ease was determined by an examination of the blood. On the other hand, in many cases of suspected malaria, the absence of these bodies led to a more careful examination, and to the discovery of the cause of the chills and fever. Four of these were cases of phthisis with ill-defined physical signs; in a fifth, after several negative blood-examinations, the ague-like paroxysms were found to be due to a septic pneumonia; in a sixth and seventh, renal disease was discovered. I feel confident that, in malarial regions, the examination of the blood will prove, in skilled hands, a most valuable aid in the diagnosis of many obscure cases.

Melanæmia.—These researches on malaria throw light on the formation of pigment in the blood and various organs in the chronic cases. Evidently the primary change is in the red blood-corpuscle, which is gradually destroyed by the amoeboid form of the parasite. Every stage of this process can be readily traced, and these observations bear out the more recent views on the origin of the pigment in the blood itself. The pigmentary degeneration of the red corpuscles noticed long ago by Frerichs and by Kelsch,¹⁶ was no doubt the same as here described. The gradual accumulation of the granules in the spleen, liver, and bone-marrow leads to the characteristic melanosis of these organs. I sought carefully for evidence of active interference with these parasites on the part of the white blood-corpuscles, but on only

Fig. 14.—A colourless corpuscle studied for an hour and a half, during which time it had, as shown at 1, included a pigmented body, and was about to take another 2.

two or three occasions was this seen. Once a crescent was found inside a colourless corpuscle (Fig. 13), and again, as shown at Fig. 14, a corpuscle gradually enclosed two free pigmented bodies. The greater portion of the pigment resulting from the destruction of the monads is picked out by the cells of the spleen and bone-marrow, which also, no doubt, as in health, remove the effete red cells and their remnants. Pernicious malaria, common enough when Stewardson¹⁷ wrote his well-known article, has now become very rare in Philadelphia. In these cases, Marchiafava and Celli have found the capillaries of the various organs filled with corpuscles containing pigment-grains which appear enclosed in a hyaline matrix. Councilman and Abbot¹⁸ have described the same change, and I am indebted to Dr. Councilman for the specimen from which the accompanying sketch was taken (Fig. 15). It represents a small brain-capillary filled with corpuscles, in many of which are pigmented bodies which stain deeply, and, so far as can be

Fig. 15.—Sketch of a capillary vessel of grey matter of brain. Case of pernicious comatose malaria—Dr. Councilman. The red corpuscles are seen in outline, and in five there are pigmented bodies.

ascertained, are identical with the pigmented organisms met with in the red corpuscles during life. Only one instance of fatal malaria came under observation, a man aged 70, admitted to Dr. Musser's wards on October 25th. He had been on the Isthmus of Panama and in Georgia, and had chills and fever in both places; last chill was three days before admission. He had also had hæmaturia. He was very anæmic, the spleen was slightly enlarged, the temperature, 101.3°. There was great stupor, and he was roused with difficulty; the tongue was dry. The temperature became subnormal on October 27th and 28th. Examination of the blood showed many pigmented bodies in the red corpuscles, numerous free circular forms, a few crescents, and several flagellate organisms. The stupor deepened to coma, and he died on the night of October 28th. The spleen and liver showed typical pigmentation, and the bone-marrow was also very dark. The spleen-pulp contained free pigment and many large cells, some of which were filled with dark granules, while in others there were bodies identical with the small pigmented forms so abundant in the blood during life. The

marrow presented similar changes. The number of red corpuscles containing the pigmented bodies was not great, nor were the capillaries of the liver or the brain stuffed with them, as in the instances of pernicious malaria just referred to. Probably this was an instance of severe malarial cachexia of many months' duration, and scarcely should be grouped with the pernicious comatose form.

To my colleagues, Drs. Curtin, Neff, and Musser, I am indebted for the privilege of examining the malaria-cases in their wards; and to my resident physicians, Drs. Donohue, Albertson, and Westcott, for assistance which materially lightened my work.

AN ADDRESS ON THE INADEQUATE TREATMENT OF ANÆMIA.¹

By SIR DYCE DUCKWORTH, M.D., F.R.C.P.,

Physician to, and Lecturer on Clinical Medicine at, St. Bartholomew's Hospital.

NONE amongst us can doubt that there is everywhere a great deal of untreated anæmia. I observe it quite as commonly in healthy rural districts as in the large towns. An out-door life, in pure air, is by no means preventive or curative of this state. I have a strong impression, indeed, that many cases, anæmic in the country, improve under the conditions of the more intense life of big cities, provided the ordinary hygienic conditions are favourable. It is common to find the contrary affirmed—that country girls often become anæmic in the large towns. This is quite true, but the facts of each case must be brought out in order to explain the cause in each case. The causes of anæmia, ill-understood as they are, are certainly not uniform. For instance, I am as convinced of anæmia due to nervous influences, as I am of anæmia due to bad air, bad food, and imperfect solar influences; and for successful treatment regard must be had to all such matters. It is not difficult to follow the onset of the disorder in a young girl who comes from healthy farm-service in the country, to work as a scullery-maid in the dungeons of Belgravia, or to sleep in the stifling attics of Mayfair; but it may be asked why this state should so often supervene in young girls sent from home to schools where, now-a-days, even in Germany and France, attention is paid to diet and to active open-air exercise. The causes may be, and probably are, not far to seek in each instance, but they are, at any rate, as I have said, not uniform.

In this communication I wish to express my belief that many cases of anæmia are insufficiently or incompletely treated. I propose to discuss neither the very large subject of the etiology, nor the nature of the particular disorder in question. I refer to cases which are very common in all ranks of life, and more especially frequent in young females, to what is known as essential anæmia in its non-pernicious variety.

The term chlorosis is especially applied to the aggravated form of this in women, and it is a good one, and worthy of retention on all accounts. I suppose the ordinary conception of chlorosis is that of a case of severe anæmia in a young woman accompanied by amenorrhœa. The relation of the latter to the anæmic state has been interpreted in two ways; first, that the amenorrhœa is the cause of the anæmia; and secondly, that the amenorrhœa is the consequence of the anæmia. With the latter view I am disposed to agree. Menstrual disturbance is common, and chiefly in the direction of scanty and pale flow, the latter being perhaps as often met with as total cessation of menstrual effort. Of course, I exclude cases where menorrhagia is the cause of a truly hæmorrhagic and non-essential anæmia.

It is a matter of fairly common belief that chlorotic women are especially liable to gastric ulcer, and to the worst accident of such a lesion, namely, perforation; and in this belief I share.

The association of menstrual derangement, itself the result of the anæmia, with gastric ulcer, is too obvious to escape recognition, and there is no other disorder so frequently associated. The ulcer itself, once formed, probably suffers from nutritional defect by reason of the impoverished state of the blood, which prevents the formation of resisting tissue around it. The risk attending gastric ulcer in an anæmic female is certainly great. Amongst other evils and dangers

¹⁶ *Archiv. d. Physiologie*, 1875.

¹⁷ *American Journal of Medical Sciences*, 1851.

¹⁸ *American Journal of Medical Sciences*, 1886.

¹ Read in the Section of Medicine at the Annual Meeting of the British Medical Association at Brighton.

arising out of the anæmic state, which have only been sufficiently recognised recently, are the conditions of cardiac debility and dilatation, and the tendency induced thereby to valvular disease, especially of the mitral curtains. I think no doubt will be entertained on these points by those who have made careful clinical studies of anæmia. It is perhaps worthy of consideration whether a condition of prolonged and untreated anæmia may not tend to overstep a curable stage, and pass into the pernicious variety.

I am not, however, now concerned to discuss this or any other points in relation to the pathology or associations of the anæmic state, and merely refer to these graver evils in order to emphasise the necessity for prompt and complete treatment. The greater number of cases of the milder forms, as a rule, are untreated, and often there is very insufficient care taken to restore the defective state of the blood. It is generally held that iron is practically a specific remedy in anæmia of the non-pernicious form. This is my own belief, and I am disposed to think that many of the failures attributed to it are due to improper administration, or insufficient dosage of the drug. Other remedies have been consequently sought, most of them proving of limited usefulness, and many of them being, I maintain, unnecessary.

I would now instance two approved plans of treatment. Some years ago, Dr. Wilks expressed the opinion that some of these cases were readily cured by aloes without any iron, and I think I have been able to satisfy myself that this is so. Constipation is a common trouble in anæmia, and it is well treated by such an aperient as aloes, which operates on the large bowel, and probably stimulates adjacent pelvic viscera, encouraging thereby restoration of function to the uterus and ovaries, and thus establishing the menses. Intestinal catarrh is relieved in this way, and so better general nutrition is secured, leading to improved condition of blood. Cases of amenorrhœa dependent on plethora, the opposite state to anæmia, may be thus treated, but saline purgatives probably answer better. The first method I would mention is that consisting in giving saline aperients together with good diet and some full-bodied red wine, such as Burgundy, to the extent of four or six ounces daily. This is found to achieve the desired result in many cases without any iron. The second method is chalybeate treatment. Good therapeutists have urged that the non-astringent preparations of iron act best, and should therefore be used. And inasmuch as the term therapeutist has been lately much objected to, I would say, here and now, that if practising physicians are not therapeutists, I do not recognise any place for them in our social system. If the end and aim of all our studies and labours is not to heal the sick, I do not know what object we are in pursuit of. I see, only too plainly, that some of the studies which now absorb the attention of many amongst our body are not directed to this end; and I have a strong opinion that those who scoff at the efforts of so-called practical men in this direction, are in no proper sense bedside healing physicians. A great gulf is fixed between the students of bedside and those of dead-house pathology. Our business as healers of the sick is to try and afford the pathologists as few opportunities as possible of following us in our work and twitting us with our failures. Their harvest, unhappily, is only too plenteous, and we owe them, and always shall owe them, our thankful acknowledgments for the aid they give us in bedside work. But let it be recognised at once, that we have to deal with life and to save it, if we can, while they deal with death. I have often said, and now repeat it, that a great physician is a great artist, and can hardly transmit his special and personal powers. His skill, however, is far from being limited to mere drug-giving, and consists in a comprehensive care and solicitude for everything, however minute, that has to do with the well-being of the patient, and the aversion from him of all unfavourable influences. Hence, no amount of pathological learning will ever, by itself, make a master of the art of healing, and a seeming antagonism is thus set up between those who maintain that dead-house research is all in all, and those who hold that bedside study alone enables a man to employ remedial agents. All, then, who try to heal the sick in any rational way are therapeutists whether they like the term or not. The rational method is, of course, founded on accurate physiological and pathological conceptions, but it is therapeutics all the same, and always will be; and drug-giving is a part, but only a part, of it; not, indeed, always necessary or advisable. Asking your pardon for this brief digression, I resume what I have to say about iron in the treatment of simple anæmia. It is found that the state of the digestive system sometimes forbids the immediate use of iron. Thus, it will hardly agree, unless the tongue be clean, and any catarrhal state of stomach be first removed. For this purpose some alkaline and mild tonic remedy is necessary, such as a soda and calumba mixture for a few days; then iron may be given,

beginning with small, and increasing to large, doses. The best preparations are the ammonio-citrate, the tartrate, and saccharine carbonate amongst the non-astringent ones; of these, from five to twenty grains may be given thrice daily. The larger doses will often succeed where the smaller fail. The carbonate of iron is perhaps one of the best preparations, and is not so much used now as formerly. In the form of "mistura ferri composita" it is still presented in the last *Pharmacopœia* (Dr. Griffiths's green mixture).

To be effectual in many cases the dose would require to be increased beyond the indicated maximum of two ounces, and patients resent such dosage. The carbonate is, therefore, better given in fuller doses in the form of the saccharated carbonate, which is not at all unpleasant, spread on bread and butter, and half-drachm doses may be thus taken. In the form of Bland's pills it is now very commonly given, and the late Professor von Niemeyer has the credit of introducing it in this form into English practice, for it became known here only after the English translation of his book appeared in 1869. He remarked that he had "had such brilliant results with these pills that he never found any opportunity to experiment with other articles." As various formulæ are given for these pills, and they demand some skill in making, I append one which is trustworthy: *R* Ferri sulphatis gr.ij; potassii carb. gr.ij; glycerini tragacanthæ q.s. ut ft. pil. The dose is one pill thrice daily, gradually increased to four or six thrice a day. Given in this way, a large amount of iron is introduced into the system, much more than is actually taken up, but there is plain clinical evidence to show that these large and seemingly uncouth doses effect what smaller ones fail to do. Of the astringent preparations, the tincture of the perchloride, of the acetate, and the sulphate, it is certain that large doses cannot well be borne or digested. The dried sulphate is a good preparation given in pill with potash or soda. I have employed it in twenty and thirty grain doses in pills with the best effects in some very severe cases of anæmia, and I wish to commend the practice, which is at once seen to be very different from that commonly pursued, in which only small doses are given. To secure the full benefit, however, in some severe cases, it is necessary to keep the patient under care or observation from time to time for one or two years, and to recur to the treatment for a few weeks at intervals. There is a great tendency to relapse, and for the benefit to pass off. The risk is of leaving such cases incompletely cured, and so still exposed to the graver evils attendant on the anæmic state. Much benefit is to be obtained from the use of chalybeate waters by patients who can resort to suitable spas. Harrogate presents, without any question, the best potable iron waters in this country, and the Kissingen aperient chalybeate spring there is very suitable for many cases; also the chloride of iron and the Tewit springs. On the Continent are many excellent iron waters, of which the best are to be found at Spa, Schwalbach, Pyrmont, Bocklet (near Kissingen), and St. Moritz. The waters most impregnated with carbonic acid are the most agreeable to take. During the treatment by iron, it is well to give a nightly dose of the compound decoction of aloes, made more powerful, if necessary, by the addition of one or two drachms of the tincture of aloes.

The therapeutics of the anæmic state demand something more than mere drugs; but I must not dwell on these. I would, however, call attention to the importance of securing rest in the early treatment of severe cases. This is urgently called for when there is cardiac debility and dilatation, also if there be any suspicion of gastric ulcer. Repose in bed for some days or weeks proves of great value; and, if there be any pain after solid food, it will be well to suspect the possibility of gastric ulcer, and to employ suitable diet for some time. The great point I seek now to enforce is the value of iron in much larger doses than are commonly given, and the maintenance of the treatment for a prolonged period. Trousseau called attention to this matter many years ago, but his precepts have been forgotten. He considered the only limit to the amount of iron to be given was the tolerance of the stomach; and, where it disagreed, he gave it with opium or belladonna, or suspended it for a time in favour of cinchona. Here was a dictum of that wise physician in respect of anæmia: "A maladie chronique, il faut une thérapeutique chronique." He regarded the disorder—not, as is too often the case, as a simple and fleeting one, but as essentially chronic. I must add, that the fault is often on the patient's side. Having secured some temporary benefit, our cases pass away from us; but our duty is to follow them up till we are certain that the blood is restored to, and maintained at, due corpuscular richness. I am sure, from observation of many cases, that persistent treatment with iron, in a suitable form, and in much larger doses than are commonly given, will prove the most valuable and trustworthy remedy we have in dealing with anæmia. The mental condition of many of the subjects of this disorder must not be

neglected. Chagrin and unhappiness, and want of active pursuits, often retard recovery. The venous murmur in the neck is found to be the last to disappear; but, until it is no longer heard, a case of anæmia demands treatment.

I might add that arsenic is of unquestionable value, sometimes, as an addition to treatment by iron, though I am not able to distinguish the cases in which it is specially useful. It is intelligible that it should be beneficial in cases complicated with malarial impregnation, as in persons long resident in the tropics; and its great value in cases of pernicious anæmia, where iron is useless, must not be forgotten in connection with its occasional suitability in simple anæmia.

Lastly, I would say, there is a chapter in medicine to be written respecting the future life-histories of those who once have been severely anæmic, and have recovered more or less completely from that state. We want knowledge as to their special tendencies, and their tolerance of other morbid states; as to their power for child-bearing and suckling, their ability to do their share of the world's work. We want to know, also, the relation of the anæmic state, and a tendency to it, with other morbid proclivities. And all this knowledge can be gathered and made common by this great Association.

I would suggest that such an inquiry as I have here indicated be set forward, and its results brought into this Section at some future meeting of our body. The work will be accomplished by those who enjoy the advantages of family practice, and can thus trace life-histories over long periods.

POST-MORTEM EXAMINATIONS OF CENTENARIANS: WITH REMARKS.

By G. M. HUMPHRY, M.D., F.R.S.,
Professor of Surgery in the University of Cambridge.

Of the *post-mortem* examinations of centenarians which have been recorded (they are unfortunately but few), the first and best known is that of Thomas Parr, aged 152 years and 9 months, made by Dr. William Harvey, by command of the king (Charles I). The body was muscular, the chest and forearms hairy, the hair being still black, but the legs without hair. Organs of generation healthy; penis not retracted or extenuated; testes sound and large, "so that it seemed not improbable that the common report was true, namely, that he did public penance, under a conviction for incontinence, after he had passed his 100th year; and his wife, whom he had married in his 120th year, did not deny that he had intercourse with her, after the manner of other husbands with their wives." The chest was broad and ample; the lungs nowise fungous, adhered, especially on the right side, to the ribs; heart large, thick and fibrous, with considerable quantity of fat; cartilages of ribs soft and flexible; stomach and intestines and all the viscera sound; kidneys healthy, with the exception of a few watery cysts; no appearance of stone in them or in the bladder; spleen very small, scarcely equalling one of the kidneys; a good deal of fat about the mesentery, omentum and kidneys; brain healthy, firm and hard to the touch.

He "had observed no rules or regular time for eating, was ready to discuss any kind of eatable that was at hand; his ordinary diet consisting of sub-rancid cheese and milk in every form, coarse and hard bread, and small drink, generally sour whey. On this sorry fare, but living in his home, free from care, did this poor man attain to such length of days. . . . He was accustomed to walk about, slightly supported between two persons; had been blind for twenty years, heard extremely well, understood all that was said to him, answered immediately to questions, and had perfect apprehension of any matter in hand; his memory was, however, greatly impaired." "He was accustomed, even in his 130th year, to engage lustily in every kind of agricultural labour, whereby he earned his bread, and he had even then the strength required to thrash the corn." His death was attributed to the change from the pure air of Shropshire to that of London, and to the change of diet, incidental to a residence in the house of the Earl of Arundel, by whom he was brought to town and presented as a remarkable sight to his Majesty the king.

2. Dr. James Keill gives, in *Phil. Trans.*, xxv, p. 2247, 1706, an account of the death and dissection of John Bayles, of Northampton, reputed to have been 130. The oldest people remembered him to have been old when they were young. Of late decrepit and carried about. His diet was anything he could get; but he had not eaten

meat for some years, and of late lived only on small beer, bread, butter and sugar. Pulse irregular and intermitting for some years before death; went to stool but once in ten or twelve days for some years before death. A little man; body emaciated; abdominal viscera pale; spleen small; kidneys and urinary passages sound; a few yellow grains of gravel in the right kidney; cartilages of sternum not harder than they usually are; ribs brittle. "Lungs attached even to the pleura." Heart large, thick and fat; diameter of aorta above two inches; the abdominal and iliac arteries for the greatest part cartilaginous. Bones of skull sound and good; a small ossification in dura mater, by the falx. Brain more solid and firm than usual; ventricles full of serum. Genitals, both testicles and penis, of large size. He had lost sight for some years, but hearing was good till he died. "The greatest part of his blood was in his arteries, whereas generally in all dead bodies the veins are full." This is attributed to the loss of elasticity in the arteries; and to the same cause is attributed the dryness and the deficiency of the secretions in the old. The strong fibrous heart, the low stature, the largeness of the chest and goodness of the lungs are regarded as having had the greatest share in preserving the longevity.

3. In *Phil. Trans.*, xlv, p. 528, 1747, is an account by Haller of the examination of a decrepit woman reputed to be 100. Tissues dry; costal cartilages not yet osseous. Aorta, together with large arteries, osseous and rough; the aorta much dilated (5 inches 2 lines in circumference), with valves indurated and earthy. Twenty small stones in gall-bladder.

4. Dr. J. Beddoe, of Clifton, informs me that he "assisted at the *post-mortem* of a woman, credibly reported to be aged 106, who died from a burn. Her costal cartilages were normal. There was no evidence of her having ever had a tooth, so entirely had the alveoli been absorbed. One of her kidneys was perfectly obsolete. She exhibited signs of extreme tight-lacing."

5. Sir G. Duncan Gibb (*Journal of Anthropological Institute*, July, 1875) gives the necropsy of Mrs. Leatherlund, believed by him to have died at the age of 110. She was 4 feet 9 or 10 inches, and body proportionately small. Skin yellowish brown; muscular development good; no decided emaciation; some fat over the chest and abdomen; cartilages of ribs cut through with the greatest ease; lungs healthy; heart a little large, rather soft and flabby, with slight covering of fat; muscular structure, cavities and valves appeared healthy; arch of the aorta enlarged, measuring 4 inches in circumference at its commencement and 3½ inches at its termination. An atheromatous patch the size of a silver threepence at the lower surface of the transverse portion, and a ridge of atheroma at the left part of the ascending portion; scarcely a trace of omentum; stomach and alimentary canal, liver and gall-bladder healthy; spleen small but healthy; kidneys soft and flabby, but, as well as the ureters and bladder, healthy; uterus, Fallopian tubes and ovaries small; thoracic and abdominal blood-vessels healthy. The larynx and the rings of the trachea were perfect and flexible.

The same author attached much importance to the good conformation of the larynx and the erect position of the epiglottis, facilitating the passage of air to and from the lungs.

6. The most complete account of the examination of a centenarian is given by Rolleston.² John Pratt, reputed to be 107. Father died aged 75; mother, 104; grandmother, 110. Habits some way short of strictly temperate. Examination made thirty-two hours after death. One upper canine. Dura mater closely adherent to skull; well-nigh continuous tracings marked the position of the coronal and sagittal sutures. No exostoses on interior of skull. Canals for meningeal arteries deepened by bands of bone on either side, but there is no mention that the skull was thick, dense, or heavy. The relation of diploë, internal and external tables, much as in an ordinary skull. Weight of brain, 43 ounces. Mentions one from a woman aged 100, 45 ounces. Convulsions rounded, and to some extent atrophied; the fissure of Rolando, and the fissure anterior to it, being especially wider and deeper than natural. Cavities of lateral ventricles somewhat enlarged; numerous amylaceous bodies on surface of corpus striatum. Body appeared emaciated, but considerable layer of yellowish fat over pectoral muscles. Muscles looked pale, but showed the usual characters of striated muscle with great clearness and distinctness. Costal cartilages cut with greatest ease, of brownish yellow colour, from oil in cartilage-cells. Died of acute pleurisy. Much fluid in right pleura; apex of right lung the seat of chronic pneumonia. Had cough for some months before death. Heart much loaded with fat; atheroma of aorta opposite the edges of valves, and calcareous deposit; very little beyond this—only one patch. Liver, 43 ounces; much oil in cells. No mesenteric glands visible; Peyer's glands merely black specks;

¹ *Harvey's Works*, published by the Sydenham Society, p. 589. Harvey expresses no doubt about his age. In this more sceptical period we may fairly admit him to rank among the centenarians.

² *Scientific Papers and Addresses* i, 141.