Among miscellaneous cases there were nine instances of hemolysis, two in cases of grave eclampsia, one in a case of extreme hyperpyrexia due to hyperthyroidism several hours before death (the temperature at this time was 109), in one case of leukoplakia of the tongue, and in one case of psoriasis. The remaining four occurred in cases of chronic diseases without definite diagnosis.

The results of our study may be tabulated as follows:

TOTAL NUMBER OF CASES STUDIED, 591.

	Hemolysis.	No.	P.C.
Normal subjects	211	0	0
Pyogenic infection	71	7	10
Benign tumors	55	0	0
Cancer	153	130	85
Postoperative cancer cases with clinical recurrence	11	11	100
Postoperative cases without clinical recurrence 3 weeks to 15 years after operation	37	0	0
Tuberculosis	52	48	92

Extracts of malignant tumors uniformly caused total hemolysis. Extracts of benign tumors uniformly caused no hemolysis.

COMMENTS.

The cancer cases showing no hemolysis were mostly in the advanced inoperable stage. Only an occasional early case failed to show hemolysis.

Cancers on mucous membranes showed hemolysis more frequently than cancer in tissue, as the breast.

All cases of tuberculosis showed reverse hemolysis, that is, normal serum hemolyzed the patient's corpuscles. In all cases serum heated to 55 C. for ten minutes prevented hemolysis. Sudden chilling of the blood according to the method of Hoover and Stone caused a marked increase in the hemolytic action. Plasma obtained by immediately centrifugalizing the serum caused little or no hemolysis in hemolytic cases.

The hemolytic property reaches its maximum about twenty-four hours after the blood is drawn.

In the cancer group the cases in which the disease was entirely removed lost their hemolytic property in from twelve to twenty-one days after operation.

In cases in which an incomplete operation was performed the hemolysins continued indefinitely.

CONCLUSIONS.

Our conclusion is that hemolysis occurs in a number of diseases. It occurs in great frequency in cancer and tuberculosis. The reaction in tuberculosis is the reverse of that for cancer. From the clinical standpoint hemolysis offers additional evidence which may be used in the diagnosis of cancer or tuberculosis. This evidence is not as yet specific.

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THE VALUE OF A ROUTINE PHYSICAL EXAMINATION.*

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One gets the impression from reading certain books on general medicine that diagnosis constitutes three-fourths of the physician's work, and that having ascertained the nature of a patient's ailment, anyone can institute treatment. However widely we may dissent

from this view, we must concede the important part played by diagnosis in prescribing for our patients, to say nothing about the intellectual stimulation it affords the practitioner. In itself it is so absorbingly fascinating that the Germans, for example, may be said to look on it as an end, rather than as a means to an end, and to concern themselves not with the treatment suggested but with the autopsy to confirm or to disprove their original findings. Nevertheless, for all of us, the recognition of disease from symptoms is essential for skilful, clear-headed management of any case, symptomatic prescribing being unscientific and unjustifiable save in rare instances. Convulsions, dyspnea, diarrhea, cardiac palpitation are symptoms, for which one should seek the underlying cause, rather than adopt palliative measures whose effects, at best, are transient.

The word "diagnosis," as I use it, includes the recognition of physical signs of disease, a careful discrimination among and weighing of these, and a final arrival at the true nature of the affection in question by consideration of signs in connection with the history of the case. Anyone who has read many such case histories and records of physical examinations with probable diagnoses, and who has then been fortunate enough either to see or to read accounts of autopsies on the bodies of these same patients, must have been impressed with the discrepancy which too often exists between antemortem and postmortem discoveries.

About a year ago it occurred to me that a review of many cases might afford some explanation of our mistakes. Accordingly, since that time I have studied one hundred instances of disease, some of which came to autopsy, others being ultimately diagnosed and successfully treated. The revelations of this work suggested the title of my paper, for, among other causes to which our errors may be attributed, the following seemed most prominent: First, lack of clinical, book and laboratory knowledge; second, untrained powers of observation; third, absence of system in obtaining histories and making physical examinations; fourth, inability to interpret data secured; fifth, the fact that the problem is incapable of solution.

I have attempted a consideration of just one part of one of these causes—the lack of systematic physical examination. In the series of cases investigated, typical of what the average general practitioner sees, as many failures in diagnosis could be assigned to this as to any other one cause. Both radials were not palpated simultaneously, the gums were entirely overlooked, no count was made of white blood corpuscles, the urine was not examined for sugar. This fact is all the more deplorable because a habit of routine work can be acquired by everyone, a fact which is not in the same degree true of the acquisition of knowledge, or of the power to observe, or, having seen, of the ability to interpret. The haphazard, accidental method of procedure is always productive of confusion and error, rather than conducive to enlightenment, accuracy, and truth. To bring forcibly to mind the real value of routine work, I have chosen several cases in which diagnostic blunders were the direct result of no regular order or plan of examination. Histories and results of examination are stated precisely as in the original.

CASE 1.—Male, aged 32, occupation cook, came to the hospital on Jan. 6, 1899. His family history was negative and

1. Cases 1, 2 and 6 are taken from Cabot's "Case Teaching in Medicine."

*Read before the Maine Medical Association at Bangor, Maine, on June 11, 1908

previous history good. He denied any syphilitic infection, but admitted having had urethritis some years previously. He had never had an attack similar in character to this. The present illness dated from Dec. 30, 1898, eight days before applying for relief at the hospital. The first symptoms seem to have come on rather suddenly with a rigor of marked severity, followed by fever and later by profuse sweating. Almost immediately afterward he was seized with intense muscular pains, extending over the trunk and limbs; these pains were agonizing in character, increased on the slightest exertion, and had been present with varying degrees of severity until his admission. They prevented him from sleeping, and he spoke of them as being not unlike rheumatism—dull and aching while he was in the recumbent posture, becoming intensely lancinating as soon as the slightest exercise was attempted. His appetite, which had previously been of the best, was absolutely lost and he had eaten nothing for three days. With the exception of some slight frequency of micturition and a slight cough with expectoration, there was nothing else of importance in the history of the illness.

Examination.—The patient is a rather large, well-formed man, the mucous membranes are of a good color, tongue moist, coated with a white fur. The eyes are markedly injected, the eyelids slightly but distinctly edematous, and an erythematous area is present above the swellings. Negative results are obtained everywhere on auscultation and percussion, except at the bases of both lungs posteriorly, where a few moist râles are heard. The heart sounds are clear. The liver and spleen are not palpable; the abdomen is soft and natural in appearance, negative results being obtained on palpation. No rose spots are seen. There is no superficial glandular enlargement. Pulse 100, respirations 24 a minute. Later the temperature ranged in the vicinity of 103 F. for three weeks and then gradually subsided. The urine is normal in color, acid, specific gravity 1.026. Microscopically, it shows pus corpuscles in considerable quantity, epithelial cells and a few mucous cylinders.

From such data can we solve the problem? Severe pains in the trunk and limbs accompany such infectious diseases as influenza, tonsillitis, dengue, variola, trichiniasis, and yellow fever. Muscular rheumatism can not be ignored; it is a common diagnosis of the real condition existing here. Can one exclude neuritis? Certainly not if the knee-jerks are diminished or absent, in which event tabes and anterior poliomyelitis also come to mind. Note that in the original examination no attention was given the gums, pupils, throat, blood, reflexes, or the urine for sugar. These were all subsequently found to be normal except the blood, which showed a leucocytosis with normal hemoglobin. The increased white count suggested a differential count, which, in its turn, revealed eosinophilia. Excision and histologic inspection of a bit of biceps muscle demonstrated trichinæ.

In the clinic of Dr. Adler at the German Hospital, New York, eight cases of trichiniasis with eosinophilia were admitted between Nov. 1, 1905, and Feb. 1, 1906. Trichinæ could be seen in the muscles of only three of these, yet all showed areas of infiltration and muscle fiber degeneration. To quote Ottenberg: "The combination of eosinophilia with edema of the face, which occurred in six of the above mentioned cases; muscular pains, present in all, though pronounced in only two; and fever, occurring in seven cases, makes a clinical picture which could hardly be exhibited by any disease other than trichiniasis." In his mind, "there is no doubt that when blood examinations are not made, many, if not all, particularly of the mild cases of trichiniasis, are mistaken for other affections, notably typhoid, intestinal intoxications, muscular rheumatism or influenza. Indeed, in the eight cases here recorded,

six patients were admitted to the hospital as probable cases of typhoid, one as a case of muscular rheumatism, and only one with a suspicion of trichiniasis."

In temperate climates trichiniasis is the only chronic febrile disease with eosinophilia and severe muscular pains. Blood examination, therefore, renders the diagnosis comparatively easy. In the tropics other fevers accompanied by the presence of intestinal parasites complicate the situation; but in any climate these cases so closely simulate typhoid and muscular rheumatism as readily to be mistaken for either without blood examination.

CASE 2.—A boy, 14 years old, of gouty family history, complains for a year of frontal headache, not very severe, but persistent and wearing. Appetite excellent, but digestion not as good as it has been. Has suddenly grown very irritable, having previously been sweet tempered. He has lost flesh during the year and seems listless and weak. Sleeps well. Bowels somewhat constipated. Getting pale. Heart, lungs and abdomen negative. Knee-jerks not easily obtained, but gait shows weakness. Urine, normal color, acid, 1.028, no albumin. Sediment negative. Temperature 98.0, pulse 96, no edema, blood negative.

This sounds complete, but it lacks the very points which make a diagnosis possible. We consider the various causes for change in disposition, and find them enumerated as masturbation, brain tumor, diabetes, psychosis of puberty. Eyestrain, adenoids, frontal sinus disease, malaria, pubescence, are considered as possible causes of frontal headache in a boy of fourteen years. The significance of pallor is dwelt on; we reflect on loss of flesh despite good appetite, together with persistent headache and diminished knee-jerks.

Two facts not mentioned in the attending physician's report, and, therefore, omitted from the above quoted history, now come to light under the routine—the quantity of urine passed in twenty-four hours, three quarts; and the amount of sugar in that urine, 5 per cent. The glycosuria, being persistent, denoted diabetes mellitus.

CASE 3.—A male child, 10 months old, was brought to the Infants' Hospital in Boston from a town twenty miles distant. The physician accompanying it said that he had seen the infant daily for one week, during which time its upper extremities were habitually extended over the head. Any attempt at moving them was resented by infantile shrieks. The child had been receiving a sterilized milk mixture which it had taken with avidity, and was apparently content when not disturbed. The diagnosis was double dislocation of the shoulder joints, and for their reduction the little patient had been sent to a hospital.

Further Examination.—Another student and myself were given an opportunity, through the courtesy of Dr. Stone, of verifying the diagnosis and we failed to do so. We did note, however, an unmistakably rachitic head, a slight rosary, and somewhat enlarged epiphyses; the eyes presented nothing remarkable, but, unfortunately for the first man's reputation for thoroughness, the gums were spongy and bleeding.

Treatment.—Under the circumstances it was deemed wise to heed the call for a different diet and orange juice. In less than two weeks' time the child moved all its extremities freely.

My point is that any person who had acquired the habit of examining patients systematically would have diagnosed scurvy at once. For this and other reasons I have since that time included the gums in my routine examination of every patient.

CASE 4.—A prominent medical consultant of my acquaintance in the middle west was one day asked by a practitioner in an outlying town to see with him one of those cases of malaria which prove the "non-specific action of quinin in that disease," to use his own words. The history, in brief, was

that of one who had had regularly recurring chills every second day for three weeks, during which time quinin powders had been used faithfully without the slightest effect on the course of the disease.

Examination.—The consultant went in search of these remarkable malarial plasmodia armed with microscope, cover-glasses and slides, blood-stain and a Talquist scale. At 4 p. m. the patient was found feeling chilly, temperature 100.9 F., pulse 88. Eyes, throat, gums and ears were normal. Marked pallor formed the background for the faintest flush over the cheek bones. A drop of blood from the ear showed hemoglobin, 90 per cent., and a similar drop under the microscope proved positively the absence of malarial organisms. Examination of the lungs, including inspection, percussion, palpation, whispered voice, was unsatisfactory. Auscultation disclosed below the right clavicle persistent, localized, cog-wheel respiration, indicating a partial obstruction of alveoli to the entrance of air. The remaining examination of the heart, arteries, liver, spleen, kidneys, glands, tendon reflexes and urine was negative. Potassium iodid, ten grains after meals, was ordered, and produced at the end of one week sputum containing tubercle bacilli.

Here, then, is a sample of a snap diagnosis based on regularly recurring chills without making any examination whatever.

The case also explains the origin and suggests the worth of reports, occurring not infrequently in our journals, concerning the non-specific action of quinin in malaria. Three lessons are suggested: first, the value of a routine physical examination; second, that from the blood only can a positive statement be made regarding the presence of the malarial organism; third, an intermittent fever which resists quinin in capsule is not of malarial origin.

CASE 5.—A consultant was called to see a case of convulsions with anemia in a woman of 40. We must admit the condition unusual if convulsions and apparent anemia were the only symptoms, but one can not sympathize with a man who failed to diagnose a disease so easy of detection as this one proved to be, because he had not examined thoroughly.

Conditions Considered.—He had considered the various causes of convulsions: uremia and hepatic toxemia, cerebral concussion or compression, diabetes, epilepsy, hysteria, sun-stroke, syncope, opium, alcohol or gas poisoning and even apoplexy. None would fit. Anemia was taken for granted because of paleness. Routine examination should include inspection of the gums, where, in this instance, with the aid of a pocket magnifying glass, was found the so-called "lead line," which is not a line at all. This suggested blood smears and stippled red cells were at once discovered; hemoglobin, 90 per cent. And yet the woman was said to be anemic!

Lead Poisoning.—The "lead line" was also found on the gums of the three children of the family, and in all probability would have appeared on the father's had not his teeth been false.

Emphasis is again laid on the word "routine." Did we all have some definite, comprehensive scheme of procedure and follow it in every case, I should not in the past have been able to diagnose plumbism in two persons, each of whom had previously consulted two different members of the metropolitan profession for the same ailment. This case also calls to mind, as did Case 2, the wholly unjustifiable diagnosis of anemia because of paleness. Pallor may mean anemia, but often does not. Consumptives, neurasthenics, persons with deficient skin circulation are pale, but few of them are anemic. The Talquist hemoglobin scale alone can decide in the vast majority of instances.

CASE 6.—A painter, 23 years old. Family history negative. General health always good. Gonorrhea eight months ago, a slight mucopurulent discharge still persisting. Seven months ago had an attack of colic, lasting three or four days, similar

to his present trouble, but less severe. Bowels move once daily without medicine. Seven days ago began to have cramps which have grown rapidly worse since and have been only partially relieved by large doses of morphin and atropin. The abdomen at first was generally tender, especially just to the right of the navel. The bowels have been constipated during the present illness, in spite of repeated doses of salts and enemata. Very little gas passes by rectum. Has vomited three times, the vomitus containing nothing of note.

Examination.—Examination shows a poorly nourished man, suffering acutely from general colicky pains in the abdomen. Expression pinched and anxious. No jaundice. Faint blue line on gums. Radial arteries slightly thickened. Heart and lungs normal. Abdomen distended and tympanitic. Between attacks of pain no marked tenderness is elicited even on fairly deep pressure. The distended, moving coils of intestine are visible through the thin abdominal walls, which are somewhat rigid everywhere. The finger high up in the rectum strikes a tender point a little to the right of the median line. The pulse is small and has been steadily gaining in frequency. The temperature taken only during the past five days has never gone above 99.0 degrees. Urine scanty, acid, high-colored, specific gravity 1.026. No sugar or albumin. Sediment negative. Leucocytes five days ago 35,000, now 19,000.

This case illustrates a mistake frequently made when one of the conditions present is so obvious as to eclipse all others—the failure to consider all the facts presented. Here are the results, for example, of a thoroughly systematic examination. Lead poisoning was so conspicuous that a leucocytosis of 35,000, which never occurs in uncomplicated plumbism, was overlooked and led to serious blunder in diagnosis. That count in conjunction with a steadily rising pulse and a distended, tympanitic, rather rigid abdomen, pointed to a probable focus of inflammation in the abdominal cavity. Operation showed general peritonitis due to appendicitis.

Instances might be multiplied indefinitely to strengthen my contention that for a thoroughly good physical examination some fixed scheme of procedure is necessary. I therefore presume to suggest one which, I feel, ought to be followed in every first examination, at least, in order that by the prominence of one or more symptoms one may not be led astray in his train of thought, may not confine his entire attention to one organ to the exclusion involuntarily of all others, may not render a snap diagnosis because of preconceived opinions.

A minimum examination should include attention to the weight, pulse in both radials at the same time, temperature, hemoglobin, blood; the urine for quantity, albumin, sugar, bile, specific gravity, reaction, and sometimes sediment; the pupils—I would almost add fundus—throat, gums, ears, reflexes, glands; the liver, spleen and kidneys, for palpation; the heart, lungs and arteries.

The tongue's appearance is of so little diagnostic importance that its routine inspection may be omitted. Dyspepsia and a clean tongue indicate hyperchlorhydria, but the so-called typhoid and scarlet fever tongues are not significant.

The hemoglobin test alone can eliminate anemia. If the scale shows less than 75 per cent. of hemoglobin, a blood examination ought to be made. This statement refers, of course, to the possibility of an anemia and does not apply to the making of blood smears to determine the presence or absence of malarial plasmodia, of stippled red cells, of an eosinophilia; or to the leucocyte count for purposes of differentiation between a possible typhoid and a pneumonia or appendicitis or

other septic condition; or to the Widal reaction. All of the latter ought to be more generally employed.

Science progresses by additions and subtractions. Nothing better illustrates progress by subtraction than the change which has taken place regarding our conception of what constitutes urinalysis. Formerly these contained references to the various kinds of cells seen, and we thought we knew their source and significance. To-day an excess of cells means exfoliation or inflammation somewhere in the genitourinary tract, the precise location being determined, if at all, by the patient's symptoms. We don't know the difference between a lymphocyte and a renal cell, hence it is more correct to speak of cellular than of epithelial casts. The various kinds of crystals are of just as little importance as cells. Hyaline and even finely granular casts may be found in any urine. One swallow doesn't make a summer or one cast a nephritis. Here, again, it is an excess of casts that should claim one's attention. They may be found after any violent exercise, in all fevers, in heart disease or anything else producing passive congestion, in senility, in the different varieties of anemia and leukemia, after the ingestion of all poisons, as well as in the three varieties of nephritis, although in Bright's disease they are usually more numerous than in other conditions. Any one of these causes may, likewise, account for the presence of albumin in the urine. The urea test is worthless, for the amount of this product in urine depends on the quantity of nitrogenous foods eaten, the digestion, absorption and the amount the individual normally retains. Equally worthless are the indican, phosphate, chlorid and uric acid tests.

If I could know but two things about a specimen of urine, I should ask for the twenty-four hour amount, and whether the greater part was passed during the day or night. One can easily inform himself, however, concerning the other points mentioned in the minimum examination. Never look for anything else, unless it be diacetic acid and acetone, and then only—save in cases of cyclic vomiting in children—if sugar be present. Personally, I never examine a sediment unless albumin is present.

No one questions the value in every case of examining such organs as heart and lungs. Many, however, will demur at the ears, and yet topi have been found in them; the gums have been known to disclose lead poisoning; throat examinations, especially in very young children, often reveal diphtheria which might not otherwise be suspected until too late. Kidney palpation, it is said, will demonstrate 50 per cent. of all kidneys to be movable in the female, a condition to which innumerable symptoms are attributed, and in connection with which it is well to bear in mind the opinions of men of large experience, that it is not the movable kidney, rather is it the knowledge of its presence that accounts for symptoms; and, lastly, after systematic examination of each patient's arteries, no one of us will ever be guilty of the question, "Is arteriosclerosis often seen?" only to be told, "Yes; it is one of the commonest conditions we meet"; for the arcus senilis, the hot feet of old persons and the burning hands of old washerwomen, the headaches, vertigos and hemiplegias of those past forty, angina pectoris, chronic interstitial nephritis, and the so-called visceral gout of the English are all manifestations of arteriosclerosis.

The examination which I propose requires from thirty to forty minutes time. If it were adopted and

used intelligently, I do not hesitate to express my belief that it would supply us with more valuable information concerning the physical conditions of our patients than we are now generally obtaining. When we cease to commit the common sin of omission, we shall retain our patients instead of compelling them to seek aid of osteopath, so-called Christian scientist or other charlatan, to whom, be it said to our shame, many persons resort because the regular practitioner has not "made good."

A PLEA FOR THE PROMPT EVACUATION OF THE UTERUS IN THE TREATMENT OF ECLAMPSIA.*

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In the whole range of obstetric practice, two diseases have claimed pre-eminently more victims and brought more sorrow into the human family than all others combined. They are sepsis and eclampsia.

For centuries a cloud of mystery obscured the causes of these two diseases. That of childbed fever baffled research until the brilliant observations of Semmelweis, and the later investigations of Pasteur revealed the cause and pointed out a line of treatment, both prophylactic and curative. Asepsis has almost eliminated puerperal infection, and the vigorous campaign waged against germs for the past half of a century has antagonized their virulence to such an extent that we seldom see now the destructive ravages of this disease. But what about eclampsia?

Zweifel has well said: "It is a disease of theories." About the time that Semmelweis made his fruitful observations regarding the cause and prevention of childbed fever Lever and Rayer demonstrated the presence of albuminuria in eclamptic patients. Frerich pointed out the close resemblance of eclampsia to the uremic convulsions of Bright's disease, and the attention of investigators was focused on the kidneys. The later destruction of theories founded on this line of investigation opened Pandora's box and a multiplicity of evil influences have been since evolved to explain the nature and causes of the disease. It is unnecessary even to enumerate these various theories, or, as they may be called, fancies. Passing over intermediate ground one comes to more recent studies and looks with encouragement of success to the theory of autointoxication. Intimately associated with fetal metabolism is the development of a toxemia in the pregnant woman. The nature of the poison and its source are yet unknown. The antagonism of healthy organs to the poison and its elimination from the system of the pregnant woman are important points for future study to elucidate. We believe that the effect of the poison is to produce certain visceral lesions, principally of the liver and kidneys, which, if unchecked, will pass beyond repair and lead to a fatal issue. Functional inactivity of the liver is the usual accompaniment of pregnancy. Hepatic involvement leading to degenerative changes, thrombosis of the peribular veins and necrosis, further cripples the function of the liver. It is unequal to the task of disintoxication of the poison and a hepatic toxemia is induced.

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.