typhoid fever, depression, and multiple abscesses, generally terminating in death, following operations or injuries, were owing to pus in the blood. However the pus was introduced, whether by absorption from wounds, or from phlebitis, or from an imaginary lesion he called hæmitis, or inflammation of the blood itself, the result was purulent blood, or pyæmia, and the cause of the fatal symptoms. But M. Piorry was no histologist. Had he examined the blood with a microscope, he would have found no pus-cells there; for, in fact, the blood of pyæmia contains no pus. Our present knowledge, therefore, demonstrates that the disease called by practical surgeons and obstetricians pyæmia is not necessarily caused by pus in the blood. This is further shown by the fact that if, as Mr. Hulke truly stated, we inject recent or so-called laudable pus into the blood of an animal, it produces no injurious effects. I have frequently performed this experiment (*Clinical Lectures*, 5th ed., p. 906), as have Sédillot and other pathologists. But, if putrid or ichorous pus be so injected, then we have the symptoms of so-called pyæmia; and the same result occurs if we inject putrid fluids, irrespective of purulent formations. It follows, therefore, that it is not pus, as pus, which produces the mischief, but any organic fluid in a state of putrefaction, that causes the blood-lesion, and, as a result, the group of symptoms now called those of pyæmia. That pus is easily decomposed has been long known; and to the absorption of that fluid, when putrid, the French surgeons Boyer and Bonnet, many years ago, attributed the noxious effects referred to as pyæmia. This condition was well named by Vogel ichorrhæmia, which is one of the varieties of septicæmia.

It appears to me, therefore, that Mr. Savory expressed the correct view on this subject, but did not appear to see that the term pyæmia ought to be abolished from medicine and surgery, and that the form of septicæmia to which he referred is correctly expressed by the term ichorrhæmia. In what the nature of septicæmia consists, is unknown. Why one variety should produce the phenomena of small-pox, another of measles, and a third of ichorrhæmia, we are ignorant. It is the same ultimate fact in pathology that exists in therapeutics, in reference to the proportion of different poisons or drugs. All we can do is to guard against the morbid influences, or modify them when present. It is in this point of view that the observations of Dr. Bastian are of direct practical importance. All trustworthy research indicates that the poisonous properties are not attached to imaginary germs constantly floating in the atmosphere, but rather to the ultimate molecules of organic matter, animal or vegetable, which belong to or enter the economy. I believe these not to be hypothetical, but visible molecules, detectable by good microscopes, and that, in the case of ichorrhæmia, the histological examination of the granulations of, and discharges from, suppurating surfaces will do much to indicate how and when they are to be removed or destroyed.

Although I have endeavoured to show that, in the morbid condition called pyæmia by practical surgeons, there is no purulent blood, and that the expression is wholly inapplicable, there can be no question there is a true pyæmia, or suppuration of the blood. This I described so long ago as 1845 (*Edinburgh Medical and Surgical Journal*, October 1845), in a case where I found, in a case of hypertrophied spleen and liver, that the blood was crowded with pus-cells. But, in that case, I took great pains to show that there was no inflammation anywhere in the economy—no suppurating sore, no phlebitis. Nevertheless, as I had no doubt that pus existed in the blood, I called the case one of suppuration of that fluid without inflammation. But the pathologists of that day could not comprehend the existence of suppuration without inflammation, and hence I subsequently called the morbid condition I discovered leucocythæmia, or white cell-blood, because that term “expresses the simple facts, or a pathological state, and involves no theory”. By some, it was supposed that the colourless corpuscles of the blood were different from pus-cells, and that they rendered the blood white, producing the white blood of Hippocrates. This error still prevails among the German pathologists, who call this morbid condition leukhæmia. It is now, however, recognised that pus-cells, lymph-cells, young mucus and epithelial cells, and the colourless cells of the blood are identical, and hence Robin has applied to the whole group the name of leucocytes, or white cells. To have retained the term suppuration of the blood, or true pyæmia, in face of the constant employment of this last term by surgeons, to express a fatal poisoning of the blood, could only have led to confusion; although, as a matter of fact, leucocythæmia is the only purulent blood known in pathology, and the only suppuration of that fluid with which we are acquainted.

I propose, therefore, in order to avoid the confusion which now prevails from the incorrect employment of terms that can only mislead, to suggest the following definitions.

Septicæmia.—Poisoning of the blood from every source—a general term.

Ichorrhæmia.—Poisoning of the blood from ichorous matter or decomposed pus.

Leucocythæmia.—White cell-blood; excess of colourless cells in the blood.

Leukæmia.—White blood, from excess of fatty matter in the blood, so-called chylous or milky blood.

Pyæmia.—This term has no meaning, unless applied to ichorrhæmia or leucocythæmia. Its employment can only lead to confusion.

THREE CASES OF BLOOD-POISONING OCCURRING IN PRIVATE PRACTICE.

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THE following cases, three in number, I have ventured to place on record, as illustrating an outbreak of erysipelas, and two allied forms of blood-poisoning, which have lately come under my immediate notice, in a presumed healthy house, situated in an undoubtedly healthy suburb of Birmingham. The cases are of some interest as bearing upon the several communications which have lately appeared in the medical periodicals, on the subject of erysipelas and its allied complaints, as occurring in hospital and private practice. I refer more especially to the address of Mr. Prescott Hewett to the Clinical Society; and to a clinical lecture by Mr. Jonathan Hutchinson, delivered at the London Hospital.

During the early part of the present winter, a gentleman, holding a leading position in this town, about 60 years of age, had determined to submit to an operation for the removal of a small tumour, situated under the right lower eyelid. The tumour had existed for some years without giving rise to any inconvenience; latterly, however, it had occasionally caused oedematous swelling of the neighbouring parts, and had also increased in size. Thus a suspicion of malignity was entertained, and its removal was recommended by Mr. Solomon and myself. The patient was stout, of loose fibre, otherwise apparently in good health, never having suffered from a serious illness in his life. He was somewhat of a lethargic temperament, rarely taking the exercise which his excellent appetite, and consequently large consumption of solid food, demanded; as regards the use of stimulants, he was very moderate. With a view to the operation, he had spent a month or six weeks at the Isle of Wight. The operation was performed by Mr. Solomon, with my assistance, the patient being under the influence of chloroform. The tumour, which was about the size of a small hazel-nut, proved to be more firmly adherent to the lower border of the orbit than was anticipated, and necessitated the removal of a small portion of bone. Microscopically, its structure was found to be principally of a fibrous nature, with many small nucleated spindle-shaped cells mixed indiscriminately with the fibres; hence falling under the category of the fibro-sarcoma of Billroth.

On the second day after the operation, a violent shivering fit and vomiting occurred, followed, on the morning of the third, by an erysipelatous blush, and polished appearance of the skin, in the neighbourhood of the wound, with, towards the evening of the same day, a temperature of 102.0 Fahr., a full bounding pulse of 124, and other symptoms of fever.

During the next fortnight, the patient passed through a somewhat severe attack of simple erysipelas of the face and head, accompanied with delirium. The eruption then gradually passed from the scalp on to the back of the neck and shoulders, assuming the character of erysipelas ambulans, involving in turn the whole of the back and loins, and finally, at the end of a month from its first appearance in the neighbourhood of the wound, fading away on the buttocks and the upper part of the thighs. During the whole of the course of the complaint, more especially in its earlier part, there were considerable dysphagia and dyspnoea. These symptoms were explained by the obvious oedema of the fauces and pharynx, and the presumed similar state of the larynx, no visual examination of the latter being possible.

After the eruption had left the head, the fever gradually abated, and, with some variations, continued until its disappearance, about the thirtieth day of the disease, leaving the patient, however, in a very exhausted and feeble state, the radial pulse being small and compressible, and the heart-sounds more than usually enfeebled. Some ten days afterwards, I paid my last professional visit, with a caution to the patient himself, and a still more distinct warning to his attendants and friends, not to permit any undue bodily exertion or mental excitement, fearing that, from the feeble state of his heart, serious syncope might occur. This warning, I afterwards heard, he neglected, in many ways exerting himself beyond what his then powers of endurance warranted.

On New Year's Eve, not having heard that he was materially worse, I called, and found him paler than on the occasion of my last visit, breathing rapidly and being occasionally troubled with a dry short cough, but still unwilling to acknowledge that he was suffering from more than a slight cold and fatigue. Next morning, I was hurriedly sent for at seven o'clock, with the message that he was taken very ill. On arriving at his house, I found that he was dead, having expired a few minutes after arising from his bed to mend his fire, with every symptom of syncope.

The subject of the second case was the wife of the above-mentioned gentleman, a lady 53 years of age, of florid complexion and full habit of body, who had for many years suffered from the effects of the so-called phosphatic diathesis in its worst form. In her youth, she had also suffered from frequent attacks of facial erysipelas. Two months before the history of the present case opens, she had a severe attack of congestion of the liver, with one or two slight paroxysms of apparent angina pectoris. From this she had quite recovered, and had returned from her month's sojourn in the Isle of Wight, greatly improved in health.

From the beginning of her husband's illness, and much against my wish, bearing in mind her previous history, she unsparingly devoted herself, both day and night, to his welfare. After five or six days and nights of the most unwearied attention to her husband, she began to complain of sore throat; her pulse and temperature rose, the former to 120, the latter to 103 Fahr., and other symptoms of fever declared themselves. In the course of a few hours, without any definite cause, such as a pin-prick or other injury, she experienced a throbbing pain in the right thumb, and it was soon evident that a whitlow was forming. The whitlow I hesitated to open for two days, knowing that it was impossible to prevent her from entering her husband's room as long as she was able to do so. At the end of that time, finding the pain unabated, and an erysipelatous blush and swelling appearing over the supratrochlear gland of the same arm, I incised the thumb freely, thus allowing the exit of a small quantity of matter. Beyond this, I leave out the enumeration of the other therapeutical procedures necessary in the further treatment of the case. From this time, however, the diffuse inflammation, which first occurred in the neighbourhood of the supratrochlear gland, gradually spread, until the whole of the upper arm, and, shortly before death, the shoulder, became involved in a most malignant form of cellulitis; free incisions into the now brawny substance of the limb gave exit to venous blood and watery serum only, the subcutaneous tissues and fasciæ having much the well-known appearance of sodden wash-leather. On the afternoon preceding her death, her temperature, which had during the morning registered 102.4 Fahr., fell to 99.5 Fahr., her other symptoms apparently being unaltered. This was the first intimation of immediately impending danger. The soreness of the throat had continued throughout her illness, during the last two days giving rise to most painful dysphagia. On examination, the soft palate and fauces exhibited extreme oedematous swelling, the mucous membrane being of a pale rose colour, but no trace of any membranous exudation on its free surface was perceptible. During the night of the last day of November she gradually sank, dying at half-past eight o'clock the next morning; the radial pulse being imperceptible for four or five hours previously to her death, and her consciousness remaining perfect until the last.

The third case in the same house, and which, from many of its symptoms, appeared not unlikely to have owed its origin to some blood-poison analogous in its nature to that of erysipelas, occurred in the person of a servant. For some weeks before her master's illness, the housemaid complained of general malaise and lassitude, slight occasional sore throat, rigors, and night perspirations, with some cough expectoration. When I first saw her, a few days after her master was taken ill, she was then confined to her bed. All the above symptoms had increased in severity; the throat was now exceedingly sore; there was much dysphagia, and occasionally dyspnoea, accompanied with free and constant expectoration of clear glairy mucus. Some redness, but no oedema, of the fauces was present. The pulmonary respiratory sounds were normal, and pain was experienced on pressure on either side of the larynx. In the course of a few days she was removed to her home in the lower part of the town, in consequence of the illness of her master and mistress. Here she became considerably worse; the difficulty of breathing increased, also the dysphagia; the expectoration of mucus was more copious; the temperature, which had been under 100 deg. Fahr., rose to 103.4 deg. Fahr. in the evening; the pulse was 120, soft and compressible. A prominent symptom during this period of her illness was a quiet form of watchful delirium, which continued day and night, both then and, to a less extent, for some time after, her removal to the General Hospital. There was also a copious diarrhoea, which lasted for two or three days; and at night the perspira-

tions were very profuse. On one occasion, the dyspnoea was so excessive that I remained with her during the greater part of one night, prepared to perform tracheotomy. After remaining for three or four days at her own home, she was taken to the General Hospital, where she slowly continued to improve, being discharged from that institution but a fortnight ago. It was somewhat remarkable that the tongue was throughout her illness quite moist; neither was it ever furred beyond a very limited extent.

The case of the master of the house affords possibly the example of an attack of erysipelas, originating *de novo* after a comparatively slight wound involving osseous structure. At the same time, it is impossible, I think, to avoid connecting its outbreak, however indirectly, with the illness of the housemaid, which bore in many ways a resemblance to that of her master and mistress, more especially in the affection of the throat with dyspnoea and dysphagia, a conspicuous symptom in each. It may be, perhaps, well to add, that neither Mr. Solomon nor I had to our knowledge been brought into contact with an erysipelatous patient for some weeks before the operation took place. I may also mention that I am not prepared to say that the ventilation of the house was all that could be possibly desired.

A CONTRIBUTION TO THE STATISTICS OF AMPUTATIONS.

By HENRY LOWNDES, L.K.Q.C.P.,
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THE interesting and practical papers by Mr. Callender have attracted great attention to what seems the divergence between the mortality following the great amputations in the present day, and that displayed in the statistics that led to the outcry against hospitalism.

In the following series, I have given my experience during the last five years at the Liverpool Northern Hospital, a rather crowded institution, containing 140 beds, which are in great part devoted to surgical accidents. Its laws stipulate that it "shall be confined as much as possible to severe accidents and acute cases." It is situated close to the busiest docks and warehouses, and is also close to the stations of the Lancashire and Yorkshire Railway. I believe that, in the number and severity of the accidents brought to it, it has, when we consider its small size, no rival.

The following amputations were all under my own care, and were, with one exception, performed for the results of accidents. There were thirty-four cases in all, viz.:

Primary Amputations.				
Part.		Number.		Result.
Thigh	- - - - -	3	- -	All died.
Leg	- - - - -	8	- -	All recovered.
Both legs, in a boy aged 14	- - - - -	1	- -	Recovered.
Arm	- - - - -	7	- -	{ 6 recovered; 1 died.*
Forearm	- - - - -	5	- -	All recovered.
Arm and entire scapula	- - - - -	1	- -	Died.
Secondary Amputations.				
Thigh	- - - - -	2	- -	Both died.
Leg	- - - - -	5	- -	{ 4 recovered; 1 died.
Arm	- - - - -	1	- -	Died.
Forearm (Disease of Wrist)	- - - - -	1	- -	Recovered.

Among the secondary amputations of the leg in this list, one man is counted twice. He had had both legs lopped off in the backwoods of America, and had his two painful conical stumps amputated here, on separate occasions, below the knee.† The eight primary amputations of the leg were for crushes of the leg, either from railway accidents, or, as is very common here, from the wheels of the heavy lorries used here passing over the leg. With one exception, the operation was performed just below the knee, as a more useful limb is thus left for working men. Moreover, I prefer this operation, as not opening the cavity of the joint. The secondary amputations were either, as in two instances, cases in which the patient had refused to permit any operation until gangrene had occurred, or cases of severe compound fracture in which it had been hoped to save the limb, and where amputation had at last to be unwillingly performed, with pyæmia perhaps impending, if not already poisoning the system.

* In this case, death was caused by hæmorrhage into the abdomen. This cavity was found full of blood, that had oozed from the vessels of the mesentery, which was found lacerated in three places.

† He is still in the hospital, but is recovering.