

two sets of cerebral nervous arrangements, one set representing (re-representing) "heat spots" and one set "cold spots," inhibit one another. The degree of quiescence of these two sets which there is in a healthy man during what might be called an "indifferent" state of "temperature feeling," such a state as that roughly described as "being neither hot nor cold," is, on the hypothesis, from nearly balanced antagonism of the two sets of nervous arrangements.

Now for cases of the one-sided sensory maladies alluded to, or rather those of them in which there is, negatively, loss of the sensation heat, along with, and referred to the same cutaneous area, super-positively, the sensation of continual over-coldness. The supposition is that in these cases there is from disease a destruction-lesion, or some kind of negative lesion (functionlessness due to some pathological process), of the cerebral nervous arrangements which are the physical bases of the sensation heat, but that there is no disease of the cerebral nervous arrangements which are the physical bases of the sensation cold. *With the negative lesion*, however, there is a double symptomatology, a double of two opposite elements, in one cutaneous area. *From the negative lesion* there is *directly* inability to appreciate heated substances applied to the cutaneous area; and *indirectly* from the lesion there is over-coldness referred to that same area. In recapitulation: the super-positive element of the double symptomatology, the over-coldness, is not caused by any disease of the physical bases of the sensation cold; obviously it cannot be if the disease has produced, as we are supposing, a negative lesion. The continual over-coldness is consequent on removal of control, synonymously of inhibition (Anstie's Principle), from the physical bases of the sensation cold by destruction, or by some negative lesion, of the physical bases of the sensation heat; there is a cessation of antagonism such that the nervous arrangements which are the physical bases of the sensation cold are "let go" and rise in activity (an hyper-physiological, not a pathological, condition) with an associated rise in the sensation cold, a continual over-coldness referred to the skin (an hyper-psychical condition).

On the principle of the hypothesis propounded there should be in cases of one-sided sensory affections consequent on negative cerebral lesions in which cases there is a continual sensation of great heat, over-hotness, of, referred to, parts of the skin,—there should be in these cases inability to have the sensation coldness from the application of substances of low temperature to the same parts of the skin. This state of things has been noted in several patients by Dr. Kinnier Wilson.

In stating the hypothesis of double antagonism in regard to the particular cases mentioned qualifications have been neglected. Nothing is said in the foregoing for or against that hypothesis in regard to abnormalities of the sensations heat and cold in cases of syringomyelia or in any nervous maladies with lesions of parts of the central nervous system lower than the cerebral hemispheres.

Cases of Epilepsy (discharge cerebral lesions) in the paroxysms of which there is the so-called "subjective" sensation of heat or the so-called "subjective" sensation of cold are best considered separately. In the paroxysms of some of these cases the sensation cold perhaps results in a round-about way by withdrawal of warm fluid, blood, from "cold spots" by contraction of cutaneous arteries, and in other cases that cold sensation may arise during epileptic discharges of the nervous arrangements which are the physical bases of the sensation cold. I have notes of the case of an epileptic patient whose paroxysms began by an auditory warning, who had also a "burning sensation" of parts of the skin of one half of his body in his paroxysms. In such cases it would be well, immediately after the ending of a paroxysm, to test those parts of the skin for both heat and cold by application of hot and cold substances; there might be temporary exhaustion, functionlessness, of the cerebral nervous elements which had been discharged in the paroxysm, of those which are the physical bases of the sensation heat—a state of things analogous to temporary exhaustion (functionlessness) of motor cerebral elements in cases of temporary motor paralysis after a convulsive seizure—and there might be, indirectly consequent on that exhaustion, a rise in activity of the physical bases of the sensation cold with an associated sensation of over-coldness.

A CASE OF BLOOD CRISIS OCCURRING IN LARDACEOUS DISEASE.

By T. S. KERR, M.B., B.Sc. EDIN.,

LECTURER ON TROPICAL MEDICINE AT ST. GEORGE'S HOSPITAL; AND

E. I. SPRIGGS, M.D. LOND., F.R.C.P. LOND.,

SENIOR ASSISTANT PHYSICIAN TO ST. GEORGE'S HOSPITAL, AND PHYSICIAN TO THE VICTORIA HOSPITAL FOR CHILDREN.

THE subject of the following notes, a man, aged 30 years, was admitted into St. George's Hospital on April 19th, 1906, for pain in the abdomen, headache, and fever. The patient had served five years in India, having been home one year, and during his tropical service had suffered on three occasions from congestion of the liver and at times from low fever. There was a history of syphilis. His illness commenced suddenly four days previously with abdominal pain, radiating to the shoulders, headache, and fever; during the last two days he had vomited frequently and passed very dark-coloured urine. He looked very ill, was anæmic but fairly well nourished, and there was great loss of strength. The skin was muddy and yellowish with freckles of pigment about the body and in the mouth. The conjunctivæ and under surface of the tongue were slightly icteric. The temperature was 103° F.; the pulse was 112 and of low tension. The abdomen was much distended, rigid, and extremely tender all over; so prominent, indeed, were the abdominal symptoms that the case was at first thought to be one of appendicitis. The right chest was dull in the axilla and up to the level of the seventh spine behind. Over this area tactile vocal fremitus was diminished and on auscultation the breath sounds were very faint and a few moist râles were heard. The urine was of a dark mahogany colour almost impermeable to the light, though only on one occasion did it present these characteristics after admission. The quantity passed was small in amount.

After 24 hours' stay in the hospital the abdominal distension and pain were less and the symptoms and the appearance of the urine were suggestive of blackwater fever or of paroxysmal hæmoglobinuria with rapid destruction of the red cells. The patient was treated with quinine. The blood in the urine rapidly diminished. On April 21st an examination of the urine showed that it contained albumin in abundance, numerous granular casts, a few hyaline casts, and a few pus and red cells; its specific gravity was 1026 (Dr. C. Slater). On the 24th the blood was examined for malarial parasites and the condition then found was so unusual as to merit more than a passing notice. No malarial parasites were found in the blood; the red corpuscles were pale in colour, vacuolated, much distorted and buckled, and showed marked variation in size, microcytes and megalocytes being numerous. The remarkable feature in the films was the extraordinary number of nucleated red cells, chiefly normoblasts, though a few megaloblasts and poikiloblasts were also present; from 5 to 20 could be counted in every field with a 1-12th inch oil immersion; the majority had single nuclei, many possessed two, and quite a number were polynucleated, the nuclei ranging from three to six; in many the nuclei were arranged symmetrically as in a rosette, presenting a most striking picture. Karyokinetic figures were to be seen and free extruded nuclei were fairly numerous.

In a blood count made on April 26th the red cells numbered approximately 1,100,000 per cubic millimetre (we say approximately as owing to a tendency of the corpuscles to clump and adhere to each other as if viscid, difficulty was experienced in making a blood count). The leucocytes numbered 13,600 per cubic millimetre. A differential count on the same date was as follows: lymphocytes, 12.4 per cent.; large mononuclears, 7 per cent.; polymorphonuclears, 79 per cent.; eosinophiles, 1.5 per cent.; myelocytes, 1.1 per cent. Hæmoglobin, 29 per cent. Of 305 nucleated red cells counted, 217 showed single nuclei, 40 had double nuclei, and 48 were polynucleated. The ratio of nucleated red cells to leucocytes was as 152 to 100—i.e., 20,672 per cubic millimetre; the ratio to red corpuscles was as 1 to 53. The polymorphonuclear leucocytes varied greatly in size, many being no larger than a red corpuscle, and were at a first glance liable to be mistaken for the multi-nucleated variety of red corpuscles. In these smaller

polymorphonuclear leucocytes the nuclei stained deeply, were numerous and well defined, whilst in the larger, apparently older ones, both granules and nuclei were very indistinct and had a faded appearance as if undergoing some degenerative process.

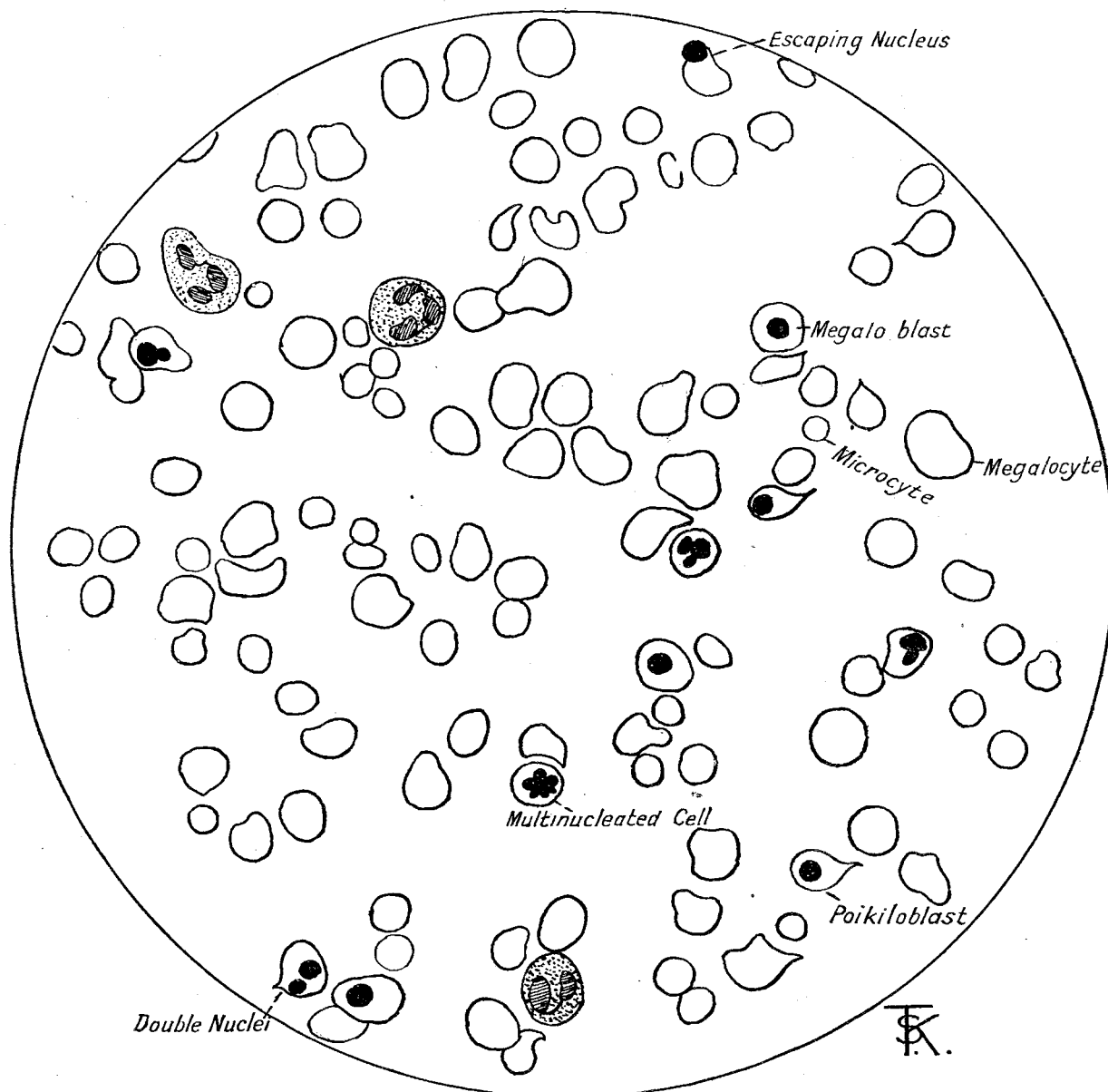
On April 28th the blood presented much the same characteristics described above; the differential count was as follows: lymphocytes, 17.5 per cent.; large mononuclears, 4 per cent.; polymorphonuclears, 76.5 per cent.; eosinophiles, 0.5 per cent.; and myelocytes, 1.5 per cent. Of 117 nucleated red cells counted 94 had single nuclei, 12 had double nuclei, and 11 were polynucleated. The ratio of nucleated cells to leucocytes was as 58 to 100.

On May 2nd the differential count was: lymphocytes, 15 per cent.; large mononuclears, 5.3 per cent.; polymorphonuclears, 79 per cent.; and eosinophiles, 0.7 per cent.

condition of the patient improved considerably for a time, but later violent diarrhoea accompanied by some vomiting and abdominal distension and tenderness set in; this varied from day to day. Thrombosis of the superficial veins of the legs supervened with much oedema and general aching pains all over. Towards the middle of May there was again a definite change for the better. The diarrhoea was less, the pain disappeared, and the temperature was normal. The patient, who had been upon a low diet, was now able to eat better and took a little chicken. The urine still contained albumin and urobilin. The improvement was, unfortunately, only temporary, for a gradual failure of strength followed and he died in an asthenic state on June 9th.

Necropsy.—At the post-mortem examination there were pigmented lines over the abdomen and broad bands upon the shins. There were soft adhesions over the whole of the right

FIG. 1.



Field under 1-12th, showing 11 nucleated red cells.

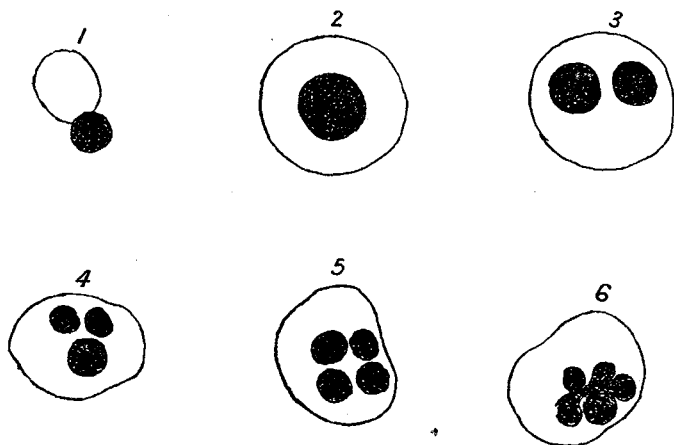
The red count failed. The leucocytes numbered 14,506 per cubic millimetre. There were no nucleated red cells. On May 17th the differential count was: lymphocytes, 19 per cent.; large mononuclears, 5.3 per cent.; polymorphonuclears, 75.8 per cent.; and eosinophiles, *nil*. The red cells were 3,950,000 per cubic millimetre; leucocytes, 17,700; only 2 nucleated red cells were seen. Hæmoglobin, 58 per cent.

The progress of the case was as follows. By April 24th the blood had disappeared from the urine though this still contained albumin in small quantity, casts, and urobilin. The temperature fell after the patient had been taking quinine for a week. The dulness in the axilla and at the right base persisted and was thought to be due to the liver, which was cautiously explored on two occasions for pus by puncture with a large needle, but none was found. The

lung and at the left apex. The right lung was encroached upon by a round bossing of the liver which pushed up the diaphragm to the level of the fourth rib and the sixth dorsal vertebra. The lungs were oedematous. The lower right lobe was less crepitant than the rest of the lung. The liver weighed 4½ pounds. Its surface was much scarred and there were firm adhesions to the under surface of the diaphragm. On the upper surface of the liver at the junction of the right and left lobes was a larger depressed scar which did not extend deeply into the organ. The right lobe was bunched up, apparently by the capsular fibrosis, into the thorax. There were also smaller bosses on the under surface of the quadrate and left lobes, and to a lesser degree on the liver generally. On section the liver tissue was healthy in appearance and was not tough. The general peritoneum was not thickened, except over infarcts in the

spleen. The gall-bladder and bile ducts were normal. The stomach appeared normal but contained grumous blood-stained fluid, as did the upper four yards of the intestine. In the lower part of the jejunum a superficial ulcer was found involving a valvula connivens, and extending transversely for an inch, and from this hæmorrhage had been recent. The pancreas and suprarenals were normal. The kidneys (left, 17 ounces; right, 16 ounces) were large and the surface was waxy in appearance, the capsules stripping easily. On section the organs, except at the centre of the pyramids, were of the colour of yellow fat. Iodine showed lardaceous degeneration. The liver did not give this reaction. The spleen (8 ounces) was waxy and contained three infarcts. To the naked eye the left testis was fibroid, the right normal. The case was therefore one of lardaceous disease following syphilis, complicated by hæmorrhage, presumably from the kidney, and terminally from the bowel, with patches of old perihepatitis deforming the liver.

FIG. 2.



Selected cells to show (1) escaping nucleus, (2) single nucleated red cell, (3) double nucleated red cell, and (4), (5), and (6) polynucleated red cells.

Several points of interest may be mentioned. The most prominent feature after the abdominal symptoms had subsided was pronounced anæmia following the hæmorrhage from the kidneys. It is probable, however, that there was a considerable amount of anæmia antecedent to the hæmorrhage, in which case even a moderate loss of blood would be sufficient to account for the occurrence of blood crisis.

Blood crisis is not uncommon in some forms of anæmia and is not infrequently met with in the apyrexial stage following pernicious malarial attacks, but a case so pronounced as that under review, associated as it proved to be with amyloid disease of the kidney, is seldom seen and should be placed on record. The points worthy of notice are: 1. The enormous number of nucleated red cells—on April 26th over 20,000 per cubic millimetre. 2. The rapid increase in number of the red cells from 1,100,000 per cubic millimetre on April 26th to 3,950,000 on May 17th, and in the amount of hæmoglobin from 29 to 58 per cent.; and the improvement in the patient's general condition following the blood crisis which may be regarded as of the nature of a regenerative process. 3. The remarkable rapidity with which the nucleated cells disappeared; on May 2nd, eight days after the crisis, there was not one to be seen.

Bleeding from the kidneys is an uncommon symptom in lardaceous disease. Dickinson says in Allbutt's "System of Medicine" that in the urine of lardaceous kidneys blood is but rarely present, but that when present it is sometimes in considerable quantity (Vol. IV.). In the same article he says that hæmorrhagic complications are rare, epistaxis being the most common. In this case bleeding took place before death from a superficial ulcer in the jejunum. A similar occurrence is recorded by Steinhaus.¹ Thrombosis, again, is not a common complication. It was found by Dickinson twice in 74 cases. The one typical symptom of lardaceous disease of the kidney which was present was diarrhoea. Edema did not occur except in connexion with venous thrombosis.

It is difficult to determine whether the patches of capsular fibrosis deforming the liver are to be attributed to syphilis

or to acute perihepatitis accompanying the attacks of congestion of the liver from which the patient had suffered. On account of the circumscribed nature of the patches we are inclined to regard the condition as a syphilitic one.

THE TREATMENT OF EMPYEMATA WITH NOTES FROM 55 CONSECUTIVE CASES.

BY GEORGE E. WAUGH, B.A. CANTAB., M.D., B.S.
LOND., F.R.C.S. ENG.,

SURGEON TO OUT-PATIENTS, HOSPITAL FOR SICK CHILDREN,
GREAT ORMOND-STREET.

As the question of the relative merits of the treatment of empyemata by resection of ribs or by intercostal incision without resection of ribs is still an occasional subject of discussion, especially amongst those who favour the latter mode of procedure, it may be of interest to place on record an analysis of the following 55 consecutive cases which were treated by the former method. The theoretical justification of this method lies in the fact that by these means only can the proper surgical principles which govern the treatment of abscesses be applied. The urgent need for the application of these principles would perhaps be more obvious if the condition was always referred to as an "interpleural abscess" rather than by the less suggestive title "empyema." These principles are briefly the establishment of a drainage of the infected area that shall allow of the most rapid escape of infected material from it combined with the removal of the maximum amount of septic material at the time of operation. An incision, which extends for the whole length of the greatest diameter of the infected area, satisfies these requirements and should only be abandoned when anatomical limitations prevent its completion. In such a way only may the conversion of an acute into a chronic abscess be avoided, with all the accompanying disadvantages of prolonged impairment of health, increased destruction of tissues, subsequent deformity, and even loss of life. Unfortunately, in the case of empyemata a compromise has to be effected, and the further that compromise is from the principles indicated the more frequent will be the occurrence of those disastrous forms of chronic empyema which terminate miserably in amyloid disease, general septic infection of other serous cavities, or even survival after the performance of an Estlander's operation.

Delay in the application of appropriate treatment is an additional factor tending towards failure. Such delay is, as a rule, the result of failure to recognise the presence of pus in the pleural cavity. The differentiation of this condition from one of extensive consolidation of the lung may be of considerable difficulty. In a certain number of these cases sent to the hospital this reason for preferring the latter diagnosis—viz., "that there was no displacement of viscera"—was frequently given, and had unfortunately led to considerable delay in the application of proper treatment. But the mechanical conditions obtaining within the thorax are not favourable either to the displacement of the heart or to the depression of the liver or spleen by a pleural effusion. The thrust of the fluid ought either to act directly on the viscera or to be transmitted to them through a rigid substance. In most instances the lung intervenes between the effusion and any other viscus and collapses—or condenses—to make room within the thoracic cavity for the effusion. The whole thrust of the fluid is thus used up in maintaining the lung in a collapsed condition and not until the lung is incapable of yielding to any further extent can the thrusting effect of the fluid be transmitted to adjacent viscera.

Evidence of displacement of viscera was carefully sought for in 41 consecutive cases. In only 19 was it found and in many of these cases a slight enlargement in the area of cardiac dullness or the fact that the lower edge of the liver and spleen was palpable was accepted as such evidence, so as to avoid the error of unduly minimising the apparent frequency of the occurrence of displacement. In many cases in which the effusion was large—in one case 35 ounces were withdrawn from a child seven years old—no signs of displacement could be found, whilst such signs were present in other cases from which only three or four ounces of fluid were removed. The conclusion to be drawn is that so-called signs of displacement of viscera are in many cases merely

¹ Schmidt's *Jahrbuch der Medicin*, vol. cclxxvii., p. 40, 1903