

*THE THERAPEUTIC REVOLUTION: MEDICINE,
MEANING, AND SOCIAL CHANGE IN
NINETEENTH-CENTURY AMERICA**

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Medical therapeutics changed in some ways remarkably little in the 2 millennia preceding 1800; by the end of the century, traditional therapeutics had altered fundamentally. This is a significant event not only in the history of medicine, but in social history as well. Yet historians have not only failed to delineate this change in detail, they have hardly begun to place it in a framework of explanation which would relate it to all those other changes which shaped the twentieth-century Western world.

Medical historians have always found therapeutics an awkward piece of business. On the whole, they have responded by ignoring it.¹ Most historians who have addressed traditional therapeutics have approached it as a source of anecdote, or as a murky bog of routinism from which a comforting path led upward to an ultimately enlightened and scientifically based therapeutics. Isolated incidents such as the introduction of quinine or digitalis seemed only to emphasize the darkness of traditional practice in which they appeared. Among twentieth-century students of medical history, the generally unquestioned criterion for understanding pre-nineteenth-century therapeutics has been physiological, not historical: did a particular practice act in a way that twentieth-century understanding would regard as efficacious? Did it work?

Yet therapeutics is after all a good deal more than a series of pharmacological or surgical experiments. It involves emotions and personal

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¹For examples of work which try to place traditional therapeutics in a more general framework, see: [1-3].

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relationships and incorporates all of those cultural factors which determine belief, identity, and status. The meaning of traditional therapeutics must be sought within a particular cultural context; this is a task more closely akin to that of the cultural anthropologist than the physiologist. Individuals become sick, demand care and reassurance, are treated by designated healers. Both physician and patient must share a compatible—though not necessarily identical—framework of explanation. To understand therapeutics in the opening decades of the nineteenth-century, its would-be historian must see that it relates on the one hand to a cognitive system of explanation and on the other to a patterned interaction between doctor and patient, one which evolved over centuries into a conventionalized social ritual.

Yet past therapeutics has most frequently been studied by scholars obsessed with change as progress and concerned with defining such change as an essentially intellectual process. And historians have come to accept a view of nineteenth-century therapeutics which incorporates such priorities. The revolution in practice which took place during the century, the conventional argument follows, reflected the gradual triumph of a critical spirit over ancient obscurantism. The increasingly aggressive empiricism of the early nineteenth century pointed toward the need for evaluating every aspect of clinical practice; nothing was to be accepted on faith and only those therapeutic modalities which proved themselves in controlled clinical trials were to remain in the physician's arsenal. Spurred by such arguments, increasing numbers of physicians grew skeptical of their ability to alter the course of particular ills and by midcentury, this interpretation continues, traditional medical practice had become far milder and less intrusive than it had been at the beginning of the century. Physicians had come to place ever more faith in the healing power of nature and the natural tendency toward recovery which seemed to characterize most ills.

This view of change in nineteenth-century therapeutics constitutes accepted wisdom though it has been modified in recent years. An increasingly influential emphasis sees therapeutics as part of a more general pattern of economically oriented behavior which helped rationalize the regular physician's place in the crowded market place of would-be healers [4]. Thus the competition offered by sectarians to regular medicine in the middle third of the century was at least as significant in altering traditional therapeutics as a high-culture-based intellectual critique; the sugar pills of homeopathic physicians or baths and diets of hydropaths might possibly do little good, but could hardly be represented as harmful or dangerous in themselves. The often draconic treatments of regular physicians—the bleeding, the severe purges and emetics—constituted a real handicap in competing for a limited number of paying patients and were accordingly modified to fit economic

realities. Indeed, something approaching an interpretive consensus might be said to prevail in historical works of recent vintage, a somewhat eclectic but not illogical position which views change in nineteenth-century therapeutics as proceeding both from a high-culture-based shift in ideas and the sordid realities of a precarious market place.

Obviously, both emphases reflect a measure of reality. But insofar as they do, they serve essentially to identify sources of instability in an ancient system of ideas and relationships. They do not explain these ideas and relationships. For neither deals with traditional therapeutics as a meaningful question in itself. As such, therapeutic practices must be seen as a central component in a particular medical system, a system characterized by remarkable tenacity over time.² The system must, that is, have worked, even if not in a sense immediately intelligible to a mid-twentieth century pharmacologist or clinician. It is my hope in the following pages to suggest, first, the place of therapeutics in the configuration of ideas and relationships which constituted medicine at the beginning of the nineteenth century, then attempt to suggest the texture of that change which helped bring about the very different system of therapeutics which had come into being by the end of the century.

I

The key to understanding therapeutics at the beginning of the nineteenth century lies in seeing it as part of a system of belief and behavior participated in by physician and layman alike. Central to the logic of this social subsystem was a deeply assumed metaphor—a particular way of looking at the body and of explaining both health and disease. The body was seen metaphorically as a system of dynamic interactions with its environment. Health or disease resulted from a cumulative interaction between constitutional endowment and environmental circumstance. One could not well live without food and air and water; one had to live in a particular climate, subject one's body to a particular style of life and work. Each of these factors implied a necessary and continuing physiological adjustment. The body was always in a state of becoming—and thus always in jeopardy.

Two subsidiary assumptions organized the shape of this lifelong interaction. First, every part of the body was related inevitably and inextricably with every other. A distracted mind could curdle the stomach, a

²Within the meaning of the term "therapeutics," I include any measures utilized by physician or layman in hopes of ameliorating or curing the felt symptoms of illness. In the great majority of instances this implied the administration of some drug, but might often include bleeding or alterations in diet or other aspects of life style. This paper avoids the question of surgery and its relationship to the cognitive system which explained nonsurgical therapeutic practices.

dyspeptic stomach could agitate the mind. Local lesions might reflect imbalances of nutrients in the blood; systemic ills might be caused by fulminating local lesions. Thus the theoretical debates which have bemused historians of medicine over local as opposed to systematic models of disease causation, solidistic versus humoral emphases, and models based on tension or laxity of muscle fibers or blood vessels all served the same explanatory function relative to therapeutics; all related local to systemic ills, all visualized every aspect of the body as interrelated, all tended to see health or disease as general states of the total organism. Second, the body was seen as a system of intake and outgo—a system which had necessarily to remain in balance if the individual were to remain healthy. Thus the conventional emphasis on diet and excretion, perspiration and ventilation. Equilibrium was synonymous with health, disequilibrium with illness.

In addition to the exigencies of everyday life which might destabilize that equilibrium which constituted health, the body had also to pass through several developmental crises inherent in the design of the human organism. Menstruation and menopause in women and teething and puberty in both sexes all represented points of potential danger, moments of structured instability as the body established a new internal equilibrium [5]. Seasonal changes in climate constituted another kind of recurring cyclical change which might imply danger to health and require possible medical intervention; thus the ancient practice of administering cathartics in spring and fall so as to help the body adjust to the changed seasons. The body could be seen, that is—as in some ways it had since classical antiquity—as a kind of stew pot, or chemico-vital reaction, proceeding calmly only if all its elements remained appropriately balanced. Randomness was minimized but at a substantial cost in anxiety; the body was a city under constant threat of siege and it is not surprising that early nineteenth-century Americans consumed enormous quantities of medicines as they sought to regulate assimilation and excretion.

The idea of specific disease entities played a relatively small role in such a system. Where empirical observation pointed unavoidably toward the existence of a particular disease state, physicians still sought to preserve their accustomed therapeutic role. And the physician's most potent weapon was his ability to "regulate the secretions"—to extract blood, to promote the perspiration, urination, or defecation which attested to his having helped the body regain its customary equilibrium. Even when a disease seemed not only to have a characteristic course but, as in the case of smallpox, a specific causative "virus," the hypothetical pathology and indicated therapeutics were seen within the same explanatory framework.³ The success of inoculation and later vaccination in prevent-

³In some ways constitutional ills fit more easily into this model than the acute infectious and especially epidemic ills. Cancer or tuberculosis, for example, could naturally be seen

ing smallpox could not challenge this deeply internalized system of explanation. When mid-eighteenth- and early nineteenth-century physicians inoculated or vaccinated they always accompanied the procedure with an elaborate regimen of cathartics, diet, and rest. Though such elaborate medical accompaniments to vaccination might appear from one perspective as a calculated effort to increase the physician's fees, these preparations might better be seen as a means of assimilating an anomalous procedure into the physician's accustomed picture of health and disease.

The pedigree of these ideas can be traced to the rationalistic speculations of classical antiquity. They could hardly be superseded; no information more accurate or schema more socially usable existed to call them into question. Most important, the system provided a rationalistic framework in which the physician could at once reassure the patient and legitimate his own ministrations. It is no accident that the term "empiric" was a pejorative until the mid-nineteenth century, a reference to the blind cut and try practices which regular physicians liked to think characterized their quackish competitors. The physician's own self-image and his social plausibility depended on the creation of a shared faith—a conspiracy to believe—in his ability to understand and rationally manipulate the elements in this speculative system. This cognitive framework and the central body metaphor about which it was articulated provided a place for his prognostic as well as his therapeutic skills; prognosis, diagnosis, and therapeutics had all to find a consistent mode of explanation.

The American physician in 1800 had no diagnostic tools beyond his senses and it is hardly surprising that he would find congenial a framework of explanation which emphasized the importance of intake and outgo, of the significance of perspiration, of pulse, of urination and menstruation, of defecation, of the surface eruptions which might accompany fevers or other internal ills. These were phenomena which he as physician, the patient, and patient's family could see, evaluate, scrutinize for clues to the sick individual's fate. These biological and social realities had several implications for therapeutics. Drugs had to be seen as adjusting the body's internal equilibrium, and second, the drug's action had, if possible, to alter these visible products of the body's otherwise inscrutable internal processes. Logically enough, drugs were not ordinarily viewed as specifics for particular disease entities; *materia medica* texts were often arranged not by drug or disease, but in categories reflecting their physiological effects; diuretics, cathartics, narcotics, emetics, diaphoretics. Quinine, for example, was ordinarily

as resulting from long-term problems of assimilation. Although acute and especially epidemic diseases were more sharply defined in time and ordinarily in their course, the pathological mechanisms which caused the symptoms which constituted the disease were still represented in terms similar to those we have described.

categorized as a tonic and prescribed for numerous conditions other than malaria. Even when it was employed in "intermittent fever," quinine was almost invariably prescribed in conjunction with a cathartic; as in the case of vaccination, a drug with a disease-specific efficacy ill suited to the assumptions of the physician's underlying cognitive framework was assimilated to it. (Significantly, the advocacy of a specific drug in treating a specific ill was ordinarily viewed by regular physicians as a symptom of quackery.)

The effectiveness of the system hinged to a significant extent on the fact that all the weapons in the physician's normal armamentarium worked, worked that is by providing visible and predictable physiological effects; purges purged, emetics vomited, opium soothed pain and moderated diarrhea. Bleeding too seemed obviously to alter the body's internal balance—as evidenced both by a changed pulse and the very quantity of the blood drawn. Blisters and other purposefully induced local irritations certainly produced visible effects—and presumably internal consequences proportional to their pain, location, and to the nature and extent of the matter discharged.⁴ Not only did a drug's activity indicate to both physician and patient the nature of its efficacy (and the physician's competence) but it provided a prognostic tool as well; for the patient's response to a drug could indicate much about his condition, while the product elicited—urine, feces, blood, perspiration—could be examined so as to shed light on the body's internal state. Thus, for example, a patient could report to her physician that, "the buf on my blood was of a blewish Cast and at the edge of the buf it appeared to be curded something like milk and cyder curd after standing an hour or two the water that came on the top was of a yellowish cast" [7]. The patient's condition could thus be monitored each day as the doctor sought to guide its course to renewed health.

The body seemed, moreover, to rid itself of disease in ways parallel to those encouraged or elicited by drug action. The profuse sweat, diarrhea, or skin lesions often accompanying fevers, for example, seemed all way stations on a necessary course of natural recovery. The

⁴The vogue of blisters, plasters, and other purposeful excoriations or irritations of the skin was related as well to the prevailing assumption concerning the interdependence of every part of the body and the necessary balancing of forces which determined health or disease. Thus, for example, the popularity of "counterirritation" in the form of skin lesions induced by the physician through chemical or mechanical means was based on the assumption that the excoriation of one area and consequent suppuration could "attract" the morbid excitement from another site to the newly excoriated one, while the exudate was significant in possibly allowing the body an opportunity to rid itself of morbid matter, of righting the disease-producing internal imbalance. Such a path to healing could follow natural as well as artificial lesions. "Every physician of experience," one contended as late as 1862, "can recall cases of internal affections, which, after the use of a great variety of medicines, have been unexpectedly relieved by an eruption on the skin; or of ailments of years' continuance, which have been permanently cured by the formation of a large abscess" [6, p. 17].

remedies he employed, the physician could assure his patients, only acted in imitation of nature. "Blood-letting and blisters find their archtypes in spontaneous haemorrhage and those sero-plastic exudations that occur in some stage of almost every acute inflammation; emetics, cathartics, diuretics, diaphoretics, etc. etc. have each and all of them effects in every way similar to those arising spontaneously in disease" [8, p. 22]. Medicine could provoke or facilitate but not alter the fundamental patterns of recovery inherent in the design of the human organism.

This same explanatory framework illuminates as well the extraordinary vogue of mercury in early nineteenth-century therapeutics. If employed for a sufficient length of time and in sufficient quantity, mercury induced a series of progressively severe and ultimately full-blown symptoms of mercury poisoning. The copious involuntary salivation characteristic of this toxic state was seen as proof that the drug was exerting an "alterative" effect—that is, altering the fundamental balance of forces and substances which constituted the body's ultimate reality. Though other drugs, most prominently arsenic, antimony, and iodine, were believed able to exert such an alterative effect, mercury seemed particularly useful because of the seemingly unequivocal relationship between varying dosage levels and its consequent action (and the convenient fact that it could be administered either orally or as a salve).⁵ Moderate doses aided the body in its normal healing pattern, while in larger doses mercury could be seen as a forceful intervention in pathological states, the end of which appeared problematical. Mercury was in this sense the physician's most flexible and at the same time powerful weapon for treating ailments in which active intervention might mean the differences between life and death. In such cases he needed a drug with which he might alter a course toward death—one stronger than those with which he routinely modified the secretions and excretions in less severe ailments.

Both physician and educated layman shared a similar view of the manner in which the body functioned, and the nature of available therapeutic modalities reinforced that view. The secretions could be regulated, a plethoric state of the blood abated, the stomach emptied of a content potentially dangerous. Recovery must, of course, have often coincided with the administration of a particular drug and thus provided an inevitable post hoc endorsement of its effectiveness. Thus a physician could typically describe a case of pleurisy as having been "suddenly relieved by profuse perspiration" elicited by the camphor he had

⁵Bleeding in a single large quantity was also seen as exerting such an alterative effect (and thus might be indicated where a number of smaller bleedings would have the opposite and undesirable effect). The term "alterative" was, in addition, most frequently associated with the treatment of long-standing constitutional ills, in the words of one physician, "subverting any vitiated habit of body or morbid diathesis existing . . ." [9, p. 22 n.]

prescribed [10]. Fevers seemed in fact often to be healed by the purging effects of mercury or antimony. Drugs reassured insofar as they acted and their efficacy was inevitably underwritten by the natural tendency toward recovery which characterized most ills. Therapeutics thus played a central role within the system of doctor-patient interaction; on the cognitive level, therapeutics confirmed the physician's ability to understand and intervene in the ongoing physiological processes which defined health and disease; on the emotional level, the very severity of drug action assured the patient and his family that something was indeed being done.

In the medical idiom of 1800, "exhibiting" a drug was synonymous with administering it (and the administration of drugs so routine that "prescribing for" was synonymous with seeing a patient). This term was hardly accidental. For the therapeutic interaction we have sought to describe was a fundamental cultural ritual—in a literal sense—a ritual in which the legitimating element rested at least in part upon a shared commitment to a rationalistic model of pathology and therapeutic action. Therapeutics served as a pivotal link in a stylized interaction between doctor and patient, encompassing organically (the pun is unfortunate but apposite) the cognitive and the emotional within a framework of rationalistic explanation.⁶ To exhibit a drug was to act out a sacramental role in a liturgy of healing. The analogy is not exact, but it is certainly more than metaphorical. The conventional definition of a sacrament, after all, is an external visible symbol of an invisible internal state. Insofar as a particular drug caused a perceptible physiological effect, it produced phenomena which all—the physician, the patient, and the patient's family—could witness (again, the double meaning with its theological overtones is instructive) and in which all could participate.

This was a liturgy calculated for the sickroom, of course, and not the church. And indeed, the efficacy and tenacity of this system must be understood in relation to its social setting. Most such therapeutic tableaux took place in the patient's home and thus the healing ritual could mobilize all those community and emotional forces which anthropologists have seen as fundamental in their observations of medical practice in traditional non-Western societies. Healing in early nineteenth-century America was in the great majority of cases physically and emotionally embedded in a precise, emotionally resonant context. The cognitive aspects of this system of explanation were appropriate as well to such a community. The model of the body and of health and disease which we have described was all-inclusive, antireductionist—capable of incorporating every aspect of man's life in explaining his physical condition. Just as man's body interacted continuously with his

⁶For parallel discussion of medical explanation in relation to cosmology and symbolic form, see [11–13].

environment, so did his mind with his body, his morals with his health. The realm of causation in medicine was not distinguishable from the realm of meaning in society generally.

There was no inconsistency between this world of rationalistic explanation and traditional spiritual values. Few Americans in the first third of the century felt any conflict between these realms of reassurance. If drugs failed, it expressed merely the ultimate power of God, but no reason to question the truth of either system of belief. Let me quote the words of a pious mid-century physician who sought in his diary to come to terms with the dismaying and unexpected death of a child he had been treating. "The child seemed perfectly well," the troubled physician explained, "till it was attacked at the tea table. Remedies, altho' slow in their action, acted well, but were powerless to avert the arm of death. The decrees of Providence . . . cannot be set aside. Man is mortal, & tho' remedies often seem to act promptly & effectually to the saving of life—they often fail in an accountable manner! 'So teach me to number my days that I may apply my heart unto wisdom'" [14]. The Lord might give and the Lord take away, but until He did the physician dare not remain passive in the face of those dismaying signs of sickness which caused his patient anxiety and pain.

The physician's art in the opening decades of the nineteenth century centered on this ability to employ an appropriate drug or combination of drugs and bleeding to produce a particular physiological end. Thus the apparent anomaly of physicians employing different drugs to treat the same condition; each drug, the argument followed, was equally legitimate so long as it produced the desired physiological effect. And this was no mean skill, authorities explained, for each patient possessed a unique physiological identity and the experienced physician had to evaluate a bewildering variety of factors ranging from climatic conditions to age and sex in the compounding of any particular prescription. A physician who knew a family's constitutional idiosyncracies was necessarily a better practitioner for that family than one who enjoyed no such insight, or even one who hailed from a different climate. For it was assumed that both the action of drugs and reaction of patients varied with season and geography. The physician had to be aware as well that the same drug in different dosages might produce different effects. Fifteen grams of ipecac, a young Southern medical student cautioned himself, acted as an emetic, five induced sweating, while smaller doses could serve as a useful tonic [15].

The same rationalistic mechanisms which explained recovery explained failure as well. One could not predict recovery in every case; even the most competent physician could only do that which the limited resources of medicine allowed, and the natural course of some ills was toward death. The treatment indicated for tuberculosis, as an ancient

adage put it, was opium and lies. Cancer too was normally incurable; some states of disequilibrium could not be righted.

Early nineteenth-century American physicians unquestionably believed in the therapeutics they practiced. Physicians routinely prescribed severe cathartics and bleeding for themselves, for their wives and children. A New England physician settling in Camden, South Carolina, for example, depended for health in this treacherous climate upon his accustomed cathartic pills. "Took two of the pills last night," he recorded in his diary, "they have kept me busy thro' the day and I now feel like getting clear of my headache."⁷ Even when physicians felt some anxiety in particular cases, they could take assurance from the knowledge that they were following a mode of practice endorsed by rational understanding and centuries of clinical experience. A young New York City physician in 1795, for example, felt such doubts after having bled and purged a critically ill patient: "I began to fear that I had carried the debilitating plan too far. By degrees I became reassured; & when I reflected on his youth, constitution, his uniform temperance, on the one hand; & on the fidelity which I had adhered to those modes of practice recommended by the most celebrated physicians, on the other, I felt a conviction that accident alone, could wrest him from me" [18]. Such conviction was a necessary element in medical practice; without belief the system could hardly have functioned.

Individuals from almost every level in society accepted—in forms reflecting individual and class differences—the basic outlines of the cognitive system we have described. Evidence of such belief among the less articulate is not abundant, but it does exist. Patients, for example, understood that a sudden interruption of perspiration might cause a cold or even pneumonia, that such critical periods as teething, puberty, or menopause were particularly dangerous. The metabolic gyroscope which controlled the balance of forces within the body was delicate indeed and might easily be thrown off course. Thus it was natural for servants and laborers reporting the symptoms of their fevers to an alms-house physician to ascribe them to a sudden stoppage of the perspiration.⁸ It was equally natural for young ladies complaining of amenorrhea to ascribe it to a sudden chill. The sudden interruption of any natural evacuation would presumably jeopardize the end implicit in that function; if the body did not need to perspire in certain circum-

⁷The "busy" referred to the "operation" of the drug and not to the physician's schedule [16]. As usual Benjamin Rush was particularly enthusiastic. "Ten of my family have been confined with remitting fevers," he wrote to John Redman Coxe on October 5, 1795. "Twenty-four bleedings in one month have cured us all. I submitted to two of them in one day. Our infant of 6 weeks old was likewise bled twice, and thereby rescued from the grave" [17].

⁸Such comments were made to examining physicians by, for example, laborer James McSherry, 39, and houseworker Sarah Mullin, 19, at the Philadelphia Alms-House [19].

stances or discharge menstrual blood at intervals it would not be doing so.⁹ These were mechanisms through which the body maintained its health-defining equilibrium, and thus they could be interrupted only at great peril. Almanacs, patent medicine circulars, and the letters and diaries of undistinguished Americans all indicate the widespread acceptance of these beliefs.

Such considerations dictated modes of treatment as well as views of disease causation. If, for example, the normal course of a disease to recovery involved the formation of a skin lesion, the physician must not intervene too aggressively and interrupt the process through which the body sought to rid itself of offending matter. Thus a student could record his professor's warning against the premature exhibition of tonics in a continued fever; such stimulants were "highly prejudicial they lock in the disease instead of liberating it from the system. After evacuations have been premised," the young man continued, "then the tonic medicine may be employed" [22, p. 3]. Yet physicians assumed that fevers normally accompanied by skin lesions could not "find resolution" without an appropriately bountiful crop of such lesions; and if they seemed dilatory in erupting, the physician might appropriately turn to blisters and counter irritation in an effort to encourage them. To "drive them inward" on the other hand was to invite far graver illness. In such ailments it was the physician's task to prescribe mild cathartics in an effort to aid the body in its efforts to expel the morbid material. Mercury, for example, might be desirable in small doses but perilous in alterative ones. In any case, however, it was the physician's primary responsibility to "regulate or restore" the normal secretions whenever interrupted; chronic constipation or diarrhea, irregular menstruation similarly implied active steps on the physician's part. In constipation mild cathartics were routine, in amenorrhea drugs to restore the flow—emmenagogues—were indicated. (The use of emmenagogues could represent an ethical dilemma to physicians who feared being imposed upon by seemingly innocent young ladies who sought abortifacients under the guise of a desire to restore the normal menstrual cycle interrupted by some cause other than pregnancy. Pious physicians sometimes found it difficult to balance their professional desire to restore a normal menstrual flow against a fear of unwittingly inducing abortion.)¹⁰

⁹The logic of the system is usefully illustrated by the assumption that suppressed menstruation would cause a plethora, or superabundance, of blood. During pregnancy, it was believed that the blood was utilized by the developing embryo; during lactation, by the body's need to produce milk for the nursing. If the mother became ill and the infant stopped nursing, a student in David Hosack's lectures noted during the winter of 1822–23, the lancet might be needed to "take off" the plethora induced by the stoppage of the monthly discharge [20]. "A partial suppression of the menses," a house-pupil at the Philadelphia Alms-House noted in 1825, "is sometimes the cause of Plethora. Give first an emetic of ipecac and than a laxative . . ." [21].

¹⁰For an example, see [23].

The widespread faith in emetics, in cathartics, in diuretics, and in bleeding is evidenced as well by their prominent place in folk medicine. Domestic and irregular practice, that is, like regular medicine, was shaped about the eliciting of predictable physiological responses. Home remedies mirrored the heroic therapeutics practiced by regular physicians. In the fall of 1826, for example, when a Philadelphia tallow chandler fell ill he complained of chills, pains in the head and back, weakness in the joints, and nausea. Then, before seeing a regular physician, he "Was bled till symptoms of fainting came on. Took an emetic, which operated well. For several days after, kept his bowels moved with Sulph. Soda, Senna tea &c. He then employed a Physician who prescribed another Emetic, which operated violently and whose action was kept up by drinking bitter tea . . ." (George Devert in [19]). Only after 2 more days did he appear at the Alms-House Hospital. Physicians skeptical of traditional therapeutics complained repeatedly of lay expectations which worked against change; medical men might well be subject to criticism if they should, for example, fail to bleed in the early stages of pneumonia. Parents often demanded that physicians incise the inflamed gums of their teething infants so as to provoke a "resolution" of this developmental crisis. Laymen could, indeed, be even more importunate in their demands for an aggressive therapy than the physicians attending them thought appropriate. The indications for bleeding were carefully demarcated in formal medical thought, for example, yet laymen often demanded it even when the state of the pulse and general condition of the patient contraindicated the loss of blood. Some patients demanded as well as expected the administration of severe cathartics or emetics. They suspected peril in too languid a therapeutic regimen.

Botanic alternatives to regular medicine in the first third of the century were also predicated upon the routine use of severe cathartics and emetics—if of vegetable origin. (In the practice of Thomsonian physicians, the most prominent organized botanic sect, such drugs were supplemented by sweat baths designed in theory to adjust the body's internal heat through the eliciting of copious perspiration.) Botanic physicians shared many of the social problems faced by their regular competitors; they dealt with the same emotional realities implicit in the doctor-patient relationship and in doing so appealed to a similar framework of physiological assumption.

Nevertheless, there were differences of approach—among physicians and in the minds of a good many laymen who questioned both the routinism and the frequent severity of traditional therapeutics. (The criticisms which greeted the atypically severe bleeding and purging advocated by Benjamin Rush are familiar to any student of the period.) America in 1800 was in many ways already a modern society, diverse in religion, in class, and in ethnic background. It would be naive to contend

that the unity of vision which—presumably—united most traditional non-Western cultures in their orientation toward a particular medical system could apply to this diverse and labile culture. Yet, as we have argued, there are surprisingly large areas of agreement. Even those Americans skeptical of therapeutic excess and inconsistency (and in some cases more generally of the physician's authority) did not question the fundamental structure of the body metaphor we have described, disagree though they may have with regard to the possible efficacy of medical intervention in sickness.

For example, the absolute rejection of traditional therapeutics enunciated by mid-century advocates of the water cure and other evangelically oriented critics of medicine did not involve a dismissal of the central body metaphor, but rather a rejection of "artificial" drugs and bleeding. These sectarians did not question, but on the contrary accepted enthusiastically, the traditional view of the body. It served indeed as the logical basis for their dismissal of conventional therapeutics; for they emphasized the body's capacity to heal itself when aided by appropriate regimen alone. The physician's therapeutic intrusions into that biological system seemed literally blasphemous.

II

In describing American medical therapeutics in the first quarter of the nineteenth century we have been examining a system already marked by signs of instability. Fundamental to this instability was rationalism itself. A key legitimating aspect of the traditional view of the body was its very rationalistic form—even if we regard that rationalism as egregiously speculative; yet by 1800, this structure of explanation was tied irrevocably to the institutions and findings of world science. And as this world changed and provided data and procedures increasingly relevant to the world of clinical medicine, it gradually undercut that structure of cognitive framework and personal interaction which characterized therapeutics at the opening of the century.

By the 1830s, criticism of traditional therapeutics had become a cliché in sophisticated medical circles; physicians of any pretension spoke of self-limited diseases, of scepticism in regard to the physician's ability to intervene and change the course of most diseases, of respect for the healing powers of nature. This point of view emphasized the self-limited nature of most ailments, and the physician's duty simply to aid the process of natural recovery through appropriate—and minimally heroic—means. "It would be better," as Oliver Wendell Holmes put it in his usual acerbic fashion, "if the patient were allowed a certain discount from his bill for every dose he took, just as children are compensated by their parents for swallowing hideous medicinal mixtures" [24, p. 5].

Rest, a strengthening diet, and a mild cathartic were all the aid nature required in most ills. In those ailments whose natural tendency was toward death, the physician had to acknowledge his powerlessness and simply try to minimize pain and anxiety. This noninterventionist position was accompanied by increasing acceptance of the parallel view that most diseases could be seen as distinct clinical entities with a characteristic cause, course, and symptomatology.

These positions represent the general pattern which most historians accept as reflecting the fundamental outline of debate over therapeutics in the middle third of the nineteenth century. And, as a matter of fact, it does describe one significant aspect of change—the influence of high-culture ideas and of a small opinion-forming elite in gradually modifying the views of a much larger group of practitioners and, ultimately, laymen. But when we try to evaluate the impact of such therapeutic admonitions on the practice of actual physicians, realities become a good deal more complex. Medical practice was conducted at a number of levels—intellectual, economic, and regional—but demonstrated at each the extraordinary tenacity of traditional views.

American physicians were tied to the everyday requirements of the doctor-patient relationship and thus, even among the teaching elite, no mid-century American practitioner rejected conventional therapeutics with a ruthless consistency. The self-confident empiricism which denied the utility of any therapeutic measure not proven efficacious in clinical trials seemed an ideological excess suited to a handful of European academics, not to the realities of practice. It is no accident that the radically skeptical position was christened therapeutic nihilism by its critics. Nihilism with its echoes of disbelief and destructive change—of “total rejection of current religious beliefs and morals,” to borrow a defining phrase from the *Oxford English Dictionary*—was not chosen as a term of casual abuse, but represented precisely the gravity of the challenge to a traditional world view implied by a relentless empiricism and the materialism which seemed so often to accompany it.

There were enduring virtues in the old ways. “There is,” as one leader in the profession explained, “a vantage ground between the two extremes, neither verging towards meddling interference on the one hand, nor imbecile neglect on the other” [25]. The physician had to contend, moreover, with patient expectations: “The public,” as another prominent clinician put it, “expect something more of physicians than the power of distinguishing diseases and of predicting their issue. They look to them for the relief of their sufferings, and the cure or removal of their complaints” [26, p. iv].

The physician had to create an emotionally as well as intellectually meaningful therapeutic regimen; throughout the middle third of the nineteenth century this meant the administration of drugs capable of

eliciting a perceptible physiological response. No mid-century physician doubted the efficacy of placebos (as little as he doubted that the effectiveness of a drug could depend on his own manner and attitude), but in a grave illness the physician's own awareness of their inertness made it impossible for him to rely on sugar or bread pills and the healing power of nature. One medical man, for example, after conceding the uselessness of every available therapeutic means in cholera, still contended that “a noble profession whose aims and purpose are the preservation of human life should not be content with anything short of the adoption of remedial measures for so fatal a disease, which promise positive and beneficent results in every individual case” [27]. Hospital case records indicate that even elite physicians maintained a more than lingering faith in cathartic drugs throughout the middle third of the century. (And in hospital practice economic considerations could have played no role in the doctor's willingness to prescribe.)

Physicians shaped a number of intellectual compromises in order to maintain such continuity with traditional therapeutic practice. Despite the growing plausibility of views emphasizing disease specificity, for example, most physicians still maintained an emphasis on their traditional ability to modify symptoms. The older assumption that drugs acted in a way consistent with the body's innate pattern of recovery was easily shifted toward new emphases. The physician's responsibility now centered on recognizing the natural course of his patient's ailment and supporting the body in its path to renewed health with an appropriate combination of drugs and regimen; even the course of a self-limited disease might be shortened, its painful symptoms mitigated. The secretions had still to be regulated, diet specified and modified, perhaps a plethora of blood lessened by cupping or leeching. Even in ills whose natural course was to death, the physician might still avail himself of therapeutic means to ease the grim road. Finally, no one doubted there were ailments in which the physician's intervention could make the difference between life and death; scurvy, for example, was often cited as a disease “that taints the whole system, [yet] yields to a mere change in diet” [28]. The surgeon still had to set bones, remove foreign bodies, drain abscesses.

Second, even an explicit affirmation of the natural tendency to recovery in most ills did not obviate the place of traditional views of the body in explaining that recovery. Physicians, for example, spoke habitually of “vital power” and the need to support that vitality if the natural healing tendency were to manifest itself. The body could, that is, still be seen in traditional holistic terms, vital power constituting the sum of all its internal realities and, by implication, a reflection of the body's necessary transactions with its environment. The use of the term “vital power” suggests, moreover, how deeply committed the medical profession still

was to the communication of meaning through metaphor, in this case a metaphor incorporating a shorthand version of the age-old view of the body we have outlined, yet appearing in the necessary guise of scientific discourse.

The decades between 1850 and 1870 did see an increased emphasis on diet and regimen among regular physicians, most strikingly a vogue for the use of alcoholic beverages as stimulants. It is hardly surprising that one reaction to the varied criticisms of traditional therapeutics was a consequent acceptance of a "strengthening and stimulating" emphasis in practice; it responded not only to criticisms by sectarian physicians of "depleting" measures such as bleeding and purging, but preserved an active role for the physician within the same framework of attitudes toward the body which had always helped order the doctor-patient relationship.

Practice changed a good deal less than the rhetoric surrounding it would suggest. "Nature," a South Carolina medical man explained to a patient troubled by a "derangement of the Abdominal organs" in 1850, "must restore their natural condition by gradually building them up anew, & time is necessary for the accomplishment of this." But, the physician continued, drug treatment was appropriate as well. "The Medicinal treatment is to aid nature, by correcting irregularities and meeting untoward symptoms as they may occur. . . . The Medicinal treatment consisted of an Alterative course of Tonics, chiefly Metallic, not Mercurial—so combined with Laxatives as to regulate the Secretions of the Digestive organs . . ." [29]. Less aggressive than it might have been a generation earlier, such a course of treatment still allowed the physician an active role.

The inertia of traditional practice was powerful indeed; older modes of therapeutics did not die, but, as we have suggested, were employed less routinely and in generally smaller doses. Dosage levels decreased markedly in the second third of the century and bleeding especially sank into disuse. The resident physician at the Philadelphia Dispensary could, for example, report in 1862 that of a total of 9,502 treated that year, "general blood-letting has been resorted to in one instance only, . . . cupping twelve times and leeching thrice" [30, pp. 12–13]. Residents at Bellevue in New York and in Boston's Massachusetts General Hospital had reported the previous year that bloodletting was "almost obsolete" [31, p. 258]. Mercury, on the other hand, still figured in the practice of most physicians; even infants and small children endured the discomfort of mercury poisoning until well after the Civil War. Purges were still administered routinely in spring and fall to facilitate the body's adjustment to the changing seasons. The blisters and excoriated running sores so familiar to physicians and patients at the beginning of the century were gradually replaced by mustard plasters or turpentine applications,

but the ancient concept of counterirritation still rationalized their use. Even bleeding still lingered, though increasingly in the practice of older men and in less cosmopolitan areas. To divest themselves of such reliable means of regulating the body's internal equilibrium was, as older physicians contended, to succumb to an intellectual fad with no compensation other than a morally irresponsible, if intellectually modish, emphasis on the healing powers of nature. It seemed to many physicians almost criminal to ignore their responsibility to regulate the secretions—even in ailments whose natural course was toward either death or recovery. Thus the continued vogue of cathartics and diuretics (though emetics, like bleeding, faded in popularity as the century progressed).

The debate over therapeutics was characterized more by moderation than by a full-fledged commitment either to the old or to the new and radically skeptical. Few physicians occupied either of these extreme positions. In the intellectual realm as well as in that of practice, clinicians sought in a number of ways to insure the greatest possible degree of continuity with older ideas. When smaller doses seemed as efficacious as those heroic prescriptions they had employed in their youth, it could be explained as a consequence of change in the prevailing pattern of disease incidence and perhaps even in the constitution of Americans. More fundamentally, most physicians still found it difficult to accept the reductionist implications of the view that disease ordinarily manifested itself in the form of discrete clinical entities with unique cause, course, and pathology. Physicians still spoke of epidemic influences, of diarrhea shifting into cholera, of minor fevers efflorescing into typhoid or yellow fever if improperly managed.¹¹ The system was rich in confirmatory evidence; did not cases of "incipient" yellow fever and cholera recover if treated in timely fashion? Traditionalists still found it natural to speak of general constitutional states—sthenic or asthenic for example, bilious or sanguine—as underlying the symptomatology of particular ills or the response of the body to particular drugs. Drugs were still assumed to reflect the influence of climate in their action. Man was still an organism reacting unceasingly and at countless levels with its environment.

Perhaps most significantly, even the most radical in their criticisms of traditional routinism and severity of dosage still emphasized that the physician's therapeutic effectiveness depended to a good extent on his familiarity with the patient's constitutional idiosyncracies. "No two patients have the same constitutional or mental proclivities," the *Boston Medical and Surgical Journal* editorialized in 1833. "No two instances of

¹¹ A New Orleans physician could, for example, write in 1849 that "we have some cases of *Yellow Fever*—that is, they are yellow fever at the death, though but few look like it at the beginning. It is the mildest type of Intermittent & Remittent fever, of which 99 in the 100 cases can be cured if taken in time & properly treated; but neglected or maltreated . . ." they shift into classic yellow fever [32].

typhoid fever or of any other disease, are precisely alike. . . . No 'rule of thumb,' no recourse to a formula-book, will avail for the treatment of the typical diseases" [33].

Indeed, it was not until the very end of the nineteenth century that an outspoken and thoroughgoing therapeutic skepticism came actually to be pronounced from some of America's most prestigious medical chairs. "In some future day," as one authority put it:

it is certain that drugs and chemicals will form no part of a scientific therapy. This is sure to be the case, for truth is finally certain to prevail. . . . The principal influence or relation of *materia medica* to the cure of bodily disease lies in the fact that drugs supply material upon which to rest the mind while other agencies are at work in eliminating disease from the system, and to the drug is frequently given the credit. . . . Sugar of milk tablets of various colors and different flavors constitute a *materia medica* in practice that needs for temporary use only, morphin, codein, cocain, aconite and a laxative to make it complete. [34].

A dozen drugs, a Hopkins clinician argued, "suffice for the pharmacotherapeutic armamentarium of some of the most eminent physicians on this continent" [35].¹² Not surprising, the sometimes aggressive depreciation of therapeutic routinism by such leaders in the profession as William Osler or Richard Cabot still provoked aggressive counterattack. "Expectant treatment," Abraham Jacobi contended bitterly in 1908, "is too often a combination of indolence and ignorance. . . . Expectant treatment is no treatment. It is the sin of omission, which not infrequently rises to the dignity of a crime" [37]. Not all medical men were willing or able to accept the newer kind of reassurance which characterized the world of scientific medicine.

Indeed, many nineteenth-century American physicians were keenly aware of the potential inconsistency between the demands of science and those of clinical practice—and, by implication, humanity. This perceived conflict had a pedigree extending backward to at least the presidency of Andrew Jackson, while it is hardly a moot question today. The debate over therapeutics naturally reflected this conflict over values. "The French have departed too much from the method of Sydenham & Hippocrates to make themselves good practitioners," an indignant New York physician complained in 1836. "They are tearing down the temple of medicine to lay its foundations anew. . . . they lose more in Therapeutics than they gain by morbid anatomy—They are explaining how men die but not how to cure them" [38]. To some American medical teachers, the newly critical demands of the Paris Clinical School and its emphasis on reevaluating traditional therapeutics in the light of "numerical" standards seemed almost antisocial, a reversion to a sterile and demeaning

¹²Critics of his skeptical position, the often acid William Osler put it, "did not appreciate the difference between the giving of medicines and the treatment of disease" [36, p. 13].

empiricism. "The practice of medicine according to this view, is entirely empirical, it is shorn of all rational induction, and takes a position among the lower grades of experimental observations, and fragmentary facts" [39]. The polarization of values implied by such observations grew only more intense in the second half of the century as traditionally oriented physicians expressed their resentment of a fashionable worship of things German, and what they felt to be a disdain for clinical acumen. The appeal of the laboratory and its transcendent claims seemed to many clinicians a dangerous will-o'-the-wisp. Even S. Weir Mitchell, onetime experimental physiologist, could charge that "out of the false pride of the laboratory and the scorn with which the accurate man of science looks down upon medical indefiniteness, has arisen the worse evil of therapeutic nihilism" [40, p. 5]. The danger, as another prominent chair-holder put it, was that young men, "allured by the glitter of scientific work, will neglect the important and really more difficult attainments of true professional studies" [41, p. 21]. To some extent, of course, this was a conflict between the elite and the less favored; it was as well a clash of temperament and world view within America's medical elite. Willingness to accept the emotional and epistemological transcendence of science—even at the expense of traditional clinical standards—provided an emotional fault line which marked the profession throughout the last two-thirds of the century and paralleled the kind of change and conflict implied by modernization in other areas of society.

In the second half of the twentieth century the relationship between doctor and patient is much altered; its context has in the great majority of cases shifted from the home to the physician's office or some institutional setting. The healer is in many cases unknown or known only casually to the patient. Even the place of drug therapeutics has changed, changed not only in the sense that the physiological action of most drugs is beginning to be understood, but in the social ambience which surrounds their use. The patient still maintains a faith in the physician's prescription—often indeed demands such a prescription—but a rather different kind of faith than that which shaped the interaction of physician, patient, and therapeutics at the beginning of the nineteenth century.

Clearly the physician and the great majority of his patients no longer share a similar view of the body and the mechanisms which determine health and disease. Differing views of the body and the physician's ability to intervene in its mysterious opacity divide groups and individuals, not unify, as the widely disseminated metaphorical view of body function had still done in 1800. Physician and patient are no longer bound together by the very physiological activity of the drugs administered. In a sense, almost *all* drugs now act as placebos, for with the exception of

certain classes of drugs such as diuretics, the patient experiences no perceptible physiological effect. He does ordinarily have faith in the efficacy of a particular therapy, but it is a faith based not on a shared nexus of belief and participation in the kind of experience we have described, but rather on the physician and his imputed status—indirectly, on that of science itself. Obviously, one can draw facile parallels to many other areas in which an older community of world view and personal relationship has been replaced by a more fragmented and status-oriented reality. Such observations have become commonplace as we try to ascertain the shape of a gradually emerging modernity in the nineteenth-century West.

What is less easy to evaluate is the moral weight to place upon such change, its existential meaning for the participants in the healing ritual. Our generation is tempted by an easy romanticization of community lost; it would be tempting, that is, to bewail the destruction of a traditional medicine, of a nexus of shared belief and assured relationship. We have lost something; or, to be more accurate, something has changed. But it would be arrogant indeed to dismiss the objective virtues of modern medicine with the charge that it is somehow less meaningful emotionally. For after all, if we have created some new dimensions of misery through technology, we have allayed others. To the historian familiar with nineteenth-century medicine and conditions of life, it would be naive indeed to dismiss the compensatory virtues of twentieth-century medicine, its humane failings to the contrary notwithstanding.

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WHERE ARE THE SNOWS OF YESTERYEAR?

Où sont les neiges d'antan?—They are not fled,
 They lie, a crown of snowflakes, on my head,
 Each hair a snowy crystal, silver-white,
 Reflecting silver moonbeams in the night.
 In youth—my hair was black, all blacked with fire,
 In age—it's chastely white, freed of desire.
 Poor Youth's a trap to play out Nature's plan
 That serves the race, not individual man.
 Youth, make your wars—Youth, dream your grand inventions,
 Youth, rabblorouse—Youth, shout your grand intentions!
 For me—distil the snows of yesteryear:
 Serenity—a love that melts all fear—
 A fusion with the rock, the cloud, the lark;
 Make me the wind, the thunder, lightning's spark—
 Make me the snow, each flake a stellar ship
 Bringing a golden laughter to my lip
 That says:

Amass the moments, make more dear
 Each day, each night—the snows of yesteryear.

I. N. DUBIN

THE ZERO-TOLERANCE CONCEPT

GEORGE B. KOELLE*

In a memorable scene from Samuel Butler's *The Way of All Flesh*, old George Pontifex drops and breaks a pint bottle of Jordan water that he has been saving for many years for his first grandson's christening. The quick-thinking butler averts an impending crisis (he has been blamed for having misplaced the hamper that Pontifex has tripped over) by snatching up a sponge, recovering half the treasured liquid from the floor, and filtering it through a bit of blotting paper. On reflection, the same purpose would have been served by the simpler expedient of turning an adjacent tap and drawing a fresh pint from the local English water supply. It has been calculated that the Jordan daily pours 6.5×10^6 tons of water into the Dead Sea [1]. Thus, when a single day's effluent has equilibrated with the remaining water of the world (which over the course of a few million years it undoubtedly would), estimated as 3.3×10^8 cu mi [2] or 1.5×10^{18} tons, a pint of water sampled from any source will contain 3.7×10^{12} molecules of Jordan water. To extend this concept still further, if a pint of water is poured into the sea and allowed to mix completely with all the water on the surface of the earth, over 5,000 molecules of the original sample will be present in any pint taken subsequently.

The general conclusion to be drawn from these calculations is that nothing is completely uncontaminated by anything else. Yet this conclusion is in conflict with both the implications and applications of certain items of federal legislation that have led to serious limitations in the production of foods and drugs. The best known and most controversial of these is the Delaney Amendment to the Food Additives Amendment of 1958, sec. 409 (c) (3) (A) of the Federal Food, Drug, and Cosmetic Act. Paraphrased, the amendment states simply that no additive found to induce cancer in any animal species following oral ingestion shall be deemed safe. On first consideration, this seems quite reasonable. However, as was brought out in extensive hearings before a subcommittee of the Committee on Appropriations of the House of Representatives in May 1974 [3], its interpretation and enforcement have followed lines

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