CONTENTS

Something for Nothing or Advice Worth While  
Ivan H. Smith, '27  
27

Idiopathic Thrombocytopenic Purpura  
Charles S. Fisher, '43  
31

Pierre Louis and the "Numerical Method"  
L. G. Stevenson, '45  
38

Pulmonary Pneumatocoele  
Lawrence D. Ruttle, '42  
50

Abstracts  
54

Editorial  
58

Book Reviews  
60

Recent Accessions to the Medical School Library  
63
University of Western Ontario

MEDICAL JOURNAL

Published Quarterly by
Undergraduate Body of the
University of Western Ontario Medical School
 Entered as a Second Class Matter at London, Canada.

BOARD OF ADVISORS
E. M. WATSON, M.D., F.R.C.P. (Edinburgh)
R. A. JOHNSTON, M.D., F.A.C.S., F.R.C.S.(C.)
S. A. MACDONALD, B.A., M.B., Ch.B.

STAFF
LAWRENCE D. RUTTLE, '42, Honorary Editor
JOHN H. LINDSAY, '43, Editor-in-Chief

Associate Editors
KENNETH INGHAM, '43, Abstract Editor
FREDERICK HEAGY, '43, Book Review Editor
MARION WEBSTER, '44, Exchange Editor

Business Manager
STUART H. BUSBY, '44

Circulation Manager
LLOYD STEVENSON, '45

Subscription Manager
ALLEN JOHNSON, '45

Advertising Manager
DOUGLAS BOCKING, '44

Assistant Advertising Manager
KEITH DICKSON, '45

Secretary-Treasurer
CECIL WALLACE, '45
Something for Nothing or Advice Worth While

By IVAN H. SMITH, '27

I WILL write briefly on the subject, "Looking Things Up in the Library." I do so not as an authority on library science, not voluntarily, but as an old student, in response to a request from a most genial member of the editorial board. I hate writing, it savours of English 21, but I love giving advice, the same as you do, so here it is. Incidentally, and of course, confidentially, I have an intuition that the Journal would wish it known it is in no way responsible, either for the views expressed by the author, or for any ulterior effect they may have on the student body!

Don't Overdo It

"Knowledge and wisdom, far from being one, oftentimes have no connections;
Knowledge dwells in minds replete with thoughts of other men,
Wisdom in minds peculiar to their own."

—W. Cowper.

You can acquire knowledge from the library, but not wisdom: which being interpreted and applied to medical students means you cannot practise medicine from a text-book. Be canny, therefore; curtail your extra-curricular literary activities, lest all work and no play make you a dull boy. Dull indeed is the bookworm so wrapped in the glory of his own acquired information that he not only has lost the art of passing a bit to others, but in applying it unto himself. An unbalanced student life may take years to undo.

Though you are entering, or have travelled well into your chosen field of medicine, don't let the rest of the world go by. You are a citizen. I will illustrate this seemingly carefree advice by an object lesson, the most effective way of teaching youngsters. Maybe you aren't a youngster. But your parents still think so, the Dean likewise; of course your instructors know better! Be this as it may, it reminds me of the early twenties, when the late Dr. Paul S. McKibben, beloved by all students, was Professor of Anatomy and Dean of this Medical School.
News of his untimely death has reached us and recalls memories of a scholastic gentleman, loyal to his school, humane in his dealings with students, and above all, worthy of a stewardship, which both students and faculty placed in him. He sponsored a life of balanced work and play. His stately figure, his iron-grey hair, his mischievous smile, his familiar pipe, will be remembered always by his students. Poised above a convivial crowd in the old gymnasium, by art and by science he gracefully and dextrously carved the annual barbecue feast. Such mental pictures strike chords of welcome memories.

One autumn afternoon of 1922 an outstanding speaker was to address the London Academy. We had to dissect. We protested. Our class president interviewed Dean McKibben. His expression upon returning from the sanctum sanctorum was one of perplexity. What was the Dean’s answer? Something to this effect: “You are second year medical students; go to the meeting if you wish, but don’t forget there’s a good ball game at Tecumseh Park.” The time-worn idea of keeping the horse before the cart was driven solidly home.

And why shouldn’t it be? Surely any second or third year student who has spent a sincerely conscientious session in the anatomy, physiology, bacteriology, or chemistry lab has done a day’s work. “A day’s work well done is a victory won,” or to the more aesthetic is this apropos?:

“Now is done thy long day’s work,
Fold thy palms across thy breast,
Fold thine arms, turn to thy rest,
Let them rave.”

—TENNYSON.

For such a man the library should provide, and right in the open, a copy of Esquire, Punch, or Life, plus an ash tray. As a matter of fact, if there isn’t enough anatomy in “Gray” to satisfy the junior student, I unhesitatingly say he is crazy, or soon will be. Crazy isn’t a nice word, so we were taught, but it is a word, and explicitly conveys my meaning.

Therefore, unless requested to search for something specific, better in your tender years be content with your standard texts, the above modern periodicals, add the Digest, Rod and Gun, Detective Stories, Good Housekeeping, and the like. In some of their pages you will find popular interpretations on recent discoveries in medicine, be they right or wrong. What more is needed for effectiveness round the Sunday evening chesterfield?

Don’t Underdo It

As the student comes along into his clinical years (his position on the chesterfield being a little more secure) less time will be consumed on the grind for fundamentals, more time will be available, as is
intended, for outside reading. Even now your time should be devoted primarily to patients, the microscope and the laboratory, rather than to haphazard library browsing; but, if in a scrutinizing study of some cases you are not unwittingly scurrying through the stacks to clarify some controversial point, you are not worthy of the name student. The automatic stimulus has gripped you; don’t let it pass, for “To study medicine without books is to sail an uncharted sea.”

Thanks to the generosity of its donors, to a continuity of expert supervision and administration, and to a Miss Sullivan attitude of devotion, our Medical School library ranks with the best in Canada. 1,150 titles of journals are listed, with 328 complete files. 25,000 volumes are on its shelves. So orderly is the cataloguing and stack arrangement that it takes but a few minutes to orient oneself on two points: first, is a certain journal or book in the library; and secondly, if it is there, where can it be found? These are most fundamental and elementary questions, the answers to which, if not already received in the Library Science Class, that gave you a credit, will be supplied gladly by its librarians. Within a matter of minutes they will have shown you that just inside the door to the left stands the library’s skeleton index key, the card catalogue. Herein is listed alphabetically by title and by author each book and periodical. Handier still, for complete information on periodicals, current and bound, is the comprehensive compilation of the medical librarian called “Serial Publications in the Library, Faculty of Medicine.” With more frequent usage you will probably be referring to the card catalogue only for books and to the latter for detail as to periodicals. If the journal you seek is not registered turn to the “London Serial List,” that tidy little reference which covers all important libraries in the city.

Yours at Western is an open shelf library. The significance of this unrestricted access to the entire collection will dawn on you only by comparison with other libraries. Post-graduate years will surprise, yet enlighten, you on this feature. Incidentally the North End is not open shelf to all students, all of which may or may not be evidence of a certain unique trust placed in medical students. But I would rather not labour this point.

Versed in the fundamentals of your own library science, unhampered by the principle of the closed shelf, and eager to broaden your information on a particular subject, what is your plan of attack? Approach your material through the bibliography of the modern text, which will list special monographs and articles. These in turn will carry references, many of which will be pertinent, and all told, should bring your detailed reading satisfactorily up to date with the text. For more recent information cover the Quarterly Cumulative Index from the publication year of the most recent references you have reviewed, up to
and through the last number of this invaluable source of reference data. Even yet a few months are missing and for the last word you will survey current numbers of the few special journals you have found that carried most of the informative articles.

Little will be missed if the above text-book line of approach is used and applied with reasonable care. Of course if you propose reviewing with a thoroughness as for a thesis you will evade this short cut in favour of the more arduous analysis of the Quarterly Cumulative Index, working back year by year until you meet that volume of the Index Catalogue of the Surgeon General's Library, which solves your needs. This catalogue of the Surgeon General's Library in Washington is the giant record of Medical literature throughout the world. Roughly, one alphabetical letter volume is published a year, indicating its inclusiveness and accuracy. For instance, subjects of the letter "G," as in "Ganglion," are brought up to the date of 1941. References on subjects commencing with "H," however, are reviewed only to 1926, revealing considerable delay in the publication of some titles, and indicating the necessity of a familiarity with the Cumulative Index. Ordinarily the "H" volume should be published in 1942.

There are other approaches, I grant, including the Medical Annual, an English publication, and the American series of Year Books which abstract important articles in the past year's literature. To jump from patient to year book may be a fair ideal for the interne or busy practitioner, but such a technique harbours many intervening missing links for the student. Their greatest value lies in assisting the student to perceive the modern trend, therein revealing and exciting an investigative interest in the inadequacies of the past.

In support of casual browsing, between classes, at noon hour, or on rainy days, I admit that within reason here is a panacea for the over-fatigued concentration centre, an ailment so subjective yet so real in student life. If so afflicted, or even if immune and in quest of profitable relaxation, and the spirit so moves, you will derive stimulating satisfaction in a relaxing survey of new editions, new books, historical masterpieces, war medicine, general medical journals as the C.M.J., the J.A.M.A., the B.M.J., or the Lancet, never missing editorials, studying summaries in general and epitomizing here and there, as your intuition guides you.

But Do It

And so, in concluding, what of it? Don't overdo it, don't underdo it, but do it. No student from library alone will grow wise. No medical student or doctor from patients alone can grow wiser. But by judicious reading, based on problems and cases, you will accumulate a background of knowledge preparing you for adventure. Might it not follow that, with happy adventure, clinical or otherwise, comes wisdom?
Idiopathic Thrombocytopenic Purpura

By Charles S. Fisher, '43

A.—Review of Standard Text-Books

1. Definition—This is a severe form of purpura characterized by copious hemorrhages from the mucous membranes, marked diminution of platelets in the blood, change in capillary permeability and severe constitutional symptoms. It is also called:
   1. Purpura Hemorrhagica,
   2. Purpura Morbus Maculosus Werlhofii,
   3. Land Scurvy,
   4. Werlhof's Disease.

2. History—Paul Gottlieb Werlhof from Helmstadt, Court Physician at Hanover, wrote the original description of "Purpura Hemorrhagica" in 1735. The diminution of blood platelets was first noted by Denys and later by Hayem. Troland and Lee pointed to the spleen as the site of platelet destruction. An acetone extract of the spleen of a patient suffering from Idiopathic Thrombocytopenic Purpura was injected into rabbits. This gave rise to a prolonged fall (640,000 down to 20,000 in 24 hours) of the platelet count. They called this principle "Thrombocytopin."

3. Classification—There are two types: Primary or Idiopathic and Secondary or Toxic. The latter is due to sepsis or some specific poison. Idiopathic Thrombocytopenic Purpura may be further classified as acute and chronic.

   (1) Acute—Characterized by abrupt onset with vomiting, headache, fever (99° - 104° F.), malaise, prostration and arthritis. It goes on to death or recovery in two to eight weeks, or to become chronic.

   (2) Chronic—May be continuous or intermittent and is characterized by frequent attacks of epistaxis. "Purpura Fulminans" is another name given to the acute type where the attack is sudden and severe and death may result in twenty-four hours. This term applies to either primary or secondary thrombocytopenic purpuras.

4. Etiology—The direct cause is believed to be the excessive destruction of platelets by the spleen. The factors behind this are unknown. Idiopathic Thrombocytopenic Purpura is a rare disease, occurring most often in girls, usually before puberty but possible at any age. Some authorities maintain that while a person may be born with a spleen causing excessive destruction of platelets, this is a congenital anomaly and is not hereditary. However, in rare cases, families have been reported whose members all have platelet counts of under 100,000.
5. Pathology—(1) The most prominent pathological finding is a low platelet count (normal is 250,000 per cubic millimetre). This may be as low as 1,000. It is generally conceded that hemorrhages occur with a count below 60,000.

(2) A secondary anemia may be demonstrated due to hemorrhage.

(3) Leukocytosis is also a symptom of hemorrhage.

Three mechanisms are responsible for all Thrombocytopenic Purpuras:

(a) Specific inhibition of megakaryocytes by some toxin or poison.

(b) Displacement of megakaryocytes by abnormal cells.

(c) Abnormal destruction of platelets.

Of these three (c) apparently plays a major role and possibly (a) a minor role in the production of Idiopathic Thrombocytopenic Purpura.

6. Diagnosis—(1) Purpuric spots are very characteristic in the acute attacks. They are maximal on the extensor surfaces but occur all over the body, coming in repeated crops. They vary from pin point petechiae to large purpuric areas. They do not disappear on pressure. These spots appear suddenly and go through four stages:

1. Red spots not raised or indurated, may be purplish-red.

2. Greenish spots.

3. Various shades of yellow.

4. Spots gradually fading to brown and disappearing.

(2) Hemorrhages—from mucous membranes of the nose, gums and interior of the buccal cavity as well as the uterus, occasionally from the gastro-intestinal and urinary tract or into the brain. Very rarely pulmonary hemorrhages occur. The hemorrhages vary from oozing to profuse bleeding. This may be the only symptom in chronic idiopathic thrombocytopenic purpura.

(3) A tendency to bleed from wounds and bruises. This is sometimes used as a diagnostic sign where the sternum is lightly tapped with a percussion hammer.

(4) Fever in acute attacks.

(5) Anemia from hemorrhages.

(6) Enlarged spleen—may be palpable.

(7) Tourniquet test positive (Hess' Test). The cuff of the blood pressure apparatus is inflated to a point midway between systolic and diastolic pressures. In ten to twenty minutes petechiae and ecchymosis appear in the dependent portions of the limb. This is due to an increased capillary permeability.
IDIOPATHIC THROMBOCYTOPENIC PURPURA

(8) **Low blood platelet count**—When the platelet count is below 60,000 there usually are purpuric spots and hemorrhages.

(9) **A lengthened bleeding time**, with normal clotting time.

(10) There is no **clot retraction** even though coagulation time is normal (thrombokinase is available from other blood and tissue elements).

(11) A blood smear shows **blood regeneration** after and during acute attacks and exacerbations of the chronic form (reticulocytes are increased, polychromatophiles are present).

(12) **Color index is unity** except during recovery from severe attacks.

7. **DIFFERENTIAL DIAGNOSIS**—Idiopathic Thrombocytopenic Purpura must be differentiated from (a) conditions of the skin resembling purpura, (b) other blood dyscrasias.

(a) 1. **Scurvy**—history of dietary deficiency.

2. **Telangiectasis**—history of long duration.

3. **Flea bite**—distribution is not specially on extensor surfaces and resemblance usually superficial.

Any of the above conditions may be excluded by a blood platelet count.

(b) 1. **A thrombopenic Purpura**—platelet count normal, history of infection.

2. **Hemorrhage of newborn**—prolonged clotting time with normal clot retraction and platelet count.

3. **Aplastic Leukemia**—clot retraction test normal.

4. **Hemophilia**—family history of hemophilia, normal clot retraction with prolonged clotting time and normal number of platelets.

5. **Pseudo hemophilia**—bleeding time normal, clotting time prolonged.

6. **Secondary Purpura**—history of disease, sepsis or toxin.

8. **TREATMENT**—1. Splenectomy is said to be specific for this disease. However, it should only be done when the disease is in the chronic form because in the acute form it carries a very high mortality. After splenectomy bleeding usually stops very soon and the platelet count rises to nearly normal in a few days. The reason is obscure, for after a few months the platelet count may again fall below the purpuric level but the patient may remain well. This leads one to conjecture on the spleen's function in capillary permeability which becomes normal within five minutes of splenectomy. Transfusion should precede splenectomy.
In some cases the relief afforded by splenectomy is only temporary, as after one to two years the hemorrhagic tendencies may reappear.

2. Blood transfusion if hemorrhage is severe or anemia profound.
4. Local hemostatics — Epinephrine, gelatin solution, styptic solution.
5. Intramuscular injections of whole blood are sometimes of value (20-40 cc.).
6. Radiation of the spleen has been used with favorable results in some cases, especially where the patient has been too ill to be a reasonable operative risk.
7. Snake venom (mocassin) sometimes recommended and is not widely used because of its great toxicity.
8. Liver extract.
9. Horse serum.
10. Coagulen subcutaneously (a preparation of blood platelets).
11. Vitamins C, K and B.

(These last five have been used with disputed results.)
13. Calcium lactate is given on the theory that it will increase the coagulability of the blood. Best and Taylor agree that it reduces the hemorrhagic tendency but say that the manner is obscure, not through increased coagulation of blood.

9. Prognosis—Runs a rather chronic course marked by exacerbations and remissions and ends in death from hemorrhage into the serous cavities or into some vital organ or in spontaneous recovery (38% of cases).

Splenectomy done in the chronic stage gives a favourable prognosis in selected cases but during the acute stage carries an 80% mortality. Acute nephritis or a septicemia from infection of the purpuric spots may be responsible for death in occasional cases.

B.—A Report of Two Cases

CASE A—White female, age 14, admitted November 15th with the following subjective complaints:

1. Profuse hemorrhage per vagina for two days previous to admission.
2. Nose bleed for one day.
3. Weakness, drowsiness and lassitude.
IDIOPATHIC THROMBOCYTOPENIC PURPURA

5. Generalized hemorrhagic spots since one week before admission.

She gave a history of commencing menstruation in January last. Menstrual bleeding since has been profuse and with little pain and the periods irregular (periods one to three weeks apart with a duration of four to fourteen days). In August last she had a dermoid cyst removed from the left ovary.

Physical examination revealed: (1) small purplish spots, very numerous, over the entire body; (2) a post-operative midline incisional scar on the abdomen, discolored dark red from bleeding; (3) heart rate 130 min., blood pressure 100/40.

On admission blood examination showed (1) Hb. 34%; (2) R.B. count 1,790,000; (3) Color index .87; (4) W.B. count, 7,900; (5) Anisocytosis, poikilocytosis; (6) Platelet count of 80,000; (7) Coagulation time, 6 minutes, and (8) bleeding time, 4.5 minutes. Shortly after admission a diagnostic D. & C. operation was performed and the cervix packed. The pathological report showed a menstruating endometrium. 550 cc. of blood was transfused. She rallied for the next two days, then began to regress rapidly. The flow per vagina commenced again. The abdomen became tense and tender. The patient became weaker and looked desperately ill. The platelet count dropped to 30,000 by the 21st with a prolonged bleeding time and no clot retraction. Transfusions were given: 500 cc. on the 18th and two 500 cc. transfusions on the 21st. On the night of the 21st the patient developed a marked dilation of the left pupil, later passing into unconsciousness, and on the morning of the 22nd died.

Necropsy Findings:

(1) A large intra-cerebral hemorrhage.
(2) Petechial hemorrhages into the lungs, pleura, pericardium, skin and G.I. tract.
(3) Uterine hemorrhage.
(4) Generalized lymph gland enlargement.
(5) Anemia.
(6) Slight hemoperitoneum.
(7) Albuminous degeneration of myocardium, liver and kidneys.

CASE B—White male, age 18, admitted November 5th with the following subjective complaints:

(1) Bleeding from nose of three weeks duration.
(2) Bleeding from gums of two weeks duration.
(3) Ecchymosis and purpuric spots over the entire body since "about the middle of October."
(4) Hematuria of four days durations.
Physical examination showed a pale young man with large amounts of old blood clots around his nose and lips, with blood oozing from the right nostril and gums. Hemorrhagic spots, varying in size from a pin point to one inch in diameter were noted over the entire body, especially marked on the legs. Chest was clear, heart not enlarged and blood pressure was 100/40. Abdominal and ophthalmic examinations were negative. There were enlarged cervical, axillary, inguinal and epitrochlear glands. At the time of admission laboratory findings were as follows: (1) bleeding time, 21½ minutes (prolonged); (2) clotting time, 6½ minutes; (3) clot retraction test showed no clot retraction; (4) Platelet count, 35,000; (5) blood calcium, 8.9; (6) Prothrombin time, 42 seconds; (7) capillary resistance test was negative after three minutes at 60 m.m. Hg.; (8) Hemoglobin, 58%; (9) red blood count, 3,650,000, and (10) white blood count, 10,550.

Treatment: (1) Repeated blood transfusions, 400 cc. on the 6th; 250 cc. on the 8th; 400 cc. on the 9th; 500 cc. on the 10th; 500 cc. on the 11th; 1,000 cc. on the 12th; 500 cc. on the 16th and 1,000 cc. on the 17th; (2) Snake venom; (3) Coagulen; (4) Adrenal cortical extract; (5) Intravenous glucose and saline; (6) Splenectomy; (7) Vitamins C, K and B in large amounts; (8) Parathormone. Splenectomy was done five days after admission because there was no response to palliative treatment. The patient’s course, however, was steadily downhill, even though there was a slight rise in platelet count following the operation (23,000 to 42,000). The patient died November 19th.

Necropsy Findings:

(1) A large hematoma in the abdominal scar.
(2) Hemoperitoneum.
(3) Slight hemothorax.
(4) Generalized hemorrhages of the lungs, kidneys, gastrointestinal tract, nose and skin.
(5) Anemia (Hb. 45% on November 14th).
(6) Albuminous degeneration of myocardium, liver and kidneys.

C.—Recent Innovations, 1939-1942

Mention has already been made of Troland and Lee’s (1) work in the isolation of a specific platelet destroying principle from the spleen. However, Pohle and Meyer (2), Tocantins (3) and Watson (4) have been unable to confirm these results. Watson suggests that the positive test was due to some non-specific reaction arising from the intravenous injection.

Rabinowitz (5) is of the opinion that, although clot retraction is due to a condensation of fibrin, the process is greatly supported by a substance liberated during the disintegration of the platelets, and wholly
IDIOPATHIC THROMBOCYTOPENIC PURPURA

independent of the action of thrombokinase. He postulates this as cystine, a substance normally present in the platelets. He says that in purpura hemorrhagica the chemical composition of platelets is altered, therefore destruction by spleen and reticulo-endothelial structures is made easy. Reasoning on the basis of a damaged liver, he postulates cystine as the abnormal substance (during purpura hemorrhagica there is faulty desaturation of amino acids by the liver). On this theory he administered cystine to patients with essential thrombocytopenic purpura. He found methionine much better. It gave retraction of the clot and stoppage of hemorrhages. He says that methionine works better because in this disease there is faulty metabolism of cystine.

Tzanck, Duseau and Dreyfuss (6) found that the transfusion of conserved blood (10 days old) often stopped hemorrhage.

BIBLIOGRAPHY

5. Role of amino acids in clot retraction (Rabinowitz), Am. J. Surg., 51-366, 1941.

"IS THIS PRODUCT COUNCIL-ACCEPTED?"

This is the first question many physicians ask the detail man when a new product is presented.

If the detail man answers "No," the doctor saves time by saying, "Come around again when the Council accepts your product."

If the detail man answers "Yes," the doctor knows that the composition of the product has been carefully verified and that members of the Council have scrutinized the label, weighed the evidence, checked the claims, and agreed that the product merits the confidence of the physicians. The doctor can ask his own questions, and make his own decision about using the product, but not only has he saved himself a vast amount of time but he has derived the benefit of a fearless, expert, fact-finding body whose sole function is to protect him and his patient.

No one physician, even if he were qualified, could afford to devote so much time and study to every new product. His Council renders this service for him, freely. Nowhere else in the world is there a group that performs the function so ably served by the Council on Pharmacy and Chemistry and the Council on Foods.

Mead Johnson & Company co-operates with both Councils, not because we have to but because we want to. Our detail men can always answer you, "Yes, this Mead Product is Council-Accepted."
Pierre Louis and the “Numerical Method”

By L. G. Stevenson, ’45

"Since we are assured that the all-wise Creator has observed the most exact proportions, of number, weight, and measure, in the make of all things, the most likely way to get any insight into the nature of those parts of the creation, which come within our observation, must in all reason be to number, weigh and measure. And we have much encouragement to pursue this method of searching into the nature of things, from the great success that has attended any attempts of this kind."

—Stephen Hales.

* * *

I.

It is always the instinct of philosophers and scientists to dwell on those aspects of nature which are neat and orderly. Where there is no sure evidence of regular arrangement in nature they like to impose some arbitrary discipline on their ideas, so that a definite pattern will emerge. They try to classify and correlate "established facts" so as to form logical "systems."

Although the instinct for order is common to both groups of thinkers, the tendency to formulate "systems," and to fill in the gaps in knowledge with assumptions and conjectures, is more characteristic of the speculative philosopher than of the scientist. The scientist wants to see each step very clearly, "and not pretend that things surmised are known." Even the "established facts" he often frankly considers provisional. "Many of the findings of science," wrote Freud, "are in the nature of an interim report." The philosopher, on the other hand, has frequently been liable to the charge of creating a neat system, and then making nature fit the pattern, vi et armis.

The scientific method, the pursuit of knowledge through experience, is the method of modern times, as distinguished from the medieval speculative method, the method of "how-many-teeth-has-a-horse-and-no-fair-to-count."

The clash between these two modes of thought has never been more acute than in the schools of Paris during the half century between 1800 and 1850. This was a period when the mists of the older time and the older method were gradually clearing away and, like all such periods of transition, it was loud with controversy.

The subject of this essay, Pierre Charles Alexander Louis, was the leader of the modern faction in a long and sometimes bitter dispute.

Louis exemplifies very clearly those qualities which we have said are characteristic of the scientist. No man was ever more orderly or more exact, and even in the field of science there can have been few who have worked with such open-minded humility and such sturdy faith in the scientific way. Perhaps there was never a scientist so skeptical as was Louis of what he repeatedly refers to as "supposed facts."

His work was fruitful and important, but more important than any contribution to knowledge which he himself was able to make was the technique of investigation which he popularized, the numerical or statistical method as applied to the study of disease.

No less representative of his creed and his following was the principal leader of the old regime, a distinguished professor named François Broussais. For more than twenty-five years Broussais enjoyed the greatest reputation of any French physician. He was the originator of what was generally looked upon as a definitive "system" of medicine, and he was the author of at least two text-books, the Principles of Physiological Medicine and the Pathology, which were standard authorities of a generation.

Broussais' theory of gastro-enteritis, the notion that all disease proceeds from inflammation of the gastro-enteric tract, was the crux of all his beliefs. It was a type of the monistic pathology which had been popular, in one form or another, since before the time of Galen. Based on incomplete and inaccurate observations, it actually sprang from the neat-minded wish to resolve all the problems of disease into one. It was a theory which engaged the determined opposition of Louis and his pupils. They believed disease to be due to a variety of causes, rather than to any single cause, and felt that every symptom-complex distinguishable as a separate disease should be made the subject of separate study. Their triumph was due to extensive and accurate observations, and to the statistical procedure which it was Louis' life work to introduce.

II.

Pierre Louis was born in 1787 at Aix. As a young man he was apparently of feeble constitution, as he did not pass the inspection for military service. He began the study of law but soon turned his attention to medicine, which he first studied at Rheims, afterwards transferring to Paris. He received his medical degree at Paris in 1813, being then in his twenty-seventh year.

After obtaining his degree Louis was for a time undecided what he should do. It happened that a friend of the Louis family, M. le de Saint-Priest, who occupied an official position in Russia, paid them a brief visit at their home in Aix, while young Pierre was still hesitating over his plans for the future. It was suggested that he should accompany

*Most of the facts of Louis' early life have been obtained from Osler's essay, "The Influence of Louis on American Medicine."
M. le comte to Russia and this was a chance which he seems to have been glad to accept. In St. Petersburg he was granted a diploma to practise, and for three years he wandered about the country with his friend, who was governor of one of the provinces. He then settled in Odessa, where he remained for four years, practising with great success. In 1821 Odessa was visited by a terrible epidemic of diphtheria, and Louis, much disturbed and saddened by the high mortality rate among children, decided to give up his practice and return to France for further study.

Back in Paris, he attached himself to the hospital service of an old friend, Chomel, physician to La Charité, to whom he was afterwards to dedicate his great work on typhoid fever. His determination, arrived at during this period, was to find for himself some new groundwork for practical medicine, some new basis for medical thinking.

"The old systems," writes Professor Shryock, "were as useless in practice as they were absurd in doctrine; one must start all over again, go back to the inductive beginnings of things," and it is interesting to observe how frequently Louis himself, in his prefaces and lectures, stresses this point of view; how often he insists that the study of a disease should be undertaken "as if for the first time".

This is not to say that he was unwilling to profit by the experience of his predecessors, but only that he found their experience as recorded in the literature, unsatisfactorily vague, and their conclusions correspondingly doubtful. It was the great work of his life to demonstrate how the experience of one group or one generation of medical workers might be made of some permanent value, and how accumulated data, even in a comparatively short space of time, might be made to yield important results.

At the age of thirty-four, Louis dedicated himself to the most painstaking observation, and for seven years he pursued this ideal with a rigour and an enthusiasm which left room for nothing else.

Louis tells us something of what it meant thus to devote seven of the best years of his life to routine observation. "From that time (October, 1821) I collected the cases of all the patients admitted to M. Chomel’s wards, which contain forty-eight beds equally divided between both sexes. All these cases were taken on the same principles and with the same details; and as it appeared to me impossible to carry on a system of observation such as this, and attend to private practice at one and the same time, I relinquished the latter altogether for the time being. I regularly passed three or four, and sometimes five hours daily at the hospital, devoting at least two hours to each post-mortem examination."

Destined to become famous chiefly as a pathologist, Louis at first
PIERRE LOUIS AND THE "NUMERICAL METHOD" 41
directed his attention to therapeutics, examining critically the confused and heroic remedies then in vogue. The method which he soon adopted was that of listing cases in numerical form and checking one group receiving a certain treatment against another group denied it. This method was of course not entirely new, but all prior attempts to use it had been half-hearted and inexact. Its new exponent, however, was extremely meticulous, both in observation and in recording, and he employed the method systematically and persistently over an extended period of time. This was something new in the history of medicine, and something vastly important to its development as a rational science.

III.

In 1825 Louis published his great work on phthisis, which involved a study of 167 clinical cases and autopsies and was the first fruit of the new procedure in pathology and therapeutics.

"The appearance of additional researches on phthisis, so shortly after the publication of those of Bayle and Laennec," reads the advertisement to the first edition, "will probably be matter of general surprise. . . . My object has been to treat it in a different manner. . . . In order to render my inquiries as useful as possible, I examined my phthisical patients with as much care as I should have done had the affection under which they suffered been very imperfectly understood."

This, in effect, was Louis' challenge to the medical world. "We must go back to the beginning," he seems to say; "we must assume nothing; we must start afresh."

His method was simple but laborious. "I inquired into the state of all their functions, ascertained as far as possible the nature of any maladies they might have, and after their death I investigated the condition of all their viscera with equal attention. . . . Thoroughly persuaded of the importance of facts of the negative class, and remembering the embarrassment and regret expressed by Morgagni, on finding the cases of Valsalva deficient in the mention of certain facts of that kind, I recorded those observed by myself with as much care as positive facts of the most interesting character." More important still, "I have stated the proportion of cases in which every lesion was found, so that my work supplies in all its parts a sort of statistical view of phthisis."

Louis' critical faculty extended to his own work. The only cases he discarded were those which he had collected at the close of 1821 and the beginning of 1822, the period of his novitiate in the use of his own method. "At that time," he writes, "I in truth frequently omitted to note the various degrees of consistence of the mucous membranes; I had not yet fixed my attention upon certain of the morbid states of the stomach; and had I employed such cases I should inevitably have fallen
into error and recorded inaccurate results. . . . I was as deeply devoted to study formerly as I am now, but I was not proof against the attractions of a theory cleverly put together; I cared less for accuracy, and sacrificed less time in satisfying myself of the correctness of supposed facts.”

The _Anatomical, Pathological and Therapeutical Researches_ so painstakingly produced make up a remarkable volume. Eighty years after its publication Osler was able to write, “I do not know of any single work on pulmonary tuberculosis which can be studied with greater profit today by the young physician. . . . The changes which have taken place in our ideas of tuberculosis diminish naught from the value of his careful anatomical and clinical presentation.”

At the time of publication the work attracted wide attention, but not all of it was favourable. Broussais was especially bitter in his attacks and described the book as “un ouvrage sans vie, ne respirant que le fatalisme, l'obscurantisme et la mort.”

Oliver Wendell Holmes, who studied in Paris about this time, writes that “Broussais’ theory was languishing and well-nigh become obsolete, and this, no doubt, added vehemence to his defence of his cherished dogmas.”

Pathologists like Laennec and Louis were obsessed, declared Broussais, with their anatomical studies, and gave insufficient attention to actual life processes. He felt that they had no interest in their patients as such, no concern in curing them; that they were, in fact, more interested in performing autopsies than in preventing them. Yet we find Louis in the preface to a treatise devoted largely to pathology, speaking of “the higher questions of etiology and treatment.” Certainly his contributions to therapeutics, while chiefly of a negative kind, were of first-rate importance.

It was Broussais’ belief, as we have already seen, that there was no such thing as tuberculosis _per se_, nor was there any other specific disease, but only various forms and manifestations of gastro-enteritis. He talked of the “maladies which are the creations of M. L——,” and lost no opportunity to ridicule the young pathologist. In the lecture rooms he stormed to indifferent classes, composed of young men who were already turning their allegiance to the new group.

“Here, in this dramatic classroom setting,” writes Professor Shryock, “was fought out what was, in a sense, the final struggle between medieval and modern science.”

*Louis would certainly have approved the adoption of the term “tuberculosis” in place of the old word “phthisis.” He was meticulous in the use of words, as in everything else, and he tells us that he only retained the expression “typhoid affection” after a long endeavour “to find some name which would express the anatomical characteristics of this disease.”
In 1829 Louis published a second important work, *Anatomical, Pathological and Therapeutic Researches upon the disease known under the name of gastro-enterite, putrid, adynamic, atoxic, or typhoid fever, etc., compared with the most common acute diseases*. The title of this book suggests the confusion with which the subject of fevers was long obscured, yet the book itself marks the beginning of a clearer understanding.

According to Dr. Meunier, Louis must be credited with giving us the definitive description of typhoid fever, which comprehended "toutes les fièvres remittentes, malignes lentes, lentes et nerveuses, nerveuses convulsives, malignes putrides, bilieuses, muqueuses, synoques putrides des ages precedants. C'est ce qui a fait dire que Louis avait etabli la fusion de toutes les fièvres continues graves de notre climat en decrivant la fièvre typhoid: *la typhoid de Louis*, comme disait Broussais."

Louis insisted on the constancy of the intestinal lesions already described by Petit and Serres, on the epistaxis at onset and on the lenticular rosy spots. Again, as in the work on phthisis, he based his deductions on a great many cases, analyzing the changes in the viscera of 133 subjects and the symptoms of nearly 900. "I am intimately persuaded that the most useful work on any given subject must be none other than a perfectly faithful analysis of the greatest possible number of facts bearing upon it." Again he constructed an immense number of tables and performed numerous analyses of symptoms. "Suppose, in truth, that a series of cases . . . were within our reach, how could we use them, how arrive at the knowledge of the general facts, whereof it must contain the elements, without the aid of the numerical method?"

The phrase "compared with the most common acute diseases" indicates yet another aspect of his procedure. It was a course he had followed in his work on phthisis, for he wished to determine which of the lesions he found were proper to the disease, and which were the result of complications. This habit of comparison was of the utmost importance in the study of continued fevers. Louis himself never distinguished typhoid fever from typhus, but the ablest of his American students, W. W. Gerhard, studying typhus cases in the Pennsylvania Hospital during the epidemic of 1836, positively diagnosed it as a different disease from the typhoid fever with intestinal lesions as described by his master. The criteria by which this notable work was achieved were largely due to Louis, and the importance of his method of closely comparing the symptoms and physical signs with the findings after death, and the tokens of one disease with those of others, was never better demonstrated.

The *Recherches* on typhoid exhibit all the scrupulous care, and the sober, explicit, unembellished style which we have come to expect in
scientific writing, but which was far from customary at that time. Most of the writing of the period seems to us decorative and verbose. Although Louis himself was sometimes guilty of repetitive writing, he was never merely decorative. His instinct was for facts alone, for a dispassionate presentation of what he could see and feel and clearly understand.

"I have sought always to give clearness to my views," he tells us, feeling that clearness, "together with rigid exactness, is the most indispensable of all qualities; and I have attempted to gain this end as much by phraseology as by the arrangement of the different subjects treated of." His "object has been not to write one single useless phrase." He quotes with approval this sentence from Rousseau: "I know that truth lies in the facts, and not in the mind that judges of them, and that the less I introduce what is merely my own into the deductions I make from them, the more certain I shall be of approaching the truth."

V.

Perhaps the finest and most complete exposition of the numerical method was his great therapeutic study, Researches on the Effects of Bleeding, published in 1835. This was considered by Holmes to be "one of the most important written contributions to practical medicine, to the treatment of internal disease, of this century (the nineteenth), if not since the days of Sydenham."

Professor Shryock expresses a similar judgment. "This work," he says, "impresses me, in some ways, as the most significant study ever made in medical method."

Venesection was long believed in and almost universally practised in the treatment of disease. The old humoral and "tension" pathology was principally to blame, but the lancet was still employed when much of the theorizing had lost credit. The procedure was justified on the ground that "most" patients seemed to benefit from it. Louis proceeded to demonstrate that this notion was erroneous, using his now familiar method with wonderful clarity and conclusiveness. He gave records of numerous cases, and showed that bleeding did not "strangle" or "jugulate" acute diseases, more especially pneumonia. The physicians who believed that it did so had jumped at their conclusions, declared Louis, after witnessing a few speedy recoveries following venesection, or a few fatal cases where blood-letting was not employed. They made no checks or tests or definite numerical comparisons, and failed to consider the other factors which might be involved. "Quel faits!" exclaimed Louis, "quelle logic!" and he overwhelmed his opponents with a torrent of facts and percentages.

*Émile, quoted on the title page and in the advertisement of the Recherches on typhoid.
“Here, for the first time,” writes Shryock, “was a clear and emphatic realization of the value of medical statistics. Taken in connection with contemporary recognition of the need of vital statistics in public hygiene, it afforded indubitable evidence that the mathematical spirit—the great germinating influence in all modern sciences—was at last establishing itself in medicine.”

It has sometimes been charged that Louis did not fully appreciate the significance of his own results. The case against him as a statistician is summed up by Professor Shryock:

“It must be admitted that Louis’ numerical method was vulnerable to certain technical criticisms. His work involved only the use of simple arithmetic. Since he did not employ the calculus of probabilities he made no allowance for probable error, and so viewed as significant small statistical differences which were really meaningless. No less an authority than Bertillon later declared that for these reasons the work of Louis hurt the reputation of medical statistics in general opinion. Yet there would seem to be no question that the French physician was the first to make systematic use of clinical statistics, and to emphasize their significance in medical methodology. The technical weaknesses of his work were soon pointed out and corrected by others.” Seldom indeed has any new method been introduced in science that has not been modified and improved by the scientific heirs of the innovator.

VI.

In addition to the works already described, Louis produced an interesting Research on the Yellow Fever, the materials for which were obtained at Gibraltar, where the disease was apparently endemic, and where Louis studied its symptoms and morbid anatomy in association with Chervin and Trousseau.

He also published a number of other important memoirs on various aspects of pathology and medicine. His list of publications is brief, however, when compared with the bibliographies of many less industrious men, principally because his methods were so tedious, his critical judgment so inexorable. Because he felt that any conclusion derived from a small number of cases was hardly worth considering, he waited for his evidence to accumulate; he patiently checked his “supposed facts”; he weighed them and analyzed them; he checked them again.

Wherever it could possibly be applied, Louis used his numerical method, and this was his greatest work. Nevertheless, he must be credited with more than one important contribution to medicine. It is true that all of his work centred around the “method,” or sprang from it, but that is only to say that all of his work was scientific.

We must not forget, for instance, that prior to Louis’ time the
clinic was seldom used, as Louis used it, for a sort of laboratory, a
place where new facts might be discovered. Large general hospitals
were built up after 1750, but were not well utilized for research until
about 1820. Nowhere was there better opportunity for the observation
of disease, and Louis, as he says himself, "seriously believed what it
has long been the fashion to repeat concerning medical science—namely,
that it is a science of observation and of observation purely." In the
wards, as well as in the mortuary, he pursued the facts and scared
away the fantasies in his resolute search after truth.

As an extension of the "method" which he employed in his personal
work and wished to see others employ in theirs, Louis conceived the
idea of world-wide surveys on different aspects of disease. "Unless I
am greatly mistaken," he wrote, "the associated efforts of a great
number of medical men placed in different circumstances are absolutely
requisite for the establishment of any grand and really useful result
in respect of the cause and treatment of phthisis. Some of these medical
men should be attached to large public institutions, others hold no such
appointments; the medical staffs of the army and navy should furnish
their contingents—in a word, nothing less than an actual crusade would
suffice." This has a curiously modern ring when we consider that the
words were written nearly a century ago.

In embodiment of this idea, physicians the world over were called
upon to contribute case histories of phthisis with notations on the
climate, "especially of localities." There is probably nothing more
characteristic in all of Louis' writings than the "Instructions of the
Royal Academy of Medicine of France for the Study of Phthisis, with
reference to different climates," which he drew up and read on behalf
of a committee. The requirements are set forth minutely, with many
cautions, and an admonishment to strict precision. He provides an
example of the type of statistical table he wishes to be made out, and
concludes with the hope "that the physicians who may wish to take
part in the proposed work will do so without preconceived ideas, that
they will seek to learn and not to prove."

VII.

Except for his investigations on particular points, we have now
considered the most important of Louis' positive contributions to
medicine. There remain his negative contributions, his work of
destruction among the superstitious and quackeries which were an
inheritance from medieval science. We have already seen how devas­
tating was his attack on the practice of venesection. This was not
the only traditional remedy thus coldly dishonoured. Oliver Wendell
Holmes, having charged that Louis generally paid too little attention to
therapeutics, makes this acknowledgement:

"One thing, at any rate, we did learn in the words of Louis. We
learned that a very large proportion of diseases get well of themselves, without any special medication . . . we unlearned the habit of drugging for its own sake."

Drugs of every kind the master regarded with suspicion, and in all his great works he devoted a section to treatment, in which he analyzed the claims of various preparations, each of them sponsored by at least one eminent physician. One by one he discards them. The physicians who testify for their favourite remedies he treats with respect, but he does not spare them. He complains that his task is "the more irksome in proportion as I have found it difficult to participate in their views." Sometimes he is astonished that highly recommended medicines appear to have so little effect. Sometimes he is more laconic. "M. Magendie," we read, "states that he has succeeded in curing persons presenting all the signs of phthisis in the first stage, and even at a more advanced stage, with the acid in question (hydrocyanic). I have been less fortunate."

Having agreed that Louis was well in advance of his own time, and having observed that Osler considered his eighty-year-old work on tuberculosis as still valuable, we must permit Louis himself to modify our opinion of what his various works may now be worth. In the advertisement to the work on typhoid he declares that "it is not true . . . as has been said too often, that facts do not become old. Doubtless, there are facts, that have been well observed, which have not become old, and which never can, since they have been accurately observed; but the immense majority of them have become so, and, moreover, those which we collect in these times, will, in like manner, in their turn, become old, for they will carry with them more or less the impress of the age, and of its methods, which, it is true, are more exact than those pursued in former times, but they are less rigorous than those which will take their places in ages to come. It is necessary for those who devote themselves to observation to be convinced of this truth, and to recall often to mind the fact that the best work is good only in relation to the epoch at which it appears, and that another must be anticipated that will be more exact and more complete."

Louis was never content with his own work or even with his own methods. Toward the close of his active career he was still spending as much time over an autopsy, despite his vast experience, as when he first began. And always he was looking forward, as he tells us in the paragraph just quoted, to a time when the best that he knew would be obsolete.

VIII.

Holmes summed up the lessons of Louis in two expressions. "I do not hold him answerable for the words," he wrote, "but I will con-
dense them after my own fashion in French, and then give them to you, expanded somewhat, in English:

Formez toujours des idées nettes
Fujez toujours les a peu pres

Always make sure that you form a distinct and clear idea of the matter you are considering.

Always avoid vague approximations where exact estimates are possible; about so many—about so much, instead of the precise number and quantity.”

Louis substituted quantitative for qualitative formulae. He taught the world of medicine the most careful and searching methods of observation, and the sure means of getting at the results to be obtained from them in the constant employment of accurate tabulation. Not a brilliant or showy man, he typifies, almost better than his colleagues of richer gifts, the habits of mind which we speak of as scientific. His work, by his own admission, was almost mechanical; his thought was generally pedestrian. Perhaps it was in this very fact that his strength lay, for he seemed to draw close to the ideal which he set for himself—the elimination of the individual factor and the establishment of conclusions of mathematical certainty. Yet the individual factor, in another sense, was always there—the resolution, the diligence, the rooted distrust of everything but thrice-verified truth, which, throughout his life, characterized this singular man.

The application of the numerical method and the recruiting of others to carry on this work occupied his whole life. At every opportunity he emphasized the need for the method in a way that may seem to present-day readers wearisome and over-emphatic. It is the method of science itself, and is so familiar to the modern mind that it hardly requires illustration. Yet we have seen how bitterly it once was ridiculed. Esmond R. Long, in his History of Pathology, observes that “it is hard to believe that this course, now considered of self-evident value, was at first scorned for its novelty.” Yet this was indeed the case. Its great advocate was forced to fight for it, to reply to Broussais’ Examen des Doctrines Medicales with an Examen de l’Examen de M. Broussais, to teach and to work and to write, until the creed which he so powerfully preached became the doctrine of modern science. He exorcised the medieval spirit of speculation, and introduced in its place the spirit of exactitude in scientific inquiry.

*BIBLIOGRAPHY

PIERRE LOUIS AND THE "NUMERICAL METHOD"

7. Louis, P. C. A.: *Anatomical, Pathological and Therapeutical Researches on Phthisis*, second edition, translated by Walter Hayle Walsh, London, 1844. *Anatomical, Pathological and Therapeutic Researches upon the disease known under the name of gastro-enterite, putrid, adynamic, ataxic, or typhoid fever, etc., compared with the most common acute diseases*, translated by Henry I. Bowditch, Boston, 1836.
Pulmonary Pneumatocoele

By LAWRENCE D. RUTTLE, '42

IN 1687 Bartholinus described the case of a four-year-old female child, who had a sac of air replacing the upper lobe of the left lung. Meyer really made the condition known in 1859 when he reported a cyst the size of a hazelnut which communicated with a bronchus, together with many smaller cysts scattered over the surface of both lungs in a six-months-old foetus.

The terminology used to describe the condition is rather varied and confusing. Congenital cystic disease of the lung, pulmonary pneumocoele, localized alveolar or lobular ectasia, and chronic bulbous emphysema, have all been used to designate the condition. Pneumocoele best describes the disease because it is essentially an air-filled cystic space. They are not true cysts because they do not contain fluid. However, this term has never been adopted and "pneumatocoele" or "congenital cystic disease of the lung" are used synonymously with it.

Pneumatocoele is relatively rare, but it has been recognized more and more frequently during the past few years. In 1929 Koontz reviewed 108 cases of congenital cystic disease of the lung. Most of these were reported by German authors. He added a case of a baby who died on the 12th day post-partum in respiratory failure. The lungs showed a large number of cysts of various size, and marked atelectasis. The cysts communicated with one another but not with the alveoli. Koontz referred to Mus, who described the cysts in cattle as pinched-off bits of lung tissue not connected with the lung proper. Up until 1937, 381 cases were reported.

Classification:

I. True congenital pulmonary cyst or cysts.

II. (a) Chronic interstitial pneumonitis with emphysema.
    (b) Chronic bulbous emphysema.

III. Cystic Bronchiectasis.

IV. Pulmonary pneumatocoele (localized alveolar or lobular ectasia).

I. True Congenital Cysts are rare among reported cases according to Pierce et al. Such cases have co-existent air-filled cystic spaces and closed fluid-containing cysts. Pierce quotes Weller, Director of the Pathological Laboratories of the University of Michigan, as saying: "I can recall no instance in which we have found changes in the lungs of new-born infants or very young children which have led us to make the diagnosis of congenital cystic disease of the lung. Judging by analogy with other organs derived from the primitive alimentary tract, one
would expect that a condition properly thus designated would be encountered occasionally."

A modification of the classification of Anspach and Wolman of congenital cysts is as follows:

**A. SOLITARY FLUID CYST (AT BIRTH)**
- (i) With no bronchial communication—solitary fluid cyst.
- (ii) With bronchial communication—solitary air cyst
  - (a) With free opening—non-expansile air cyst
  - (b) With one-way mechanism—expansile air cyst.

**B. MULTIPLE FLUID CYSTS (AT BIRTH)**
- (i) With no bronchial communication—multiple fluid cysts.
- (ii) With bronchial communication—multiple air cysts
  - (a) With free opening—non-expansile air cyst
  - (b) With one-way valve—expansile air cyst.

**II. (a) Chronic Interstitial Pneumonitis with Emphysema:** The interstitial inflammatory changes associated with bronchopneumonia or progressive fibrosis in certain unresolved lobular pneumonias may produce sufficient contracture to effect an alveolar emphysema becoming cystic in proportions. They tend to be lobar or unilateral.

- (b) *Chronic Bulbous Emphysema:* A chronic asthmatic may have such a generalized bulbous emphysema that it can be visualized by X-ray.

**III. Cystic Bronchiectasis:** Koontz noted a greater incidence of congenital cystic disease and bronchiectasis on the left side. This is probably due to the tortuosity of the left main bronchus as it bends sharply beneath the pulmonary artery. This makes for poorer evacuation of exudate from the left lung.

Necrosis of the bronchial or bronchiolar wall is rather frequent (20 per cent of cases autopsied by McNeil). Rupture of the alveolar or bronchial walls produces an interstitial emphysema by allowing the air to dissect along the septa while coughing, thus forming subpleural blebs. This can happen easily in bronchopneumonia which is so frequent in childhood.

Pierce reports a case who previously had a normal lung tissue structure and developed a roentgen appearance closely similar to many so-called congenital cystic pulmonary diseases following bronchopneumonia.

**IV. Pulmonary Pneumatocoele:** These patients present a single or a few contiguous grossly emphysematous alveoli. In one case Pierce traced the development of the pneumatocoele from normal lung struc-
ture to the formation of a pneumatocele following bronchopneumonia and then its spontaneous regression.

**Pathogenesis and Pathology:** Some of the many theories advanced to explain the formation of congenital cysts are:

1. Fetal bronchiectasis
2. Excessive growth of parts around the bronchial tree
3. Faulty development of the mesoderm or entoderm
4. Stenosis of the bronchial tree
5. Syphilis, etc.

Probably it is due to a combination of causes. Another explanation is that it is due to a congenital or acquired ball-valve mechanism at its bronchial orifice which prevents adequate egress of air from its thin walled cavity. Koontz noted an excessive development of the mucous membrane lining the constriction in the bronchioles. The opening is so small that lipiodol can rarely be forced into the cavity.

Most of the cysts are lined with ciliated columnar epithelium with a tendency to layering. It may be cuboidal, squamous or may be replaced by granulation tissue. External to the mucosa, fibrous tissue, smooth muscle, fibres and pieces of cartilage can be found.

**Symptoms and Signs:**

A pulmonary pneumatocele may occur at any age, but usually is diagnosed in the young individual. It may or may not cause symptoms. The most prominent complaint is recurrent dyspnoea with cyanosis. There may be considerable sputum if the cyst communicates with a bronchus and drains. The temperature is elevated if it becomes infected. Hemoptysis is fairly common. Thoracic pain, anorexia, wheezing, vomiting and palpitation may occur. Recurring bouts of bronchitis or bronchopneumonia may be a prominent feature. The X-ray aids in confirming the diagnosis.

A differential diagnosis must be made between pulmonary abscess, putrid pulmonary necrosis, tuberculous cavitation, loculated pneumothorax, pyoneumothorax, congenital cysts, regional obstructive emphysema, dermoid cyst and echinococcus cyst.

**Prognosis:**

In infants and children, the prognosis is grave. The prognosis is poorest in the expansile type of cyst. Cases with infected cysts do not do as well as those in which there is no infection.

**Treatment:**

Schenck makes the statement that “surgical extirpation of the cystic defect is the only form of rational treatment in selected cases.” Where there are no symptoms, no treatment is necessary. Judicious
aspiration of the air from the cysts in infants and young children during an attack of severe dyspnoea and cyanosis may prevent death.

The application of sclerosing chemicals to the living membrane has been used with indifferent results. Phrenicotomy and artificial pneumothorax have been used with little success.

SUMMARY

1. Pulmonary pneumatocoele is not a rare condition and is being diagnosed more and more frequently.
2. There appear to be many etiological factors.
3. X-ray, together with definite signs and symptoms, makes the diagnosis.
4. Lobectomy is the only satisfactory treatment at present.

BIBLIOGRAPHY

IN THIS ISSUE . . .

Two objectives have guided the arrangement of Abstracts in this issue. Firstly, we have endeavoured to outline the characteristics of a few prominent journals in conjunction with the presentation of abstracts of sample articles from these journals. This, we hope, will familiarize the students with the individual journals and encourage regular reading from them. Secondly, an effort has been made to select some material of interest to students of the pre-clinical years. This, we feel, has been neglected in the past.

Emphasis continues to be placed on articles dealing with the various aspects of war medicine and surgery.

—ABSTRACTS EDITOR.

THE NEW ENGLAND JOURNAL OF MEDICINE

This is one of the most readable of medical periodicals. Both clinical research and reviews of medical subjects are well represented on its pages. Public health surveys and projects receive attention from time to time. As with most other progressive journals, the New England Journal of Medicine contains articles on various timely aspects of War Medicine. One of the most popular features of this journal from the student's point of view is the series of case records of the Massachusetts General Hospital found in every issue. These records are well worth the few minutes a week required for their perusal. The following is an abstract of a typical article from the Journal dealing with a military subject.

BLAST AND CONCUSSION IN THE PRESENT WAR

By John F. Fulton, M.D.,
New Haven, Connecticut.
The New England Journal of Medicine,
226:1, 1942

The first definition of a bomb in the Oxford dictionary is "a ball of wild-fire." The Spaniards quite early developed techniques for destroying enemy ships by throwing fire balls on their decks. In the nineteenth century the fire balls were called "bomb shells," and during the last war just "shells" and the word "bomb" was reserved for explosives dropped from the air.

With this preface, the author goes on to describe the physical characteristics of bomb destruction. This destruction is to a certain extent sharply circumscribed, the area affected depending on the size of the bomb, for example, the 50-kilo bomb makes a crater in the street about twenty to thirty feet in diameter and three to five feet deep. In England, this depth destroys the essential services of water, gas, electricity, sewage and telephone.

He then describes blast injuries under four headings: the physics of the blast wave, the effects of blast on animals, the effects of blast on man and suggestions concerning therapy.

From the physics viewpoint he shows that close to the point of explosion blast gives a high pressure wave, rising immediately to its peak and followed by a phase of less than atmospheric pressure. The wave recedes in height further from the point of explosion. There is also a ground wave, caused by the explosion of the bomb beneath the surface, which may shake down buildings at some distance.

The effect of blast on animals has been carried out by Hooker, and his chief findings were that the lungs showed numerous hemorrhagic spots, but the extent of these seemed to have
no relation to the extent of exposure to the blast wave. Hemorrhagic lesions were found in the brain and spinal cord of some animals. Some bruising and laceration was found in other thoracic and abdominal organs.

The effects of blast on man have been found to be similar to those on animals, namely, diminished cerebral circulation, pulmonary hemorrhage, contusions and lacerations of abdominal and thoracic organs, minor changes in the nervous system and occasional subpial hemorrhage spots.

Fat emboli from nerve destruction has been mentioned as a cause of death, but its existence has not been determined.

As for therapy, he says that from the effects produced it would point to the use of oxygen and to measures designed to improve the systemic and especially the cerebral circulation.

—C. McLagan, ’44.

SURGERY GYNECOLOGY AND OBSTETRICS

One of the most famous and widely read American surgical journals, Surg. Gynec. & Obst., provides a constant source of information and stimulus for undergraduate students. A great many photographs, photomicrographs and diagrams adorn its pages and make reading both pleasanter and more remunerative. Concise summaries are always found at the end of each article and by simply reading these the student is able to acquire a great deal of information with very little expense of time. The subject matter of the journal is, as its name indicates, quite varied. Numerous articles on war surgery now appear regularly. The following abstract will serve as an example:

LUNG INJURY DUE TO THE DETONATION OF HIGH EXPLOSIVE

By J. O. King, M.D., Ph.D. and G. M. Curtis, M.D., Ph.D., F.A.C.S.


A description of peacetime lung trauma serves as an introduction to the observations which the authors have made regarding the effects of detonation of high explosive on the lungs of humans and of experimental animals. Attention is called to the striking similarity between the effects of direct crushing force and those of the compression phase of the blast wave of a violent explosion. Illustrative case reports with post-mortem findings are outlined and tentative conclusions as to the mechanism of lung injury are presented.

The physics of the "blast wave" is discussed. The wave is described as consisting of a high compression component (for a 125 lb. charge—200 lbs./sq. in. at 15 ft., 10 lbs./sq. in. at 50 ft., with a duration of about .006 sec; for very high explosive pressures up to 1½ tons/sq. in. are reached) and a much weaker low-pressure component (no more than 15 lbs./sq. in.).

The effects of these physical influences are deduced from a host of observations made during the first Great War, the Spanish War, the recent bombings in Britain, and experimental work. The symptomatology of this "blast" syndrome varies from almost no respiratory disturbance to complete respiratory cessation. Shock, dyspnoea and haemoptysis are common sequela. Physical examination usually reveals no evidence of external injury, and this has been the cause of numerous unfortunate errors. Post-mortem reveals vascular congestion and interstitial haemorrhage which are more severe on the side nearest the blast source. This injury is thought to be the direct result of the impact on the thoracic wall of the high-pressure component of the blast wave. Haemorrhagic lesions of the C.N.S. are considered to be caused by sudden venous back pressure due to violent compression of the thoracic cage.

Prevention has been found to be possible by protecting the chest from the direct impact of the blast by a sponge rubber vest or by bomb shelter protection. It is emphasized that blast injury to chest and central nervous system should be suspected in all persons exposed to blast, and that severe injuries to other parts of the body should not be allowed to overshadow this serious possibility.

—G. K. Ingham, ’43.
THE PHYSIOLOGICAL REVIEW

This journal, one of several good physiological journals received by the Library, is, perhaps because of its remote location in the lower stacks, frequently neglected by students of the pre-clinical years. Numerous articles of lasting interest and importance are to be found scattered here and there among the more basic and technical writings of experimental physiologists. It is hoped that the following article, abstracted from the Review, will serve as a stimulating example of the type of material available to the students in this journal:

THE PRESENT STATUS OF THE SHOCK PROBLEM

By CARL J. WIGGERS

Physiological Reviews, 22:74, 1942.

This article is of particular interest at a time when the treatment and care of war casualties are occupying much of the field of medical interest.

Dr. Wiggers states that the similarity of changes in the central arterial pressure pulses during hemorrhage and shock indicate that the dynamic sequence is the same in both.

The volume of circulating blood may be slowly decreased by a significant amount before arterial pressure declines. This fact has been explained by:

1. acceleration of the heart;
2. increased peripheral resistance.

It is evident now that blood pressure is sustained chiefly because cardiac output is not decreased at once. A normal venous return is maintained by vasoconstriction which acts:

1. not so much by increasing total peripheral resistance as by driving blood from certain blood reservoirs—spleen skin and liver—into the large veins;
2. by reducing capillary pressure in selective areas, thereby favouring the resorption of tissue fluid.

During the early stage of hemorrhage there is no determinable increase in the oxygen utilization co-efficient nor impairment of blood flow, hence initial deterioration of capillary tone through vasoconstriction seems to be a figment of the imagination. Capillary damage is more probable a consequence than a cause of arterial hypotension.

In the second stage, a progressive decline in blood pressure occurs. Cardiac output decreases for compensatory mechanisms are no longer able to maintain venous return. During this stage, reinfusion of blood or plasma leads to complete recovery.

Dr. Wiggers' analysis indicates that while it is easy to set up views as to how the reduction of venous return is initiated, the operation of none of the suggested mechanisms—arteriolar dilatation or constriction, capillary dilatation and changes in permeability, failure of venopressor force,—has been proved by existing experimental evidence.

Nevertheless obvious loss of blood (hemorrhage) or plasma (traumatic shock) remains a clearly demonstrated initiating factor in many types of shock.

The circulatory failure may continue steadily in its downward course or, after blood pressure has been stabilized for several hours at levels ranging from 78-80 mm. Hg., it drops abruptly and death occurs in one half to one hour.

Precipitating causes for the circulatory collapse are:

1. failure of vasomotor centre
2. failure of heart.

Observations on the accumulation of the transfused blood in the spleen and mucosa of the small intestine, indicates that something happens in the peripheral circulation during later stages of hemorrhage, which leads to congestion and rupture of capillaries.

It is believed that the reduction in venous return is not sufficient to create the irreversible circulatory failure characteristic of deep shock. A number of possible factors—the adrenal cortex and its hormones, translocation of potassium, default of emergency reflex controls, vasomotor failure, myocardial depression and lack of aortic adaptation — are suggested for further study in this connection.

—A. C. JOHNSON, '45.
FUNCTION OF THE VERTEBRAL VEINS AND THEIR ROLE IN SPREAD OF METASTASES

By Oscar V. Batson


This article deals with the route by which paradoxical metastatic tumors may be spread; viz. the vertebral venous system. Previously, theories concerning the conduction of carcinoma cells, pointed toward the lymphatic, and venous systems, but their common bottleneck was involvement of a channel through the lungs. That is, a diagnosis of primary cancer of the prostate is followed by findings of bone lesions in the pelvis. This pattern is not one of lymphatics or of nerve sheaths, but of a plexiform arrangement of veins.

Direct confirmation was found by injecting a radio-opaque medium into the dorsal vein of the penis of a cadaver. A roentgenogram showed anastomotic connections of the prostatic plexus with the vertebral venous plexus, which, in turn, has connections with the segmental veins of the thoraco-abdominal wall (and therefore the breast) and with the azygous vein, through which communications with pleural and bronchial veins is established. Increased abdominal pressure as in straining, coughing, etc., could thus force blood out of the vena caval system and increase the flow through the vertebral veins, carrying with it malignant cells. The arrangement of the latter agrees with the pattern of aberrant prostatic and breast cancer spread.

The author suggests that the vertebral veins be considered as a fourth system along with the three recognized systems, pulmonary, caval, and portal, in view of its anatomic structure, its physiologic and pathologic importance.

—Mack Stevenson, '46.
DR. ROY KOREY

On the inside cover of The Doctors Mayo is a plate reading "Presented by 'Korey Fund,' Dr. R. S. Korey, New York City."

This presentation plate, and the publicity, was not stipulated in Roy's donations to the Medical School Library. He would probably have preferred the anonymity which so securely shrouded his gift of the electric clock to the Library.

The clock was purchased with the Dr. B. T. McGhie prize in psychiatry which Roy turned over to the Library in 1940. In 1941 he returned $100.00, the value of the J. B. Campbell Memorial Scholarship in Medicine, and requested that it be used for the Library.

Books in the fields of medical biography and medical history, each bearing a presentation plate, are being purchased with the latter donation.

Roy's generosity, in spite of his financial security, is a gesture toward the school which most, as impecunious students, cannot afford and as busy-opulent alumni neglect to make.

The gentlemen who made Roy's gifts possible have also encouraged better work and contributed to the reputation of U. W. O. Medical School. Scholarships should be founded; fellowships should be made possible; bequests are acceptable. Alumnus, you're elected!

—J. H. L.
"No man is big enough to be independent of others" was the advice given to Dr. Will and Dr. Charlie by their independent "little doctor" father. Their mother was "a woman of tolerance, understanding and equanimity." Such parents prompted Charlie to say, "The biggest thing Will and I ever did was to pick the father and mother we had." The book is made delightful by many such personal expressions as the above.

The fiery old doctor had a most colourful and varied career, but, with all his peregrination, he managed to bring his young sons up as doctors as naturally as a farmer used to bring his sons up to be farmers. One became the "head" doctor, the other the "belly" doctor, of the most famous clinic on our continent. However, before the small hospital of the Sisters of St. Francis became a world famous clinic, the brothers Mayo had much bigotry and professional rivalry to overcome. They took their father's precept and used it to learn from anyone whom they could watch or talk with. They, in turn, taught anyone who was willing to watch or listen, and all their accomplishments were due to "my brother and I." Such perfect teamwork between meticulous and spontaneous individuals is remarkable.

Miss Clapesattle, a trained historian, approached her work like a true scholar, but has infused into a scholar's masterpiece the discursiveness and delightful humor of an Elian essay on "Poor Relations" or "Roast Pig."

—J. H. L.

FOUNDATIONS OF NEUROPSYCHIATRY
By STANLEY COBB, A.B., M.D.
(Second edition formerly known as A Preface to Nervous Disease, 231 pages, illustrations, tables, diagrams. The Williams and Wilkins Company, Baltimore, 1941.)

The time is rapidly approaching when the reconciliation of the observed facts of the more philosophical sciences of psychology and psychiatry with those of the basic sciences of physiology and anatomy
will be sufficiently intimate to permit a unified concept. Continually, lines of thought are being thrown out to bridge the great gap which exists between these different approaches to the complex phenomena of nervous activity.

Dr. Cobb, a far-visioned neuropsychiatrist, has collected in the pages of this delightful little book, an outline of the present concepts of the functioning of the human nervous system. The point of view to which he adheres is both refreshing and stimulating. He contends that "psychology is a subdivision of physiology." He admits that many of the exceedingly complex functions of the nervous system are far from being understood at present, but (and this is the sensible, refreshing part of his attitude) he maintains that "there is nothing supernatural about these functions—there is no need for metaphysics to explain them."

Many of the chapters of the book are terse condensations of recent articles in the current literature and form separate units which may be read independently of the others. Chapter VI, for instance, is a very complete account of the dynamics of nutritional supply to the central nervous system. It is called "Cerebral Circulation." It would be of special interest to second and third-year students. The chapters on "Epilepsy" and "Peripheral Nerve and Neuritis" are likewise concise, common sense accounts of the present state of knowledge of these "symptoms."

It is perhaps the point of view expressed by the author which makes his book most notable. He states in Chapter IV that there is "no hint of any fundamental difference between 'mental' and 'non-mental' functions of the central nervous system, whether they be studied by chemical, physical or microscopical methods."

Dr. Cobb's attack upon the use of the archaic misleading terms "functional" and "organic," in describing disease processes, is a treat to read. He tells how fear was the first of a train of events leading to a state of pellagra, and defies anyone to draw a line between mental and physical causes of the ultimate clinical situation.

These are the trumpetings of a new era in medicine—but what's more, they make very interesting reading. They are as refreshing as a one o'clock lunch!

—G. K. I.

SURGERY OF MODERN WARFARE
Edited by HAMILTON BAILEY, F.R.C.S.


The final part of this timely series concludes the section on face and neck wounds. Dott describes the modern treatment of brain and skull injuries.
In a special chapter, the use of suprapubic cystostomy in dealing with the retention associated with spine and cord injuries is adequately described by Ward.

An excellent summary of various subjects is given in the final appendix, thus keeping the book up to date.

—J. H. L.

LECTURES ON WAR NEUROSES
By T. A. Ross, M.D., F.R.C.P.


A brief description and methods of treatment of war neuroses is the purpose of Dr. Ross’ excellent series of lectures.

He has so well avoided the obscure, but impressive, psychiatric jargon in his book that even some medical students have been reported as enjoying it.

Most of the work deals with the acute and chronic war neuroses, their aetiology, description and treatment.

In a brief description of civilian neuroses, he remarks on the pleasantly unexpected paucity of mental breakdowns under the strain of war conditions.

This small, easily read book is an excellent contribution to one of our modern medical problems.

—J. H. L.

MEDICAL DISEASES OF WAR
By Sir Arthur Hurst

(pp. 327. Baltimore, Williams & Wilkins Co., 1940; $5.50.)

Since the second edition of this work appeared in 1918, the author has coupled his wide experience, and the medical records of various armies to make this excellent contribution to war medicine.

"Shell shock," false sympathy, prolonged bed rest and indiscriminate physical therapy are all considered as causes of chronic invalidism. The timid, schizoid types are the likely candidates for war neuroses.

The immediate treatment, by suggestion, manipulation and encouragement have been most efficacious in the prevention of prolonged disabilities.

The comparative ignorance of modern gas poisons makes his chapter on gasses chiefly of historic interest.

His outline of common skin diseases is an excellent guide for the medical officer or practitioner.

—J. H. L.
HEART FAILURE
By ARTHUR M. FISHERG, M.D.

The second edition of this exhaustive work on the dynamics of the circulation has been brought thoroughly up to date. It opens with a discussion of basic physiological principles such as the cardiac output, blood velocity, circulation time, etc. Then there follows a consideration of the various symptoms and signs of heart failure as manifested by every organ and system of the body. The causes of heart failure are gone into in detail and an excellent section of peripheral circulatory collapse ensues. Finally, the book ends with a thorough consideration of treatment.

"Fishberg" may be somewhat too ponderous for the medical student's complete perusal, but as a standard reliable reference it is second to none.

—A. S. DOUGLAS, '42.

EFFECTIVE THERAPY
in
Otitis Media
REQUIRES ANALGESIA — BACTERIOSTASIS, AND DEHYDRATION OF THE TISSUES

Auralgan

THE DOHOW CHEMICAL COMPANY, LTD.
Montreal — New York — London
To Study the Phenomena of Disease without Books

Is to Sail an Uncharted Sea.

—Osler.

RECENT ACCESSIONS TO THE MEDICAL SCHOOL LIBRARY

Ariëns Kappers—The comparative anatomy of the nervous system of vertebrates including man. 2v. 1936.

Becker and Obermayer—Modern dermatology and syphilology. 1941.

Cabot—The patient’s dilemma. 1940.

Cameron—Gynecological operations. 1941.

Clapesattle—The Doctors Mayo. 1941.

Clarke—Illustration; its technique and application to the sciences. 1939.

Clarke—Molding and casting; its technique and application for . . . physicians, dentists . . . 1940.

Cleveland Clinic—Allergy in clinical practice. 1941.

Cope—Early diagnosis of the acute abdomen; 8th ed. 1940.

Dole—The glass electrode. 1941.

Eller—Tumors of the skin, benign and malignant. 1939.

Granger—A radiological study of the para-nasal sinuses and mastoids. 1932.


Grollman—Essentials of endocrinology. 1941.

Hewer—Recent advances in anaesthesia and analgesia; 3rd ed. 1939.

Hill—Germs and the man. 1940.

Hurst—Medical diseases of war; 2nd ed. 1941.

Hutchison—Lectures on dyspepsia. 1927.

Jirka—American doctors of destiny. 1941.

Jordan and Burrows—Textbook of bacteriology; 13th ed. 1941.

Kolmer and Tuft—Clinical immunology, biotherapy and chemotherapy. 1941.

Laidlaw—Virus diseases and viruses. 1939.

Large—Advance of the fungi. 1940.

Lewis—A short history of psychiatric achievement. 1941.

Magnuson—Fractures; 3rd ed. 1939.

Medical clinics of North America—Military medicine. November, 1941.

Mellan—Organic reagents in inorganic analysis. 1941.

Merchant—Veterinary bacteriology. 1940.

Moore—Modern treatment of syphilis; 2nd ed. 1941.

National foundation for infantile paralysis—Infantile paralysis. 1941.
Penfield and Erickson—Epilepsy and cerebral localization. 1941.
Penfield—Military neurosurgery. 1941.
Prentiss—Chemicals in war. 1937.
Pusey—A doctor of the 1870's and 80's. 1932.
Pusey—A history of dermatology. 1932.
Pusey—A history and epidemiology of syphilis. 1933.
Red Cross, Canada, Ontario Division—Emergencies in war. 1941.
Robson—Recent advances in sex and reproductive physiology; 2nd ed. 1940.
Sherington—Man on his nature. 1940.
Stockard—Genetic and endocrinic basis for differences in form and behavior. 1941.
(An American anatomical memoirs, No. 19.)
Studies on tuberculosis. 1941. (American journal of hygiene. Monographic series, No. 16.)
Thewlis—The care of the aged. 1941.
Thorndike—A history of magic and experimental science. v. 5-6. 1941.
U.S. Army Medical School, Washington, D.C.—Immunization to typhoid fever. 1941.
Walshe—Diseases of the nervous system; 2nd ed. 1941.
Williams—Obstetrics; 8th ed. 1941.

Yearbooks, 1941—
Eye, ear, nose and throat General medicine
General surgery Industrial and orthopedic surgery
Obstetrics and gynecology Pathology and immunology
Physical therapy Public health
Radiology Urology.

Yoe and Sarver—Organic analytical reagents. 1941.
Zilboorg and Henry—A history of medical psychology. 1941.
Zondek—Clinical and experimental investigations of the genital functions and their hormonal regulation. 1941.

War periodicals received currently in the library—
Bulletin of war Medicine, published by the Medical Research Council, London.
Journal of Aviation Medicine.
Journal of the Aeronautical Sciences.
Journal of the Royal Army Medical Corps.
Journal of the Royal Naval Medical Service.
Military Surgeon.
United States Naval Medical Bulletin.
War Medicine, published by the American Medical Association.
War Memorandum, published by the Medical Research Council, London.