ethidene was administered with the gas- and ether-inhaler. He did not respire regularly at first; but he never coughed, and was not observed to swallow. After twelve or fourteen respirations, he talked, and commenced to struggle. The face-piece was then removed for a little distance from the face, to allow him to breathe some fresh air. The struggling and convulsive movement which followed interfered with the precise observation of the state of the pulse; when these had ceased, there was hardly any pulse, and it soon disappeared; but he continued to breathe ten or twelve times in a satisfactory manner, and then a pause was noticed between the respirations. His head was immediately extended backward and downward over the edge of the bed, and the tongue drawn forward, whilst the feet were raised, and artificial respiration commenced. This, in about a minute, restored him so far as to cause him to try to speak in an indistinct manner, as a patient often does just before waking up. The pulse became distinct, all danger seemed past, and he was again placed in the position for operating. In doing this, he seemed to raise his head voluntarily, and some more of the anæsthetic was about to be given, when the pulse was again noticed to be failing. Without loss of time, the artificial respiration was recommenced as before, and, during the first three minutes, there were several natural gasping inspirations, but the pulse was never felt again. The case becoming desperate, an opening was made through the crico-thyroid membrane into the larynx, and a silver tube introduced. Air was blown through the laryngeal tube, during artificial inspirations, for three-quarters of an hour, after which it became evident that further attempts were useless.

The *post mortem* examination, made by Mr. Samuel Lloyd of Bloomsbury, revealed a large flabby heart, with the usual amount of fat on it; the substance seen on section, of pale tint mottled with yellow, having the ordinary appearance of fatty degeneration. The lungs were a little emphysematous, and congested posteriorly, but fairly crepitant. The spleen was friable; other organs healthy; the liver rather large.

The heart was carefully examined by Dr. Crosby, who wrote the following notes of it. "The apex of the heart, including the extremities of both ventricles, was covered with a layer of fat five-eighths of an inch in thickness, which mingled with the muscular wall so as to render it difficult to define where one ceased and the other began. The microscope showed the muscular tissue at this part to have undergone extensive degeneration, whole fibres consisting of strings of fat-globules, displacing the true sarcolemmal elements. At other portions, where to the unaided eye the muscle appeared fairly healthy, abundant deposits of oil-globules existed."

REMARKS.—With reference to this sad case, the first question is, What was the cause of death? It was clearly one of cardiac syncope, the breathing continuing for some time after the circulation had stopped. It could be accounted for, first, by supposing the administration of an excessively strong dose of the anæsthetic; secondly, by exhaustion of a weak heart in consequence of violent effort; or, thirdly, by the inefficiency of the heart's action, produced by advanced fatty degeneration. Such a heart as we found was ready to cease beating from comparatively slight causes. He had inhaled but a small quantity of the anæsthetic, and for a short time. Holding the head in a depending position, with the feet raised, and ten or twelve artificial respirations, were followed by a gasping inspiration, his pulse became regular, and he commenced speaking. Had the syncope been produced by a large dose of dichloride, the pulse would not have so soon recovered on lowering the head. If recovery of the heart's action had been brought about by the artificial respiration dissipating the vapour from the chest, and so supplying the heart with purer blood, the heart, once fairly started again, would probably have continued to act. Nevertheless, as death was probably the result of several factors, may not the depressing effect of ethidene have made the syncope fatal, which, under gas or chloroform or ether, might have been recovered from? What we know of the stimulating effect of ether would lead us to conclude that it would have been safer, but the struggling produced by ether would have been dangerous in this particular case. Had chloroform been used, and the same struggling occurred, the chances of resuscitation would have been less. The case shows how very important it is to watch the pulse as well as the breathing. The respiration was effectually performed some time after the pulse ceased to be perceptible. If the inhaler had been applied until the breathing showed signs of danger, the restoration of the circulation, which unfortunately was for a brief time only, would not have occurred at all. In any case where the pulse is observed suddenly to fail, I would not only remove the inhaler from the face, but use a towel or some kind of fan to blow the vapour away from the patient's lips, and I would also assist the natural respiration by gentle pressure on the sternum during the respirations. Seeing, also, that raising the patient to a position for operating was quickly followed by syncope, I would, in a similar case, keep the head dependent until

recovery were complete, in spite of the disadvantage of having a struggling patient to deal with.

Some of you may ask whether the failure of the heart might not arise from the stoppage of blood in the lungs, through their not being supplied with oxygenated blood. My reply is, that the circulation was restored, and the patient's lips became of almost natural colour when he was put back in position for the operation, and the inhaler was not again applied. Moreover, in giving gas, ether, or ethidene, I have always excluded air, upon the same principle, until voluntary struggling has ceased; and these cases in all exceed twenty thousand, amongst which not a single death occurred.

REMARKS ON ULCERATIVE ENDOCARDITIS, OR MULTIPLE EMBOLISM.*

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THERE are few subjects more interesting to the practitioner than embolism; but, of all its forms, that which now often goes by the name of ulcerative endocarditis—that form in which the granulations developed on inflamed valves, and may be the diseased valves themselves, tend to undergo disintegration and to be shed in small fragments into the blood-stream—is at once, perhaps, the most interesting and the most obscure.

The cases here referred to are certainly common; but there can be no doubt that they are largely misinterpreted, being apt, according to circumstances, to be mistaken for cases of ague or malarial poisoning, for cases of chronic pyæmia, for cases of enteric fever, for cases of sub-acute rheumatism, for cases of tuberculosis, and not improbably for many other affections of different kinds. The symptoms, indeed, of ulcerative endocarditis may simulate those of any of the diseases here named. There is generally, however, something special in the symptoms, something peculiar in the progress of the case, something suggestive in the circumstances under which the symptoms have arisen which stamps its nature. Especially there is generally manifest heart-disease; generally there has been antecedent rheumatism; and generally, in addition to a febrile temperature of hectic or remittent type together with the various phenomena referable to such temperature, sooner or later distinct implication of certain organs may be recognised.

I shall not stop to consider the question whether ulcerative endocarditis is dependent on the presence of micrococci in the blood and in the cardiac lesions, as many German writers contend, further than to state my own belief that, as a general rule, at any rate, there is no causal relation between them. I believe that the disintegration, or ulceration if you will, may take place spontaneously, so to speak, in any of the inflammatory or degenerative affections of the valves or other parts of the endocardial surface; and that it is especially common after or in the course of acute rheumatic endocarditis. The particles which become detached, suspended in the blood, may of course be carried into any of the terminal systemic arteries, and no doubt are carried indifferently to various parts of the body. But the consequences of their impaction will of course depend partly on the size and anastomotic relations of the arteries in which they become arrested and which they obstruct, and partly on the importance of the organs to which the obstructed arteries belong. And hence, since the brain and kidneys and spleen not only are important organs, but are supplied with arteries which beyond a certain point do not anastomose with one another, and which, therefore, if obstructed, are liable to involve the softening and disintegration of the districts to which they lead; it is easy to understand why they especially should manifest the consequences of embolic obstruction. And, as a matter of fact, in ulcerative endocarditis, the vessels of the spleen become from time to time thus occluded; so-called "infarcts", or wedges, varying, it may be, from the size of a walnut downwards, are developed in its substance, and the organ becomes enlarged. The renal vessels become similarly affected; infarcts, wedge-shaped and extending from the surface vertically inwards, form, and the kidneys enlarge. As regards the brain, no doubt analogous conditions are always liable to

* Read before the East Surrey District of the South-Eastern Branch.

arise; and occasionally effusions of blood or circumscribed softenings occur, as in a case of ordinary embolism. It must be added, that if the walls of the heart, in the liver, and elsewhere, small points of disintegration, surrounded by congestion, occasionally appear, doubtless due to the same cause; that smaller or larger extravasations of blood are liable to take place beneath the integuments and serous membranes; and, further, that inflammation of the serous membranes (occasionally suppurative) is apt to supervene. As a general rule, of course, disease is limited to the left side of the heart; and consequently the arteries of the lungs escape the pluggings to which other arteries are liable.

It will be gathered from the above remarks, that the main indications of ulcerative endocarditis are the supervention, in a case of manifest valvular disease of the heart, of remittent febrile symptoms of more or less irregularity, attended with rigors, and in which the temperature may rise to 105° and upwards, and sink below the normal; and the occurrence, sooner or later, of symptoms pointing to the implication of the various organs above specified, especially tumefaction and tenderness of the spleen, and albuminuria, associated possibly with tenderness and pain in the loins. Other phenomena, which are much less frequent, but which tend to establish the correctness of the diagnosis, are jaundice referable to congestion of the liver, serous inflammations, and paralytic or other symptoms referable to the brain.

I refrain from here discussing the symptoms of ulcerative endocarditis at length, because the cases which I now proceed to narrate will give a more complete picture of the disease than a mere formal discussion could possibly do. I should like, however, to add that, in my view of the question, the difference between a case of ordinary solitary embolism and one of ulcerative endocarditis or multiple embolism is only one of degree; that, between these, which may be regarded as the extremes, many intermediate conditions occur; and that the phenomena of ulcerative endocarditis, of which my cases are extreme examples, occur temporarily, or (so to speak) in a dilute form, in many cases of heart-disease, probably without being recognised as such.

CASE I. Syphilis (?): Ulcerative Endocarditis: Symptoms simulating those of Ague: Infarcts in Kidneys, probably also in Spleen and Heart: Suppuration of Serous Membranes: Death.—A. J., a married woman, aged 35, was admitted into St. Thomas's Hospital under my care on February 12th, 1878. She seemed to have been a fairly healthy woman, and never to have had rheumatism or any other serious disease until within the last fourteen months. She had had, however, two miscarriages. During the last fourteen months, she was said to have suffered from syphilis. She had sore throat, sore places on the lips, breakings out about the body, and falling off of hair. In October last, she stayed at Overton, a village in Hampshire; and, on her return to London, was attacked, as she said, with ague. The fits came on once and sometimes twice a day; comprised a cold, a hot, and a sweating stage; and lasted generally for several hours. Her illness continued for six weeks. After an interval of two or three weeks, they recurred in the second week of December, and continued without intermission until December 23rd. She was then quite well, she said, for two days; but on Christmas Day she went into a cold bed, to which she attributed the return of her malady, which came on at once and had persisted ever since. During the last four weeks, the paroxysms had recurred regularly every twelve hours. She said, however, that the paroxysms were now of longer duration than formerly; and that the severe rigors she once had were replaced by a slight creeping sensation. She had lost flesh, and latterly her appetite had been bad.

She was a thin, dark, sallow-looking woman, sensible, but somewhat lethargic in manner and appearance. There was no eruption on the skin, or other sign of syphilis. Her tongue was moist, but slightly furred; her appetite was moderately good; her bowels rather confined. The lungs were normal; respirations 20 in the minute. Præcordial dulness was normal. The apex of the heart beat just below the nipple, and feebly. There was a loud systolic mitral murmur. Pulse regular, small and weak, 116. Her temperature at the time this note was taken was normal. The liver-dulness was not increased. The splenic dulness was about two inches and a half long; but the organ did not extend below the ribs. The urine was free from albumen.

For the first four days, or rather from the afternoon of the 12th, when she was admitted, until midnight on the 15th, she was put under no special treatment; but she was carefully watched, and her temperature taken every hour. During this time, she had five distinct ague-like attacks, each of several hours' duration, the first of which reached its height at midnight on the 12th; the second, midday on the 13th; the third, early on the morning of the 14th; the fourth, at midnight on the 14th; and the fifth, midday on the 15th. Each attack presented a cold, a hot, and a sweating stage; and during each the temperature rose to from 104.8° to 105° , and fell in the intervals to from 97° to 95.8° . She continued ill and weak. On the morning of the 16th, salicylate of

soda was ordered, and it was continued until midday on the 19th. It had its usual influence in causing headache, noises in the ears and deafness, sickness, and on the night of the 19th hallucinations. For the first two days, it was given in half-drachm doses before each expected attack. Throughout the latter part of the time, twenty grains were administered every two hours. During this period of three days and a half, she had six distinct febrile paroxysms: two on the 16th, in each of which the temperature rose to 105.6° , and between which it fell to 104.6° ; two on the 17th, and two on the 18th, in which the height of the temperature-curve gradually fell to 103.4° , and in connection, at any rate, with the earlier of which, the interparoxysmal falls were diminished. The paroxysms, however, on the whole, were becoming more frequent, and probably the falls were interrupted in consequence. On the morning of the 19th, however, the temperature sank as low as it had ever done, and remained low for an unusual length of time. There was still no improvement in her general condition.

At midday on the 19th, quinine in five-grain doses three times a day was substituted for the salicylate, and the treatment was continued until midday on the 26th. The temperature during this time underwent considerable change, and presented remarkable variations. On the 19th, 20th, and 21st, it scarcely rose at any time above 100° , or sank below 97° ; but its oscillations between these extremes were frequent; and, although she had no rigors, her skin presented at different times extreme cold, great heat, and profuse perspirations. But during the next five days the febrile attacks acquired, with some degree of irregularity, their old intensity. Within this period, she had ten distinct attacks, in most of which the temperature reached to between 103° and 104° , with intervening falls to 96° or 97° . During the whole of this time, she was evidently becoming worse and worse. She was drowsy and apathetic, and indisposed to answer questions; she was exceedingly pale and sallow; she was once or twice sick; she was troubled part of the time by a cough, attended with a little sanguinolent expectoration; and her tongue, which was at first clean, latterly became dry and fissured. But she was in no pain. Her respirations were 24 in the minute, and her pulse varied only from 96 to 100. There was no physical sign of pulmonary mischief. On the 26th, her tongue was dry; her abdomen was slightly tumid; there was some tenderness in the splenic region, with slight splenic enlargement; the urine, which had a specific gravity of 1025, contained a small quantity of albumen, with hyaline casts and mucous corpuscles; and the blood presented a marked excess of white corpuscles. Dr. Sharkey noted, besides the systolic murmur at the apex, a localised rough to-and-fro sound at the base of the heart.

About noon on the 26th, five minims of liquor arsenicalis were ordered to be given three times a day; and the medicine was continued until her death on March 1st, at 6 A.M. The temperature fell to 95.3° in the afternoon of the 26th, and rose to 105° about midnight; it fell the next morning to 95° , and rose about noon to 105° . Subsequently, the variations of temperature were very numerous; but it never fell again below 100° , or rose above 105° , and for the most part oscillated between 102° and 104° . At the moment of death, it was 101.6° . During this time, she was manifestly sinking. She was becoming weaker and thinner, and more apathetic; was very sleepy, and indeed somewhat comatose, and at times inclined to ramble. Occasionally she passed her urine unconsciously. Her tongue and lips were dry and cracked; her teeth were covered with sordes. Extension of dulness with some degree of tenderness still continued in the splenic region. The urine had a specific gravity of 1012, and contained albumen. Respirations 24; pulse 108. She became more and more comatose, and died without any other marked change in her symptoms.

NECROPSY.—The body was pale, well nourished, and somewhat fat. The peritoneal cavity contained a pint of semipurulent fluid, mixed with ropy pus; no congestion. There were old adhesions about the uterus and ovaries. The liver was large, soft, and flabby; the lobules were coarse and fatty. The spleen was six inches long, three inches wide, and three-quarters of an inch to an inch thick; it was dark-coloured and pretty firm. One or two small dark red spots, suspicious of embolism, were seen here and there. The kidneys were small, especially the left; their capsules were partially adherent; their surfaces were smooth, but with small scattered depressions due to old infarctions. The colour of these was dead white, with here and there a yellowish tinge and small red or purplish dots. On section, some reddish cones of more or less recent infarction—chiefly small—were also observed.

The cortex was pale and somewhat atrophied. The pericardium contained an ounce of slightly turbid fluid, and presented a few small ecchymoses. The heart was somewhat enlarged; both ventricles, but mainly the right, being dilated. The muscular tissue of the organ presented two minute, apparently embolic, abscesses. All the valves

were healthy, with the exception of the mitral. On looking at this from the auricular aspect, a mass apparently as large as a marble seemed nearly to fill the orifice. This was adherent to the posterior segment. It consisted of an irregular outgrowth of vegetations, which hung down into the ventricle, and measured three-quarters of an inch vertically by half an inch thick. The chordæ tendinæ connected with the diseased arteries were thickened, and several were ruptured. The auricular surface was slightly granular; the ventricular very irregular and eroded. The mass was of irregular consistence; in some parts hard; in others soft and crumbling. The pleuræ contained from a quarter to half a pint of turbid puriform fluid, and presented a few subserous petechiæ. The lungs were generally crepitant, but presented here and there small ecchymoses, in the centres of some of which were small firm plugs of fibrin. No further disease was discovered.

REMARKS.—This case is a very interesting one, and one for several reasons specially interesting to myself. In the first place, I am bound to acknowledge that, although on admission I made a note of the mitral murmur, I was so satisfied, from the statements made by the patient and from the character of her symptoms during the first two or three days of her residence in the hospital, that she was really suffering from ague, that I not only neglected to attach any importance to her cardiac affection, but actually for a time forgot that there was anything the matter with her heart. Consequently, when, after the lapse of a few days, I had satisfied myself that her symptoms were not due to malarious influence, I looked, not to the heart, but to the uterine organs, for the source of the symptoms, which I was now disposed to regard as pyæmic. There was nothing in the history, however, and nothing in the symptoms, to indicate affection of these parts; and when the cardiac disease was, so to speak, rediscovered, the case was regarded, as in fact it turned out to be, one of ulcerative endocarditis. How long her heart-disease had existed, and what was its cause, could not be determined; but probably the disease was due to a forgotten attack of rheumatic fever, or had occurred in connection with her syphilitic symptoms during the last twelve months or so of her life. The symptoms were interesting, not only from their resemblance to those of ague, but because antiperiodic remedies had little or no important influence over them, and because of the long intermissions which occurred during their progress. The enlargement and tenderness of the spleen, and the albuminuria which came on in the course of the disease, were important diagnostic signs. The *post mortem* examination confirmed the opinion previously held as to the nature of the case; for not only was the affected mitral valve in a condition of disintegration, but numerous infarcts were found in the kidneys; the spleen was large, and presented indistinct traces of the same condition; there were minute spots of disintegration in the heart; and there were numerous subserous petechiæ, and a tendency to suppuration in the peritoneal cavity and in the pleuræ.

CASE II. *Rheumatism: Ulcerative Endocarditis: Infarction in Spleen and Kidneys: Extravasation of Blood into Right Cerebral Hemisphere: Epileptic Attack: Death.*—H. A., a married woman aged 26, was admitted into St. Thomas's, under Dr. Stone, on November 25th, 1879. She was married eight years ago, and had had four children, who were living, and one miscarriage. She had an attack of rheumatic fever early in 1878, which came on whilst she was suckling, and left her with some difficulty of breathing. In all other respects, she had been well down to nine weeks ago; when she caught cold, had a dry and painful cough, and took to her bed. She had had no rigors or vomiting; had perspired a good deal; had felt weak and ill, and short-breathed, and the catamenia had been absent. She had only left her bed for a day or two at a time since.

She was thin, pale-faced, suffered from shortness of breath on exertion, and had some pain, with slight effusion, in both knee-joints. The tongue was coated, moist; the appetite bad; the bowels confined. The temperature on admission was 100°. The area of cardiac dulness was increased; the impulse was diffused, powerful. A loud systolic murmur was audible at the apex, which beat in the nipple line. The murmur was conducted round to the axilla, and might be heard at the angle of the scapula. The pulse was 96, regular. The lungs were healthy; the liver-dulness was normal; the spleen measured three and a half inches in its longest diameter, and the point which was tender could be felt below the ribs. The urine was of specific gravity 1018; it contained no albumen.

By December 3rd, the pain in the knee-joints had subsided; but she still continued weak and ill. On the 5th, the urine was found to contain a trace of albumen; its specific gravity being 1015. About the same time also she began to complain of pain and tenderness in the loins. On the 13th, she was complaining again of pain in her knees, and also in the ankles. She was becoming manifestly weaker and thinner, was somewhat deaf, and disinclined to answer questions. About

the same time, she began to suffer from cough, and it was observed that she perspired profusely. On the 18th, she complained of a sense of weakness in the right hand and arm, but there was no perceptible difference in the grasp of the two hands. It was also discovered at this date that her sight was dim; and on ophthalmoscopic examination, many floating opacities were found in the vitreous humour of both eyes, especially the right, which obscured the fundus. On the morning of the 20th, the temperature rose to 102°, and small petechial spots were found studding the trunk and extremities; but were chiefly abundant on the chest. She was extremely weak and emaciated. Her face was very pale, but the cheeks presented at times a slight hectic flush. She had a slight cough, unattended with expectoration or local signs of disease. The cardiac murmur remained without change. The spleen was still enlarged; and the urine was scanty, albuminous, smoky, and of 1016 specific gravity. On January 3rd, it was reported that she had spat a little blood on December 31st, and that she had slept well, and, on the whole, had improved a little in her condition. But petechiæ were still present on the chest; and her urine had a specific gravity of 1020, and contained albumen; and she was drowsy and apathetic. She remained in the same state down to the morning of the 7th, when, at about 9.30 A.M., she was suddenly seized with a fit. She was insensible and rigid, with some gurgling sound in her throat for about a minute; she then struggled and bit her tongue; but there was no distortion of the face. The eyes were turned upwards; the pupils were equal; there was no squinting; the face was pale; and the respirations gasping, and about nine in the minute. Her extremities were cold. She died in about half-an-hour.

One or two additional facts in regard to this case may here be added.

1. Throughout her illness, the temperature generally varied daily between 98° and 99°, on the one hand, and 101° and 102°, on the other; it was usually lowest in the morning and highest in the evening; but sometimes the morning and evening temperatures were febrile and at about the same elevation; and once or twice the morning temperature was higher than that of the evening; further, on two or three occasions, the temperature was subnormal, and on two or three rose to nearly 103°.

2. The pulse was, for the most part, not very rapid, varying between 90 and 96.

3. And lastly, her temperature, on the morning of her death, previously to the fit, was 98.6°.

NECROPSY.—The body was much emaciated. There were small petechiæ on the surface of the pericardium, which contained eight ounces of fluid. The heart weighed twelve ounces; it was hypertrophied. The valves were healthy, with the exception of the mitral, which, on its aortic segment, presented an irregular area, of the size of a shilling, which was rough with papillary elevations and long shaggy outgrowths. There were petechial spots on the visceral pleuræ. The lungs were cedematous, but otherwise healthy. The peritoneum was studded with small hæmorrhagic spots. The liver was pale and friable; healthy. The spleen was large (twelve ounces), soft, containing a large number of infarcts; some pale and old and perfectly decolorised, others quite fresh. The kidneys were large (together weighing fifteen ounces). The surfaces were congested, with here and there petechial spots. Some small infarcts, for the most part not very recent, were scattered through both, together with patches of probably both interstitial and tubular nephritis. Below the dura mater, covering the right hemisphere of the brain, was a large mass of clotted blood recently effused. This had come from a hole in the lower part of the parietal lobe. On section, the hæmorrhage was found to extend about an inch into the substance of the brain. On the surface, in connection with the hæmorrhage, was a small cavity, about the size of a pea, with a well-defined wall, the origin of which was not clear. The vessels at the base were healthy.

REMARKS.—This was a typical case of ulcerative endocarditis coming on as a sequela of, and in connection with, rheumatism. The febrile symptoms, the increasing debility, the enlargement and tenderness of the spleen, the albuminuria, and the petechiæ, associated as they were with distinct heart-disease, all combined to render the nature of the case clear. The point of chief interest in the case, however, was the sudden occurrence of cerebral symptoms due to abundant extravasation of blood into the tissue of the brain. Was this a mere accidental coincidence, or was it the direct consequence of her disease? Considering her age, and that no degenerative affection of the arteries was present, my own belief is that the hæmorrhage was connected with cerebral embolism: itself a consequence of the ulcerative endocarditis. It is known that embolism leads to weakening of arteries and to the formation of aneurisms; and it is not improbable that the rupture of one of the cerebral arteries in this case may have been due to that cause. The nature of the small cyst in the neighbourhood of the hæmorrhage was not made out.

CASE III. *Acute Rheumatism: Ulcerative Endocarditis: Deposits in*

Spleen and Kidneys: Cerebral Embolism with Hemiplegia and Aphasia: Death.—A. H., a girl aged 13, was admitted into St. Thomas's Hospital under my care on April 8th, 1879. Five years ago, she had an attack of acute rheumatism, followed by a relapse, since which time she had been perfectly well down to the commencement of her present illness. She had suffered from no dyspnoea or palpitation until, she said, two months ago. Six weeks since, she complained of stiffness of legs, followed by pain and swelling in the knees and ankles. The symptoms subsided in a week's time, but recurred after the lapse of another week. At this time, she was attacked with pain and swelling in the right knee and left wrist.

On admission, her face was pallid, but her cheeks slightly flushed; she complained of pain in the right knee and left wrist, which joints were red, swollen, and tender. There was no cardiac pain, or indeed pain anywhere else. Pulse 96, regular, soft. The cardiac impulse was diffused, the apex apparently beating one inch outside the left nipple in the fifth interspace. The præcordial dulness measured at this level about two inches and a half across, and extended upwards to the upper level of the third rib. A loud blowing systolic murmur, transmitted mainly towards the axilla, and heard at the angle of the left scapula, was audible at the apex. The sounds at the base were natural, with the exception that there was accentuation of the second sound. The lungs were resonant, and the breath-sounds normal. The tongue was moist and coated. Her appetite was fair; she had no thirst. The splenic dulness was normal. There were no signs of abdominal affection. The urine was of specific gravity 1.022; clear, without albumen. She slept well. The temperature on admission was 97.4°. It rose in the evening, however, to 102.6°, at which time the pulse was 120°.

The next morning (the 9th), the rheumatic symptoms continuing, and the temperature remaining elevated (100.4°), with pulse at 120, she was ordered 20 grains of salicylate of soda with syrup of orange-peel and water every four hours. She was put also on milk diet with beef-tea.

By the morning of the 10th, the inflammation of the joints had wholly subsided, but the temperature remained febrile, and she was weak and poorly. She continued with little change down to the 15th, on the morning of which day, although her temperature was only 98.8°, her pulse was 132, and her tongue coated; she made no complaint, however. The salicylate was discontinued, and a draught containing a grain of quinine was ordered three times a-day. That evening, her temperature rose to 103°.

The next morning (16th), her temperature had fallen to 99°. The tongue was coated. Pulse 112; temperature 26°. There was no joint-affection; and in fact nothing special to remark, except, perhaps, that she was quiet and apathetic, and remained weaker than one would have expected. In the evening, however, there was slight return of pain and swelling in the ankle and wrist. This continued, not very severe, until the evening of the 18th, the temperature on the evening of the 17th rising to 103.4°.

From this time forward, there was no return of rheumatism; but there was no improvement in her condition generally. She lay in bed, pallid, quiet, and uncomplaining; not acknowledging any pain or suffering, and generally answering that she was better; her appetite remaining fairly good; and her bowels acting naturally. She was becoming, however, progressively thinner and weaker; and her temperature, which had much of the hectic character, presented remarkable fluctuations. It was almost always lower in the morning than in the evening; at the former time, indeed, it was often normal or even sub-normal; and at the latter, rose occasionally to 100°, but more frequently to 102° or 103°. The highest temperature (with the exception of that preceding death) was 103.8°. She never had rigors. About the middle of May, it was noted that her legs had become contracted at the knee-joints, not from any rheumatic affection, but simply from having lain so long motionless in bed, and extension was applied; but it caused much pain, and was not persisted in for any length of time; and, about the end of April, a rough murmur, increased by pressure, was audible at the base of the heart. This was probably pericardial; at any rate, it soon disappeared. The systolic murmur at the apex persisted without change.

The continuance of the above symptoms after all the rheumatic affection had disappeared—and at a time when, from the absence of dyspnoea, cough, and expectoration of blood, of distension of the systemic veins and dropsy, and of irregularity of pulse, there was no reason to believe that the mitral valve disease which was present was yet causing its mechanical consequences—led me naturally to suspect that they were referable to multiple embolism. And consequently we looked carefully, from an early period of her illness, to the condition of the spleen and kidneys, in which organs especially embolic infarcts are met with under such circumstances.

A trace of albumen was first detected in the urine on April 14th.

This might have been due to the influence of the salicylate. A small quantity was again observed on the 22nd and on the 24th. On the 25th, there was none. Henceforth, a small quantity of albumen was found on every examination but one or two, the urine being for the most part scanty, clear, and of high specific gravity.

On June 6th, it was first clearly recognised that the spleen was enlarged. Its dulness had an extent of four inches in the mid-axillary line, extended forwards, and, on deep inspiration, the lower extremity of the organ could be felt below the ribs. It was not tender at this time. On the 28th, it was first noted that, in addition to the splenic enlargement, she had been complaining for a few days of severe pain in the splenic region—so severe as to cause her to cry out—together with tenderness.

She continued thus, becoming weaker, thinner, and paler, more and more apathetic, and latterly drowsy, until July 14th. At 8 A.M. on that day, she was apparently in her usual condition; but at 11 A.M., she was found by the nurse to be paralysed and speechless. She had completely lost the use of the right arm and leg, her mouth was drawn to the left, and the right side of the face was generally weaker than the other. There was no loss of sensation, nor was there any loss of sight in the right eye. The pupils were equal and contracted to light. She whined a little from time to time, but did not utter any articulate sound. She passed her evacuations unconsciously. She was not unconscious, but did not seem to understand what was said to her. About this time, her temperature ranged from 98.2° to 98.8°, her respirations were about 30, and her pulse 114.

She now gradually sank. There was no appreciable improvement in her paralytic symptoms, and she remained entirely speechless. She seemed to suffer from pain in the left leg, which she frequently rubbed. With her left hand she was constantly picking at her lips or at the bed-clothes. She frequently moaned, and had much difficulty in masticating and swallowing. All her evacuations continued to be passed into the bed. The urine, which on one occasion was removed by the catheter, was found to be turbid, of specific gravity 1032, and containing much albumen. Her pulse, during the 15th, 16th, 17th, and 18th, ranged from about 140 to 156; her respirations from 30 to 44; and her temperature gradually rose from 100.2° on the morning of the 15th, to 106.6° shortly before her death at 7.45 P.M. on the 18th. She perspired profusely also during this period.

NECROPSY.—The body was much emaciated. There was no evidence of pericarditis. The heart was somewhat hypertrophied. All the valves were healthy except the mitral, the free edges of which were puckered and studded with irregular, pedunculated, friable, wart-like masses. The surface of the left auricle in the neighbourhood of the valve for about a square inch was rough and granular, with inflammatory exudation. The lungs and pleuræ were healthy. The liver was natural, but for a patch on the upper surface several inches square, and extending an inch or so in depth, in which the tissues were of a port-wine hue. The spleen was much enlarged, and presented three or four large infarcts; the largest of which, occupying the lower extremity, was as big as a Tangerine orange, and softened in the centre. The kidneys were pale, mottled, and somewhat enlarged, with preternaturally adherent capsules. Their surfaces presented numerous depressions, which corresponded to contracting infarcts. Besides these, there were many wedge-shaped infarcts of more recent formation. The brain at first sight was healthy. The left middle cerebral artery, at a short distance from its origin in the fissure of Sylvius, was plugged by a small clot, in which was imbedded a branching yellow friable mass, exactly like those attached to the mitral valve. The distal and proximal parts of the vessel were both plugged with recent clot. The caudate nucleus of the corpus striatum, the anterior part of the ventricular nucleus, and the portion of the internal capsule between them, together with the anterior extremity of the optic thalamus, were much softened. The white matter external to and around the corpus striatum and the grey matter on the surface was only very slightly, if at all, affected.

REMARKS.—This also was a case of much interest; but it calls for few remarks beyond those incidentally made in the foregoing narrative. There was no apparent reason why, when her rheumatism had subsided (as it had done, a few days after admission), she should not speedily have recovered. There was a cardiac murmur, no doubt; but the cardiac disease had not induced any of the usual mechanical ill-consequences, and in that sense was not incompatible with restoration to fair health. But the expected amendment never came. Instead, she remained weak and febrile, and before long it became only too apparent that ulcerative endocarditis had supervened. Progressive debility and apathy, persistent hectic temperature, the supervention of enlarged and painful spleen and of albuminuria, combined to render the nature of the case clear. The occurrence of cerebral embolism, with hemiplegia and aphasia, was a striking incident in the case.

CASE IV. Heart-Disease: Ulcerative Endocarditis (?): Enlargement and Tenderness of Spleen: Albuminuria.—E. A. E., a girl eighteen years old, was admitted under my care on February 22nd, 1878. She had had scarlet fever and other diseases common to childhood, but had never had rheumatism or other serious illness. She was said, however, to have been short-breathed and liable to colds. The catamenia had been absent for eleven months. Her present illness commenced a week before admission, and was attributed to kneeling on damp stones. Since then, she had suffered from bad cough, had been frequently sick, and had perspired much at night. Three days ago, her face and legs became swollen. She had been passing urine frequently. The bowels had been regular.

She was in fair condition, and had a high colour, which was natural to her and often became bluish on exposure to cold. The face was puffy and shiny. The feet and legs were much swollen. The tongue was moist, covered with a thin white fur; appetite fair; bowels open; urine pale, clear, 1015; no albumen. Her cough was troublesome; there was no expectoration. Respirations 48; pulse 104; temperature 101°. She complained of headache, but had no other pain. The lungs were fairly resonant, but there was a good deal of crepitation audible over the lower half of the right lung. The præcordial dullness was increased in all its dimensions; and a marked thrill was perceptible over the apex. As regards the sounds of the heart, it may be at once stated that they were a source of considerable interest and frequent examination. The conclusions to which we came, however, were that there was a diastolic murmur (probably aortic) audible along the sternum, but scarcely at all over the aortic valve itself; a musical systolic murmur over the right ventricle, and probably, therefore, regurgitant tricuspid; a deeper-toned, but somewhat indistinct and variable, systolic murmur audible at the apex, which was probably mitral regurgitant; and a diastolic murmur internal to the apex, which blended to some extent with the aortic diastolic murmur, but was of slightly different rhythm, and apparently a presystolic murmur. She appeared, therefore, to be suffering from regurgitant aortic disease; from obstruction and regurgitant mitral; and from regurgitant tricuspid.

During the first three days of her stay in the hospital, her cough subsided; her anasarca disappeared; and her temperature, which rose at times to over 102°, sank by the end of that time to about 99°.

From this time forward to the middle of May, she remained weak, and indisposed for exertion, and suffering off and on from sickness, headache, pains in the chest and abdomen, and slight cough. For a few weeks at the beginning, she was troubled with conjunctivitis and pain in the eyes; for about a week dating from March 12th, the pulse at the wrist varied usually between 44 and 60; the beats of the heart, which were alternately strong and weak, being exactly twice as frequent; and the respirations were rapid, occasionally amounting to 64 in the minute. During the earlier part of this period, the temperature ranged between 97° and 99.8°; but during the latter part of it, mostly varied between 99° and 101°.

On May 17th, her temperature rose to 102.7°, and she complained of a sharp cutting pain in the left side of the chest, which prevented her from sleeping that night. From this time to the beginning of August, her daily temperature ranged for the most part between 98° and 102° or 103°, occasionally, however, falling nearly to 97°, and occasionally rising above 103°. During this period, she greatly complained of chills, not unfrequently rigors, coming on in the morning, and followed by much heat and then by perspirations. She suffered also from tendency to faint, and occasional sickness. The febrile exacerbations, moreover, were generally attended with pain in the left hypochondriac region; and subsequently it became clear that the spleen was enlarged, its area of dullness being considerably increased, and its lower end perceptible below the ribs; and that not only was it the seat of pain, but was tender on pressure. For the relief of this, leeches were applied on July 30th. The last note in regard to splenic pain was made on August 6th. On July 23rd, the urine was dark coloured, turbid from lithates, specific gravity 1022, and contained albumen. The only other noteworthy facts during the period now under consideration were, that, on July 2nd, she complained of pain in her limbs, and one of the ankles was said to be swollen; that, on the night of the 4th, she was kept awake with pain in the right calf, which continued for several days; and that, on the 15th, a similar pain arose in the left calf, which lasted for a day or two. The pain was circumscribed, but unattended with pain or redness.

Early in August, there was considerable improvement. The temperature became normal or nearly so; all pain in the spleen and elsewhere subsided; sickness ceased; and the urine became free from albumen. She left the hospital on September 9th, apparently convalescent. I did not see her again, but heard that she died suddenly, under what circumstances I do not know, a few months afterwards.

REMARKS.—The above case was interesting as a study of cardiac

murmurs; but in the absence of a *post mortem* examination, it is useless to discuss the facts of the case further than has been already done. At first, I was disposed to regard the heart-disease as congenital, and so, indeed, it may have been; but since rheumatic symptoms manifested themselves whilst she was under treatment, there is some reason to suspect that her cardiac disease was of rheumatic origin. The case, while it was under observation, was in all respects a typical example of ulcerative endocarditis. It was a very disappointing case to treat, for nothing that was done for her appeared to do her any good. It is interesting, however, that, without apparent cause, the special symptoms of ulcerative endocarditis subsided during the last month of her stay in the hospital, and that she left the hospital comparatively well. In this respect, her case resembled Case I. Both of them show that the symptoms of this affection may disappear, at any rate for a time; and presumably, therefore, may disappear altogether. Whether or not the symptoms in this case recurred before death, I am unable to say.

ON THE USE OF ARSENIC IN SKIN-DISEASES.*

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It seems only natural that this Association should take an especial interest in the action and uses of arsenic in cutaneous medicine, for it is little more than thirty years since it made a vigorous effort to poll professional opinion widely on the subject. In 1848, a series of queries was issued to all its members, and the seventy-five answers received bore emphatic testimony to the fact, that the remedy had never been found either fatal or permanently detrimental to health. It may have been necessary to reassure the public mind at that time, for it seems pretty certain that arsenic was then prescribed without much scientific precision, and in a way which must often have aggravated the symptoms which it was intended to relieve; and the writings of Hunt, valuable though they undoubtedly were as the records of a wide and well used experience, undoubtedly unsettled the minds of practitioners by the free use he made of the drug in almost every form and variety of skin-disease. Arsenic at this time was in serious danger of suffering gravely in general estimation from the indiscriminate praise of some of its more enthusiastic adherents; and it is only the able writings of Hutchinson, Startin, Clifford Allbutt, Wilson, McCall Anderson, and others, which have once more placed it in its proper position, and pointed out with scientific accuracy the class of cases in which it may be given with most advantage; and, following the action of thirty years ago, I venture to invite the members of our Association here present to open their budgets of experience, and discuss a few points which I will now briefly lay before them.

We do not require to be specialists to know, in a general way, which cases of skin-disease benefit by arsenic and which are rebellious to improvement under its use. Any practitioner who gravely proposed to treat measles, or small-pox, or scarlet fever, with Fowler's solution, would be looked upon as little short of a lunatic; and all the cutaneous manifestations of syphilis are by common consent regarded as quite outside the boundary of this line of medication. A broad distinction has been drawn in respect of treatment between the moist and the dry eruptions; for, whilst we know that a case of acute eczema, with red smarting skin and copious exudation, is usually made worse by arsenic, no fact in therapeutics is better established than the disappearance of the same eruption when it has become chronic, under the use of the drug, or the way in which the silvery scales of psoriasis will gradually drop from the skin of the patient who has perseveringly taken his daily doses. All this is part and parcel of the commonest professional knowledge. Can we do more than simply reaffirm the facts? Shall we rest satisfied with their simple possession as mere empirical experience, or may we attempt to explain? Is there any guiding principle which may serve to place our practice on a scientific basis? Is there anything in the physiological actions of arsenic from which we may derive any clue to its practical uses? Writers on therapeutics supply some facts which have been used in explanation; for we are told that various skin-eruptions of a vesicular, pustular, and even scaly character, occasionally follow the administration of the drug; and from this we might consider ourselves entitled to argue that it simply acts as a cutaneous stimulant by setting up a new action which may replace, or even permanently displace, the morbid process already going on. But specious although this may seem at first sight to be, it can hardly be accepted, in the absence of more convincing evidence than we can at present bring forward in its favour, for all authorities allow that cutaneous irritation is

* Read in the Subsection of Dermatology at the Annual Meeting of the British Medical Association in Cork, August 1879.