000.

Hæmoglobin.—Eighty per cent. on admission, falling after the hæmorrhages, and was only 60 per cent. on April 24th.

Leucocytes.—There was pronounced leucocytosis from the onset: on March 29th, 18,800; on March 31st, 37,000; on April 2nd, 45,000. Then they gradually fell and were normal on April 27th. The differential count at the height of the leucocytosis (500) gave polynuclears 86 per cent., small mononuclears 6·2, large mononuclears 2·6, transitionals 2·8, eosinophiles ·4, nucleated red blood corpuscles 1.

Coagulation Time, April 7th, from 1 minute 30 seconds to 1 minute 55 seconds; April 23rd, 2 minutes to 2 minutes 15 seconds.

Blood Platelets, April 13th, 122,000 per c.mm.; April 23rd, 230,000 per c.mm.

Blood Cultures, made twice, were negative.

The temperature range was between 99° and 100·5°; even when she was quite convalescent her temperature was between 99° and 100°.

May 8th.—The patient returned to-day complaining of a breaking out of spots on the legs, which came the day after her discharge. She looked a little pale, and she had numerous purpuric spots over the ankles, legs, knees and lower thighs. Over each elbow on the olecranon there was an erythematous spot about 2 cm. in diameter, pale red, raised, with a tendency to clear in the centre. An identical spot almost completely surrounded the tip of the little finger of the right hand. The edge of the spleen was distinctly felt. There were no urticarial wheals, and no abdominal tenderness.

ANALYSIS OF THE SYMPTOMS.

I.—THE VISCERAL MANIFESTATIONS.

(a) *The Gastro-Intestinal Crises.*—This special feature in the entire group of cases presents the most distressing, though not the most dangerous, of the visceral complications. The attacks may be characterized by colic alone, more frequently colic and vomiting, colic with vomiting and diarrhœa, and lastly colic with vomiting of blood, or the passage of blood in the stools. As a rule, with the gastro-intestinal crises there are cutaneous manifestations, but not

invariably. In Case 2 there were severe attacks of the most agonizing colic without any other symptoms. Cases 1 and 18 are particularly interesting as illustrating the nature of certain obscure forms of gastro-intestinal colic, particularly in children. Case 1 consulted me for remarkable attacks, which recurred every two months, lasting for from six to ten hours, accompanied with fever and remarkable delirium. These had recurred for nearly eight years. For the first six years, with the attack he had an outbreak of what he called big liver-spots. For two years there had been no skin complications. In Case 18, for five years the child had been plagued with attacks of colic and vomiting, for which the mother had consulted many physicians. When she came under my observation the nature of the trouble was made evident by the concurrent outbreak of an exudative erythema. These crises are identical with those which occur in the angio-neurotic œdema. Several members of the family with this disease which I have described* had had urticaria, and the patient who came under my care had coincidentally with the angio-neurotic œdema characteristic urticarial wheals on the chest and thighs.

Case 14 illustrates the remarkable relationship which exists between urticaria and the gastro-intestinal crises. The association of digestive disturbance and hives is common enough, but these cases are, I think, somewhat different, and it is reasonable to suppose that the lesions causing the pain in the abdomen are associated with the formation of wheals and swelling in the mucous membrane of the stomach and intestines. F. A. Packard† has recently considered the question of urticaria of the mucous membranes in an exhaustive paper, in which many references are given to the formation of wheals in the throat and mouth. Though writers speak of involvement of the stomach and intestines, I know of no instance in which the lesions have been actually seen in these parts. Colcott Fox, in his article on "Urticaria," in *Allbutt's System*, states that wheals have been seen in the stomach of a rabbit and dog and cat. In Case 14 the patient had for years recurring attacks of severe pain in the stomach, with coincident urticaria, the skin lesions lasting for a much longer period than the abdominal symptoms. Packard refers to

* *American Journal of the Medical Sciences*, April, 1888.

† *Archives of Pediatrics*, October, 1899.

a case of Lemonnier, in which there had been giant urticaria and an attack of vomiting of blood, which was attributed to urticaria of the stomach. Both Pringle* and Chittendent† have reported cases of recurring attacks of hæmatemesis with urticaria. It is interesting to note that in Case 14 the patient had hæmorrhage from the stomach as a terminal symptom. In the series of eighteen cases, urticaria was present at some time or other in eight cases, not including the three cases in which acute circumscribed œdema was present.

(b) *Hæmaturia and Nephritis*.—Acute nephritis occurred in cases 3, 4, 5, 6, 8 and 15. Chronic nephritis occurred in Case 14, and hæmaturia at the close. In a case referred to in my previous paper, reported by Dr. Prentiss, of Washington, a chronic nephritis of several years' duration followed an attack of arthritis, with purpura and gastro-intestinal crises.

To two of the instances of nephritis I may call particular attention, as death directly occurred from this complication. In Case 3, a boy of six years, the onset was with pains in the ankles, colic and urticaria. The colic recurred with great severity. It was not until the fifth week of his illness that the urine became scanty and albuminous, and showed red blood corpuscles and many tube casts. He died with dropsical symptoms in three months. In Case 8 the disease set in with pain in one ankle and urticarial rash. Within a month the child had anasarca, with albuminuria and tube casts in the urine. The patient died in uræmic coma.

(c) *Hæmorrhages from the Mucous Surfaces*.—These occurred in six cases; from the bowels in Cases 3, 6, 11, 14 and 18; from the nose and gums in Case 10; from the stomach in Cases 11 and 14; from the kidneys in Cases 11 (not associated with nephritis) and 14. Several of the cases of acute nephritis had a few red blood corpuscles in the urine.

(d) *Cerebral Symptoms*.—In two cases in the series there were remarkable symptoms pointing to involvement of the brain. In Case 1, a man aged 27, who during six years had recurring attacks of gastro-intestinal crises, with the onset of the symptoms he had fever and became delirious and talked nonsense. In Case 15 it seems highly probable that the recurring attacks of hemiplegia, five

* *Clinical Society's Transactions*, Vol. XVIII.

† *British Journal of Dermatology*, 1898.

or six within a year, were associated with changes in the brain of essentially the same nature as those which subsequently occurred on the lip and in skin. They remind one somewhat of the attacks of recurring aphasia with paralysis in cases of Raynaud's disease.

(c) *Pulmonary Complications.*—Only one case of the series (2) presented marked pulmonary symptoms, to which I have referred in the supplementary history of the case.

In erythema nodosum and in urticaria, asthmatic attacks have been described, due, it is thought, to changes in the mucous membranes of the bronchi of a nature analogous to those in the skin.

Packard, in the paper already referred to, reports cases of the coincidence of asthmatic attacks with urticaria, and gives a very full consideration of the literature. The two conditions have occurred coincidentally, or an outbreak of urticaria may replace an asthmatic attack. In Case 2, without positive asthmatic attacks, there were constant signs of bronchial trouble, but it was not until the emphysema was well established that there were bouts of nocturnal dyspnoea.

It is interesting to note that in not one of the series of eighteen cases was there acute endocarditis, a not very infrequent lesion in certain forms of polymorphous erythema.

II.—SKIN LESIONS.

An analysis of the lesions of the skin in this series is of interest. In four (Cases 6, 8, 11 and 16) purpura alone was noted. In the remaining fourteen cases the lesions were characterized by erythema with exudation, either urticaria or urticaria with purpura, acute circumscribed oedema, or the lesions of a typical erythema multiforme. Acute circumscribed oedema occurred in Cases 2, 7, and 15, all in association with other exudative lesions. It is interesting to note that the skin lesions may be absent for a protracted period as in Case 1 for two years with recurring crises of great severity, or in Case 8, severe attacks for five years before any skin lesions appeared.

One of the most interesting features in these cases is the inconsistency of the character of the skin lesions; thus in Case 2 the lad had urticaria in his first outbreak, subsequently urticaria and purpura, and later an area of angio-neurotic oedema of the most

characteristic form, and still later, on one hand, very typical lesions of an exudative erythema.

Case 14 illustrates an extraordinary recurrence of urticarial attacks for many years. No cutaneous hæmorrhages appeared until his final and fatal illness, in which there were hæmorrhages into the skin and from the mucous surfaces. In some cases urticaria has existed with the purpura, and in some, simple purpura in one place and purpura urticans in another. I have not seen the co-existence of urticaria with angio-neurotic œdema, which has been referred to recently by Oppenheimer (*Lancet*, 1898, Vol. I. p. 570), but in one case of the hereditary form, which I described some years ago, urticaria had preceded the outbreaks of œdema.

This great variability in the character of the skin lesions is of considerable moment, and it is quite possible that within a year in an individual case the diagnosis might be given of simple purpura, peliosis rheumatica, angio-neurotic œdema, exudative erythema, and simple urticaria.

III.—ARTHRITIS.

Swelling of the joints or of the synovial sheaths or peri-articular tissues occurred in ten of the cases in the series. The joint trouble may be transient, and, as in Case 2, may occur but once in a prolonged illness. There may be a polyarthrititis of great intensity simulating acute rheumatic fever, as occurred in Case 4. Infiltration of the peri-articular tissues and of the subcutaneous structures over the joints may simulate a genuine arthritis. In some of the cases the swelling was chiefly along the tendons, as on the backs of the hands. In one case (5) there were swelling and pain in the left biceps muscle. In other instances, as in Cases 7 and 18, there may be swelling of the foot and ankle joint and of the leg, due to extensive infiltration, œdematous or hæmorrhagic. In Case 18, the attacks of swelling of the knees and legs, without any skin rash and in connection with the recurring cramp-colic, were due, in all probability, to infiltration about the joints. I have not seen subcutaneous fibroid nodules in any of the cases.

And lastly a few remarks on *the mutual relations of the members of the erythema group*.

That there is a close affinity between exudative erythema, Henoch's

purpura, peliosis rheumatica, urticaria, and angio-neurotic œdema, is shown by, first, the similarity of conditions under which they occur; secondly, the identity of the visceral manifestations; thirdly, the substitution of these affections for each other in one and the same patient at different times. The student is, however, at the outset confronted by this interesting feature. On the one hand, similarity of lesions may result from a variety of causes. The rash of iodism, of endocarditis, of scurvy, and of small-pox are identical. The wheals of urticaria from nettles, of an acute gastric toxæmia, and from the poison of the malarial parasites are indistinguishable. A typical acute exudative erythema may result from several causes. On the other hand, unity of cause may be associated with a variety of lesions. In one and the same person within a few months, presumably under the same ætiological conditions, there may be a multiplicity of skin lesions; and, as in several of the cases here described, four or five separate diagnoses would be required to cover the cutaneous lesions at different periods. We cannot say why in one case there is exudate of red blood corpuscles without erythema (purpura), in another a serous exudate with hyperæmia (urticaria), in a third serous exudate with hyperæmia and hæmorrhage in varying degrees (erythema exudativum multiforme), in a fourth serous exudate alone (localized œdema). Two or three of these lesions may co-exist or may rapidly succeed each other during the same attack, or in succeeding attacks the skin lesions may vary, urticaria in one, purpura in another, and so on.

Ætiologically the cases here reported are very difficult to group. Cases 1 and 15 are peculiarly obscure, and suggest a relationship with migraine. In Case 12, associated with a dilated stomach, the cause could be looked for in all probability in the products of gastric fermentation. Case 14 belongs to that remarkable group, comprising many cases of localised œdema (as well as ordinary urticaria), in which we must suppose that during long periods of years, in association with a special vulnerability, inherited or acquired, of the vaso-motor system, there is manufactured some poison, either endogenous or exogenous (gastro-intestinal). Case 5 followed an acute infection (gonorrhœa), and comes in the category of the acute infectious erythemas, of which two forms may be recognised, a specific independent malady, which has been met with in epidemic form, and a variety which may occur

in any of the acute infectious diseases. It is quite possible that some of the cases were of rheumatic origin, though I hold with those who do not look upon the arthritis, so commonly present, as necessarily indicating the presence of a rheumatic poison.

A point of special interest is the relationship of certain forms of purpura to the erythemas. Schönlein's peliosis rheumatica may be regarded as a hæmorrhagic type of an exudative erythema, and Henoch's purpura, which is characterised specially by the occurrence of gastro-intestinal crises, belongs to the same group.

Several interesting communications have of late dealt with this question. The case reported by Dr. J. Fayer* illustrates the sequence of arthritis, œdema, erythema exudativum purpuricum, and finally sloughing of the affected areas. The illustration suggests peliosis rheumatica. A very important paper "On the Relationship of Purpura Rheumatica to Erythema Exudativum Multiforme," † after describing several interesting cases of purpura rheumatica and giving an analysis of those under his care, forty-two in number, Mackenzie says: "I now come to the *nosological position* of purpura rheumatica. The prevailing view is that purpura rheumatica is a variety of erythema multiforme, and Schönlein's original description of the disease certainly is in accordance with this conclusion. With this view I do not altogether agree. I admit its very close alliance, and that the various forms of erythema are almost as closely associated with rheumatism as is the form of purpura, to which I should restrict the term purpura rheumatica. But in e. multiforme the hæmorrhage is only incidental, whilst in purpura it is primary and essential, and in the majority there is no co-existing erythema. Still in a small minority we find some form of erythema co-existing. In erythema nodosum we see precisely the same thing. In the majority of cases we find the eruption limited to the nodose form, though more rarely we have other forms of erythema associated with it. Thus, admitting that e. nodosum is a variety of polymorphic erythema, we recognize it as a distinct type. Some would go so far as to call it a distinct disease, but in this I do not concur. Similarly I claim p. rheumatica, such as I have sketched, as a distinct clinical type which deserves recognition, and I have endeavoured to indicate the class of cases to which I think the term should be restricted." He very correctly

* *British Journal of Dermatology*, Vol. VIII.

† *Ibid.*

concludes that it is undesirable to consider all cases of purpura to be essentially of the nature of polymorphic erythema.

Certain French writers, as Thibierge, in the recently issued second edition of the *Traité de Médecine* (Vol. III.), group under the erythemas both the purpuras and the urticarias, describing only three principal types of the former—the rheumatic and infectious purpura, and the purpura hæmorrhagica of Werlhof.

The relation of the so-called angio-neurotic œdema to the other members of the erythema group is, I think, less doubtful. That it is essentially of the same nature as urticaria, and should be grouped with it, is shown by their simultaneous outbreak, by their substitution one for the other, by the identity of the visceral complications, and by the peculiar local limitation occasionally seen in both, as to the face or hands. I do not know if the simple urticaria has ever been described in members of the same family through a series of generations, but, as I have already mentioned, a patient under my care with the hereditary form also had urticaria. A very interesting paper on this affection has recently been published by Schliesinger, under the name of "Hydrops hypostrophos" (*Münchener med. Woch.*, August 29th, 1899). He groups together the various manifestations of angio-neurotic œdema—the acute recurring œdema of the eyelids or of the lips, the acute recurring exophthalmos, certain forms of nervous coryza, the hydrops articulorum intermittens, the acute œdema of the tongue, of the pharynx, and of the larynx, certain forms of nervous asthma, the acute œdematous swelling in the stomach and the intestines (causing recurring attacks of colic and the intermittent vomiting of Leyden), intermittent forms of nervous diarrhœa, and, lastly, certain affections of the kidneys causing polyuria or hæmoglobinuria. There is really no warrant for separating too sharply angio-neurotic œdema and urticaria; Oppenheimer has seen them occur together, and many observers have noticed the interchange of urticaria with acute localised œdema.

What is needed, in truth, is a dermatological Linnæus, to bring order out of the chaos at present existing in the group of erythemas. While I feel that in bringing together a somewhat motley series of cases I may only have contributed to make the "confusion worse confounded," on the other hand there is, I think, a positive advantage in recognizing the affinities and the strong points of similarity in affections usually grouped as separate diseases.