

STANDARDIZATION OF SURGERY

AN ATTACK ON THE PROBLEM

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At one time the surgeon was almost the only skilled mechanical worker with a craft knowledge analyzed, recorded and disseminated. Now the man with the shovel and the apprentice bricklayer have outstripped him in technic, for in their activities essential motions, tools, and economy of effort have been studied and standardized and taught, while we who think ourselves open-minded scientists look askance at propositions to apply to ourselves measurements of action and efficiency and fatigue, record of errors, instructions in type, motion-training, submission to discipline and new adjustments of function and cooperation. The high average of equipment, dexterity, information, conscientious care and self-sacrificing humanity in operating-rooms, great and small, here and abroad, are matters which some years of planned travel and laborious note-taking heartily attest; but evidence is not lacking that advance is very irregular where it might be all along the line, and erratic rather than on any studied and unified plan.

Is it unfair to affirm that, on the whole, surgery is unstandardized? For example, what is standard nursing? Does Germany have an idea of American ward practice in this line? What is the standard treatment of chronic non-operative disabilities? Has America shown evidence of acquaintance with the outfit of nearly every large German hospital? What is high-grade care of the well-to-do, of the poor? Has London an inkling of the provision for private patients which is a feature of our hospitals, even in small

towns? On the other hand, have we any understanding of their organized insurance relief among the lower classes? In surgical teaching how many countries have copied the one that gives nation-wide promotion for merit? Indeed, to make the point we do not have to select the larger issues; elementary every-day instances will do. For the simple abdominal incision where every factor may be worked out to standard, who has run a long course of tests? In stitching and tying have we settled what are the swiftest motions, as a peasant lace-maker has; or do we ever go into training for correct form? Yet piano-players, pugilists and golfers study these things. The diamond knows every player's batting average, the race-track publishes records, the government office rates men for accomplishment. But there is no hospital governing board which, when a vacancy occurs, or the day of annual reappointment comes round, can ask for the equivalent of a fielding average, or track performance, or rating for character of work done as applied to a visiting surgeon, a house surgeon or a nurse. A consensus of opinion made up of general impressions, of personal preference and prejudice decides. Who determines, anyway, whether a man is fit to operate at all? A doctor without surgical qualification may engage bed-room and operating room in one of the dozen private sanatoriums in any large city, or in the hospital of the little community, and proceed to do the gravest of operations. Until now the patient has had no way of knowing whether or not the doctor has had surgical training. There is no graded standard at all. That the public does not want to be protected and would hinder standardization and legislate for "medical freedom" hardly lessens the duty to lay bare the facts and to present some plan for betterment. We may first, however, get some notions of what that plan might be and set them down. For we would not like to admit the extent of our ignorance, all the way from the specific requirements as to just what is the best mate-

rial for a knife-blade, or the best way to sterilize it, up to the number and kind of hospitals needed in a particular type of community.

A beginning has been made. What has been done in Germany is ably recorded in Grober's book. Our hospital superintendents have one of the most practical and effective organizations in the country. A group of independent New York hospitals is working together in several matters, such as purchasing, issuing reports, checking up of the end-results of each surgeon's work, and promotion for merit rather than for seniority. Dr. W. G. Thompson of New York has shown the unnecessary number of miles of walking done by ward nurses because of poor room planning. Philadelphia has a Committee on Hospital Efficiency named by its County Medical Society to study the whole situation there with an efficiency engineer, Mr. Richard Waterman, as its secretary. Each of the fifty-five hospitals of the city has been invited to send to a conference an "efficiency committee" made up of the superintendent, a member of the lay governing board, and a member of the professional staff. There questions of uniform accounting, cooperative social service and studies of end-results are taken up. The reports are to be had from Dr. Edward Martin, 1506 Locust Street. The New York Board of Estimate has published pamphlets covering investigations by Mr. Henry Wright concerning Bellevue and Allied Hospitals, and has recast the organization. A beginning in the coordination and standardization of dispensary work has been made for the clinics of New York (and also of Brooklyn) by the Associated Out-Patient Clinics of the City of New York, with an office at 17 West Forty-Third Street. Groups of picked men of allied interests have found that at a cost of a couple of thousand dollars within the space of five years and by a very moderate alteration or enlargement of ordinary vacations they can see the best clinics of Europe and America at work and thus select the best experience.

Surgical literature is abstracted in a way more nearly approaching symmetry and completeness than ever before in the joint American-German-French publication the *International Abstract of Surgery*. Furthermore, the degree of the American College of Surgeons will set a new standard here so that the public will understand what qualifications are fundamental. And, lastly, there is a demand for the standardization of hospitals that cannot fail to bring about far-reaching results.

A GENERAL PLAN

A scheme or proposal for standardization of hospitals and surgical technic and procedure and surgical outfits would be worthy of wide and concerted effort. How should it be attacked? I have tried to find out. Dr. Hornsby answers that the organization of hospital superintendents shows that they are fully awake to the need and have made great advances on the administrative side. The father of the newer studies of efficiency in industry, Dr. Frederick W. Taylor, who has praised operative work as an example of well-planned procedure, writes me as follows:

In applying the principles of scientific management to hospitals I am sure there is an immense field . . . the best progress can be made if the work is done under the guidance of a man who has had practical experience in changing over from the old to the new type of management. . . . Unless the introduction of the new methods is made the special work of a man whose whole success depends on making quite rapid progress, the details are so great and the obstacles so many that even after a year or two of work, almost nothing seems to have been accomplished.

Then he gives warning that there are a multitude of fakers posing as efficiency engineers.

In Mr. Waterman's activities in Philadelphia, referred to above, an attack was made on the big problems in a basic fashion. That committee has not yet, I understand, reached the consideration of a plan of study of general surgical technic.

Mr. Frank Gilbreth, while condemning our methods rather fluently has a program to suggest to us. He alone, as far as my questioning goes, has an answer to the query, yours and mine—what can I do—do now—to work out this thing in my own hospital, in my own line? This engineer has seen a considerable amount of operating in the United States and Canada and some in Europe. He has taken moving pictures of operations at New York Hospital, where he is consultant engineer, though he is, unhappily, too busy a man to be able to give much time to the institution. He asserts that hospitals are far behind factories in effective organization; that from 10 to 30 per cent. of precious ether moments could be saved, more especially in the period of preparation. "Surgeons," he says, "think not in terms of elementary motion, but in periods of elapsed time."

He outlined for me last February the way he would go about the study of our problems. He said:

The ideal way would be a demonstration hospital, but until one is started any institution could do these things: first, lay out a form for making a record; next, record the present practice in minutest detail; third, examine the data thus gained; fourth, organize a planning department, and last, adapt to your special needs the plan of carefully separated functions, with their functional foremen.

With regard to the study of detail, make stereoscopic pictures of everything. No detail is too small to write down. Trace the route of a pill from the manufacturer until it goes down the patient's throat. Make the most painstaking statement of every single item of outfit and action. A doctor should be assigned to the engineer who would do this, taking, if necessary, two years and making Century Dictionary-sized volumes.

As to the examination of the data, it is astonishing how just the laying bare of cold facts will be enough to reform and abolish no small proportion of the things that are wrong. Most institutions boggle at the proposal to make this kind of record. They are afraid of it. Most surgeons resent it, refuse it. But this is the way to better things—to chart every break in technic, stick it up, be public about it. And cure results.

In the matter of the planning department, ask any institution for its chart. It looks foolish. It hasn't any chart. [He showed the chart of a factory organization (Chart 1) and commented on it.] This chart may be modified easily to fit the health factory. The important matter is to divide and define the functions of the various individuals, particularly of the foremen. The questions in a factory or in a hospital are these: Who? When? Where? How? Upon what man does each one of these things depend for advice and control? There would have to be some alteration to fit this class of institution. For instance, there would be no speed boss. In place of a gang boss there would be a teacher. There would be a repair man. There would be an inspector,

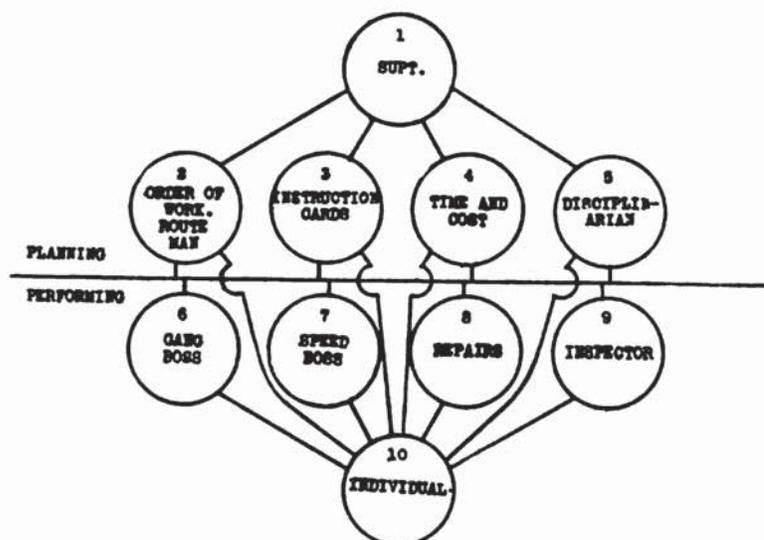


Chart 1.—Functions of scientific management, New England Butt Company, Providence, R. I., 1912.

who would be a very important part of the organization. His work would be not so much investigation as prevention. Investigation is the finding out of the cause of trouble after it happens. Inspection is the keeping of everything up to the mark so that trouble does not happen. One might be said to be post mortem, the work of the pathologist. The other might be said to be preventive medicine. This man need not be a medical man. He is the checker up and is not the man who punishes or disciplines, for when he finds something going wrong, such as a nurse dropping gauze on the floor on her way to do a dressing, or making unsafe contacts, it is he who reports to the disciplinarian. All breaks, all technical errors of whatever kind are entered by him. If a surgeon makes a fault in technic it is entered without malice and without any other idea than that of checking up. Publicity about this list of errors is the great way of stopping trouble.

The disciplinarian is the man who decides all the questions bearing on faults made. His activity is not that of bouncer in general as the word suggests. A workman may commit several faults. Under the old régime it was three times and out. Then he was bounced and a new man put in who was allowed to make four errors and then he was bounced and went off and got another job. Under the new way when the first man has made errors—one, two, three—he is every time gently but persistently corrected and correction continues until he ceases to make that particular error.

As far as possible all activities are charted in a peak and valley drawing. The peaks and valleys give us the clue to the high and low points of all our work and we proceed on these clear indications.

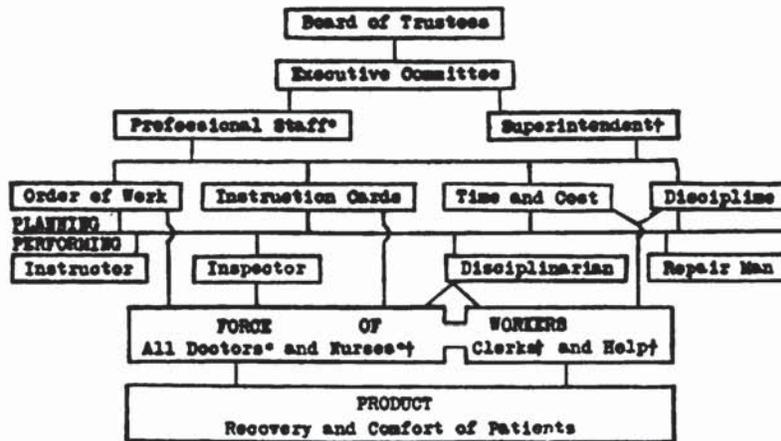


Chart 2.—Functions of scientific management in hospitals (suggested by Gilbreth, drawn by Dickinson); *—professional control; †—executive control. Alternative: Omit "Professional Staff."

Be simple. Use few tools. Imagine yourself operating out under a tree. Hunt out the best experience, measure it, make it standard, write it down on an instruction card. Above all get your people thinking in terms of elementary motions.

The merit of these suggestions by Mr. Gilbreth lies herein, that he gives us something concrete to start on. The medical practitioner is still trying to work on the old one-doctor-one-patient scheme. American practice in surgical services has no clear plan. It works on what might be called a one-surgeon-all-function idea. In large hospitals the usual arrangement is this: The visiting surgeon is responsible, in his wards, while on a three months' tour of duty, for many varying and

ill-defined activities. He plans, teaches, inspects, executes. His ideas may vary not inconsiderably from those of his predecessor or the man who follows him, but he has neither chart nor detailed written instructions to show others what these ideas are when his trimester begins. His force is yet to be drilled. By the time it leaves him it has begun to appreciate his needs and the group is working together. Members of the house staff are frequently jealous of and openly rebellious at assistance, however skilled, given at operations by qualified older assistant visiting surgeons. Except for the one in charge, the nurses are furnished to the operating-room to be trained and are removed as soon as effective. Checking up by the visiting surgeon is sporadic, never covering all detail in the whole of his service, never overlooking an entire day's activities. Supervision of a visiting is unknown. It is not too much to say that he actually accounts in details to no one, and presents no balance sheet.

In hospitals where a surgeon's service is continuous, some system prevails. Even here, however, there is no answer to the question as to how many hours a day or a week he is required to give to this unsalaried service. Nor is tenure of office fixed. Usually it is for life. The juniors serving long years never know what prospect there is of promotion. Nor can able men not connected with the hospital determine whether opportunity or experience may be obtained in service there, as they might should a limit of fifteen years be named for such service or a Codman plan of measuring men by their results be instituted to weed out incompetents.

PLANNING DEPARTMENT

While studies looking to wide changes in organization are under way, parts of the factory scheme might be adopted, such as a planning department, instruction, inspection. As to order of work and instruction cards, rules and regulations exist in every hospital—in the

back of some dusty drawer. Wherein are many dead letters and few directions for details of every-day procedure. Ward routine is tradition; a newcomer alters it at will; an enema is given in three or four ways. A house officer starting on service gets directions as to his duties passed along by word of mouth. A head nurse imported to take charge of the operating-room rarely finds these things: a schedule of duties and of outfit; formulas; a list of stock instruments as agreed on by the staff, each article catalogued by its name and picture (in a place where tools are very various); diagrams of the instrument table for each operation or class of operations, and typewritten details of the procedure adopted as the standard average in this particular set of operating-rooms. Yet every employee can be provided with a schedule of duties and belongings. In any hospital, in each of the sections of the planning department—order of work, instruction cards, time and cost, and discipline—the study of precedents and conditions could be taken up to-morrow and in time fairly complete schemes be submitted. This could be done by one man committees or members of the professional staff combined with the executive.

INSTRUCTION

The drill of the house surgeon cannot properly take place when explanation, question and pause are impossible—with blood spurting and seconds precious. The training in aseptic operative technic of the specialist on the eye, ear, nose and throat cannot be worked out by himself, yet there is no one whose duty it is to show him. These are but examples. High or low, every one of us needs better knowledge of standards and new methods. In no rationally planned way can this be brought about save to agree on standard and to delegate the general teaching and levelling up to some qualified individual or individuals. In the training-school we are used to this daily instruction. On the professional side it is haphazard.

INSPECTION

It is not easy to adjust our point of view to the idea that the actions of all of us are to be checked up and compared with certain standards while our breaks are calmly tallied and bulletined and our results are openly scheduled. As it is at present a visiting or associate may be a striking success in diagnosis or technic but in other points like after-care or progress or humanity be grievously defective. Who may tell how the balance is to be struck under present methods?

SUMMARY

Pending the working out of a comprehensive plan we have outlined the progress already made in the direction of standards and coordination, and pointed out the way an individual surgeon or service may begin to try out certain of the advanced methods adopted in the management of industries. Some of these are new adjustments of "function" (responsibilities and duties) clarified, charted, defined; regular instruction, such as drill in technic and manual dexterity and correct form; practice in team work; the printing on instruction cards of the best standard practice covering all ordinary acts and activities; constant inspection by one delegated to this duty; record of successes and errors like a ball-player's fielding average or a government office tally of character of work done; promotion by rating, and finally, a series of studies, undertaken as in the other mechanical crafts, by measurement of motion, speed, fatigue and efficiency.

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