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OUR BETTER ORDERING AND PRESERVATION[1]

By Dr. ISAIAH BOWMAN

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THE title of my address is a phrase from one of the earliest documents of American social history, the compact made on board the *Mayflower* before she reached Plymouth harbor. Since the patent under which the company sailed from home was drawn for Virginia and not for New England, whither storms had deflected the ship, it was deemed necessary to have a form of government adapted to the new situation and to frame "laws for the general good"—to prevent a few asocial men in the company from imperiling the enterprise. Before they set foot on the new land of hope and liberty they drew up a document constraining and defining each man's liberty. It was the good of the whole they sought, which implied recognition of the harm that might result from the wayward course of the individual. To "combine ourselves together into a civil body politic, for our better ordering and preservation," was the first requirement. Whatever the new land was to give or to deny, the first problem was the choice of a social and moral order under which they were to live.

It is significant that the text of the compact is brief. They did not know what kind of land it was, whether rich or poor. The winter's privations were before them. They shared the land with unpredictable savages. They did not know how the members of the company would get on together. In short, they had to go forward from day to day, and meet problems as they arose. The important thing, after dedication of self-government to the general good, was *how to agree* on what to do, whatever it was that they would find it good to do. That is the core of the document. If laws were to be for the general good, men were to obey

[1] Dedication address, Natural Resources Building, Urbana, Illinois, November 15, 1940.

whatever should be agreed upon *by the company*. We recall this sound principle on an occasion devoted to conservation in 1940 because loose talk about individualism and free enterprise may have blinded us to the fact that there never was free enterprise in America except on the part of the trapper and hunter and then only when he went outside the bounds of settlement. Anything having to do with social living is not free but bound by "the general good," and it has been so from the far beginnings of settlement in America—in Virginia, at Plymouth, in Maryland and Georgia, and no less in Illinois as shown by the provisions for a popular assembly, judicial procedures and education, in the Ordinance for the Government of the Territory of the United States Northwest of the Ohio, confirmed by the Congress of 1789.

There is something so pervasive in the influence of the men who wrote the *Mayflower* compact as well as other early New England settlers and their descendants upon American intellectual and material development that it can not have been chance that won for their codes and systems such wide allegiance on the part of successive generations of westward-spreading settlements. The essence of their community ordering has had continuing significance: it is vital to our system of living to-day. If this be true, the recognition is especially useful at a time when we meet to look along the road ahead, when we try to see the present meaning of that "wise and continuing use" of our natural resources, as Theodore Roosevelt expressed the purpose of conservation.

Writing in 1858, John Gorham Palfrey in his "History of New England" well expressed the principle of the "better ordering and preservation" of the Plymouth Plantation. He said that the people of early New England formed "a distinct character by its own discipline, and was engaged at work within itself, on its own problems, through a century and a half." *At work within itself by its own discipline!* Other leaders, other emphases. More than two centuries after the landing at Plymouth John C. Calhoun was to plead, in his enthusiasm for internal improvements, "Let us conquer space." Whatever impedes the intercourse of the extremes with the center of the country at Washington, he argued weakens the Union. Social intercourse would be promoted by wider and swifter "commercial circulation" over extended roads and canals, the people would be bound together socially and politically, thus avoiding the estrangements that might otherwise follow our perilously rapid territorial growth. But what was it that he would bind together? Just people, communities? Back of his question lay a deeper one. Calhoun did not say what was going on in the communities that were to be so bound or how he would improve them. The question is all-important, for if we have not improved the people of a country we have not improved the country at all.

Settlement in America, Palfrey explains, meant not only the arrival of European colonists, "but the framing and establishing of that social system, under which, through successive generations, their descendants have been educated for the part which they have acted in the world." When the settlements of New England were at work within themselves they were framing a social system; that is to say, they were making a choice of values—they were accepting this and rejecting that. They were establishing something they had thought about, something that had been deliberately chosen by the community. They did not look to Education with a capital E to set everything straight, as some of our modern critics are inclined to do. What happened to a young man or woman after school years was also important. In Palfrey's phrase, successive generations of descendants were *educated under a social system* that had been framed and established (and we may add modified) for the general good. A largely unmixed group of communities of English origin, the New England settlements were able to maintain their identity unimpaired, to remain homogeneous and in a certain degree of seclusion from the rest of America, to develop a *character*, to choose values deliberately, to order and preserve that which they believed to be good.

A former Justice of the Supreme Court of the United States recently stated that the times called for a return to "morality," defined as that which men and women through long discussion, observation and agreement about experience of social living have found to be good and have built into community character. This reads like a gloss on John Morley's conclusion ("On Compromise," 21–22), "Moral principles, when they are true, are at bottom only registered generalisations from experience." Vital to the general good is a sense of morality, felt, inculcated and built into a democratic society. It is fatuous, continues Morley, to believe that "a government may depress the energy, the self-reliance, the public spirit of its citizens, and yet be able to count on these qualities whenever the government itself may have broken down—." To flout experience and deny the possibility of ensuing evil condemns any system, however noble its humanitarian pretensions.

Valuable as Morley's commentary may be, our "better ordering and preservation" require an extension of his definition of public morality if applied to our times and problems. Finding ourselves confronted with problems hitherto considered insoluble, we are obliged to experiment. Our resources are not what they once were, our population has been thrown in upon itself, the different purposes and values of land have already overlapped, we have to make many more choices be-

tween two goods and not merely a choice between good and bad. A recent report upon the national wealth of Great Britain, made for the purposes of national defense, has shown that while the land is worth £620,000,000, the buildings are worth £4,600,000,000, or seven times as much. Building or destroying a house or planting or wasting an acre now represents a choice by more than the individual and the choice must be made for the general good. From the standpoint of engineering, England is now fully occupied: the whole of it is an industrial plant. Her cities can not grow much more without reaching the limit of possible service in water supply, thus getting in the way of each other. The food demand has long since outrun the domestic supply, and naval strength and food are tied together inexorably. A battleship is a machine shop supported by a vast number of other intricately related machine shops, mines, aptitudes and skills. Government in such a land is necessarily a business, a whole people's business, and much of it is new business and new experience as well as new or revised morality.

In this country we are following the same road at a slower pace. If we greatly extend our foreign commerce, and if our population continues to increase and, what is more important, to require a yet higher standard of living, we shall find ourselves greatly multiplying the number of choices we have to make between one kind of ordering and another. We can not just grow and pay no attention to the social strains of growth, as if increase of size were itself a virtue. As a matter of fact, as a thing gets beyond a certain scale or size, it gradually ceases to be the original thing and becomes something different. In a motor-car collision at ten miles an hour you may be hurt; at fifty miles an hour you are not hurt five times as severely, you are dead! The general good requires us to adapt our choices of laws to changes in social aims and character that growth inevitably brings.

It is clear from the events of the past twenty years that the time has come when America must take a good look at itself in the mirror of experience. Filled with people, some of the land that we have used or destroyed or wastefully exploited has begun to dehumanize some of its occupants. We have reached the point where civilization is a disease, not merely for conquered savages that we "protect" but for those among us who live on wasted inheritances of soil, minerals, blood. When civilization piles up evil features it is time to refer to "the general good." It is time to work harder within ourselves under our own discipline, as Palfrey phrased it. It is time to look at the morality of things-as-they-are. Woodrow Wilson saw that time coming: "Presently there will come a time when America . . . will be obliged to pull herself together, adopt a new regimen of life, husband her resources, concentrate her strength, trust her best, not her average members."

This inescapable thought runs through American history. It is not a novelty of to-day or a careless improvisation to meet a sudden emergency. In this State of Illinois Abraham Lincoln began his career, made his nationally known House Divided speech, set the purposes of his life. I may appropriately quote him in reference to the distinctive purpose of American society. In his first annual message delivered in December, 1861, he defined the war aims of the Union. He said it is "a struggle for maintaining in the world that form and substance of government whose leading object is to elevate the condition of men—to lift artificial weights from all shoulders; to clear the paths of laudable pursuit for all; to afford all an unfettered start, and a fair chance in the race of life."

It is in the mood of our times to regard the choice of social values, or agreement about our "regimen of life," as matters political, as symbols of unrest, as a desire for revolutionary change. Only the historically blind and deaf could so regard them. Each age has its crisis that lifts men and leads to the higher development of intellectual and spiritual powers: "depth and passion and resource are needed for stormy times," and the times help exhibit if they do not make the qualities. Out of crisis and clash of interests come the new choices of values and things to be conserved, and equally of values and things that must go by the board. The "Rolls of Parliament" for fourteenth century England are full of petitions submitted by merchants, for the suppression of weirs, locks and mills, that "thwarted" the streams and were detrimental to "the passage of ships and boats on the great rivers of England." Roads were bad and even rich merchants, like common pedlars, had to travel over muddy roads. Travel by water, if possible, was a safer and more comfortable way of reaching the numerous fairs where itinerant merchants did their most important business. Without telegraph or railway post, travel in those times was much less for pleasure than from necessity. Whatever blocked the streams blocked commerce. Parliament had to choose between the mill and the ship, between the miller and the merchant. Now the choice was one way, now another.

Principles grew out of this experience and they survive as active forces all over America as in England, in your State of Illinois, in my State of Maryland, as survivals of earlier centuries of English experience. Even five hundred years ago there could not be free enterprise except within the limits of compromise of conflicting claims with the general good in view. Those who challenged authority, because of a right denied, almost always won out in the end, whatever their personal fate. Over five hundred years ago John

Ball, a priest, was drawn, hanged, beheaded and quartered, because he made too much fuss about the general good. He traveled widely and preached. What he said seems mild to-day. One of his surviving lines is, "They dwell in fayre houses, and we have the pain and traveyle, rayne and wynde in the feldes."

There is rising in this country a belief that loyalty can be made a living principle only if we agree that the first mortgage upon our future talent and time, after national defense, is laid by the problem of unemployment. This belief will be pressed home by our preparations for national defense. You can not ask a hungry man to get excited about saving the country. He will ask, Whose country? Proposition number one in our national policy should be that no one shall go hungry, and this means that no one who desires to work shall be left unemployed. The "general good" invites each man to try his talents, and develop his powers through education, provided not at his expense but at the expense of the taxpayer. The community says, "Let's see what you can do and what you are worth. After that you must take your chances and do what your aptitudes indicate that you can do in unhandicapped competition with the rest." When that has been done, liberty becomes in such a man, or should become, a thing alive and substantial. We can then expect that a man's faith and confidence become joined to his sense of liberty. Steep and precarious as the road to this high level may be, we have no choice but to take it. The Promised Land is widely diffused prosperity. The opportunities and risks must be matched by courage. We can speak of the remedial future in no other terms.

And we can not deal with the future at all unless we employ the imagination: "a faultless judgment on the circumstances of the present is not enough." It has been said that a practical man is a man who practises the blunders of his predecessors, but it is fairer to say, with Buchan, that a profound practical intelligence is a rarer thing than seminal idealism. Concocting things in a study may be sheer waste unless joined with experience. Practical men and politicians have this in common that they are able "to devote extraordinary abilities to the propagation of commonplace views. . . . Their function is not to carry flame but weight . . ."

I have been quoting from the late H. A. L. Fisher, warden of New College, Oxford, historian and man of wide acquaintance and experience. Hear his conclusion of the matter:

> The great statesmen of the world have had a very concrete sense of human realities. They have not lived in a world of abstractions, but have always kept before them the vision of men and women and children, for the most part poor and struggling, and, therefore, quick to feel the inequalities and imperfections of Government. The stuff of which politics is made is in reality very simple—bread, coal, clothing, meat, houses, and land. To help improve the common lot—this is the ambition which makes, and will continue to make, the biggest and most generous men in any society desire to take up politics.[2]

In the examples that I have cited, in the moralities concerned with the general good, in my remarks about the politician and the practical man in relation to our remedial future, I have been trying to approach the detailed questions of conservation in the light of *principle*. I have referred to the hungry man and the unemployed man for the same reason. It is no good at all to study the gypsum and lead deposits of the State of Illinois, or look into the conservation of oil and gas deposits, or lower the rate of soil erosion, or improve the health of your people, or reduce the damage of insect pests, and of fruit and tree diseases, unless you look at these things from the standpoint of the better ordering and preservation of something that you have deliberately chosen which includes all the other aims and objects of your civilization. It has been said that we can afford to neglect politics, which ought to mean the general good, because we are so affluent. Sheltered by size and distance from lightning attack by external foes, it has seemed as if we could afford to be an "intermittent democracy." We could work at it when we felt like it. We looked to others to develop or choose the great ideas, forgetting that whatever we have gained of distinctive American excellence in the political field has grown out of self-discipline, awareness of the common good, an agreed method of reaching agreement, the development of community *character*, the better ordering of our affairs. There is nothing we can say or do about conservation that is not embraced in this scheme of nation-building.

I emphasize the careful location of conservation in the American scheme of things because of the great number of techniques that are applicable to conservation and among which it is easy to get lost, ignoring compass and route. Conservation of our natural resources now includes all resources; it takes in the land beneath a man, the weather above him and the man himself. About all these things Charles A. Beard has remarked that "Nature presents no problems. We ourselves raise all of them." The other day I picked up a geography text used in the schools just 100 years ago. I looked up the section on Illinois and found it described as a land "of inexhaustible fertility" and the proof thereof was that crops had not diminished in volume after a century without fertilizer. The settlements of Illinois two hundred years ago were too small in number to prove anything so fundamental as that, and we have now come to the point where the care of the soil is just as important as what you are to eat at

[2] "Pages from the Past," 1939, p. 215.

the next meal because land and food and health are now very closely tied together.

There is something apparently so simple and easy in the "waste not, want not" formula of conservation that the essence of the thing may be overlooked entirely. That essence for society is that the general good shall rule the mode of exploitation. It is not a problem in waste merely. The essence of a scientific conservation program is that we do not yet know fully what we waste, or why we waste, or how serious that waste may be unless we first find the law of waste for every wasted thing. We search for basic causes, on the sound principle that after we have related cause and effect we *may* be able to find the cure for undesirable effects. Nature did not ask that the prairie sod be broken, the woodlands of the valley floors cut off, the streams polluted. Men began doing these things in complete ignorance of the result now before us or without any curiosity about any "law of waste," and without realizing how easy it is to destroy a natural balance of forces, which, once destroyed, changes the land itself as human habitation, and changes the degree of welfare. Nor could men have foreseen fully the day of conflicting interests when, with population swarming everywhere, city health services widening their inexorable demands, and standard of living becoming more and more a matter of social responsibility, compromises among interests had to be effected on an ever-widening scale. We had to learn all over again how nature works at the same time that we had to learn how to keep our fundamental American aims—America as a land of opportunity, reasonable freedom, self-discipline, evolving moral system, never forgetting the poor and struggling and their preoccupation with those simple realities, "bread, coal, clothing, meat, houses, and land."

More than 100 years ago Disraeli was hammering at the truth that supreme control over mechanical power was paralleled by no proportionate advance in moral civilization. There was only a hurry-scurry of money-making, men-making, machine-making, as he put it. England had altogether outgrown not the spirit but the organization of her institutions. When a new race of men demanded general or popular education the ministry fell into a panic! What would he say of that continued lack of parellelism? Emerson in a later decade expressed anxiety about the human effects of a machine civilization. Carlyle was one of the most brilliant of the literary group that saw no social progress in mere multiplication of machines and money. Macaulay, on the other hand, found inspiration in material expansion and its cultural effects. Our recent excitement about such effects is an old emotion. The dish has been served again and again. What followed the peace that closed the Napoleonic Wars also followed the World War and Versailles—commercial dislocation, wide social demands upon government for jobs and higher standards of living, self-criticism, social education and social discipline, individual good and general good brought into harmony if possible. The advocates of routine have no place in a time like that! The same power that goes into discovery and machine invention must go into social objectives, their definition and purpose. It must be as important to think about the welfare of the people of the corn belt as to think about the convenience of a self-starter. It must become more praiseworthy to think about the protection of men in a shop than to think about the perfection of the transient and material things which they produce. The conservation of our natural resources, meaning the wise and continuing use of resources, is a problem in social ethics.

Scientific research has made almost magical progress, but many are the problems yet to be solved by science. The men at work in the new building which we have met to dedicate will take an active part in their solution, have no doubt of that. New facts, new techniques, new principles will come out of that work. These things we may take for granted. What we can not take for granted is the attitude of the commonwealth of Illinois toward the results of that scientific work. So if I talk but little about your water-supply upon which, 34 years ago, I spent an interesting summer; if I touch lightly upon forests and soils, it is because their proper study and disposition depend on a far more fundamental thing—the social system of the state that supplies the framework for all scientific and educational enterprise, affects the position of that enterprise.

Let us take highways as a useful example of the conservation of energy and human life, almost as important to-day as forests and power installations. When we first began to drive motor-cars the morals of the road were amazingly low. They fell still lower when practically every one had a car. We often said when we met a bad driver, "What can you expect when every one drives a car, the imbecile along with the intelligent?" Now we can say that experience, education, improved mechanics, better roads from the standpoint of the limits of human skill, eyesight and attention, have built a road ethic far ahead of what we had originally. With center lanes extended and a stricter control of drinking drivers the present shameful accident record will be improved. Every one of intelligence has found out that warning signs are put up for *his* safety. "That man is free who is conscious of himself as the author of the law which he obeys" (T. H. Green).

Soil conservation is taking the same course but more rapidly. The demonstration is right under your eye in the field. When it comes to forest control we are still far below acceptable standards. The gap is so wide

between the forested watershed above and the farm below that cause and effect are less obvious. The technical aspects of control are now well known. It is the social ethic that lags behind. Partly, this is because the general good grows yearly more complex and difficult to see clearly or to deal with simply. The political channels are crowded with issues from bank to bank. Time is wasted on postmasterships that should be spent in quickening the national conscience about the waste of things we shall never again recover, like that forty-acre farm that goes down the Mississippi every minute.

A social system devised for the general good, "for our better ordering and preservation," must be built upon a moral conviction sustained by self-discipline in individuals and in the nation. Breasted has sought the beginnings of moral experience in the life of the Egyptians and attaches significance to the early appearance of *Maat* (right). "A man's virtue is his monument" reads the autobiography of an Egyptian nobleman inscribed on an ancient stone tablet. Another runs, "I was one who heard (legal) cases according to the facts without showing partiality." Gradually *Maat* passed into a method of moral guidance and control of human affairs, and especially public affairs. Orderly administration became suffused with moral conviction. For a thousand years, concludes Breasted, organized government gave Egyptians of the Old Kingdom a majestic picture of the actual operation and beneficence of *right*.

The dream of democracy is wise self-control and self-dynamic through education, through the exploration of "the edge of the possibilities" by individual initiative, through a government inspired and informed by the general good, by *Maat* or right. The goal is a controlling majority doing the right thing as a result of intelligent forces at work within, rather than by arbitrary force imposed from without. Conservation is therefore an educational job in large part. But I would warn you that the educational task is partly an emotional task as well as a task in reason and persuasion. Some one must be on fire about it. Feeling is a part of the job of the men who occupy this building. Creation is the product of passion.

You have both noble and ignoble examples to point the moral of your effort. Whether or not men were once able to walk from Egypt to Morocco in the shade, the changes in North Africa have in the main been degradational since two millenniums ago. One of the earliest vernacular names of Ireland was Fiodha Inis, or the Woody Island. The name of an ancient tribe inhabiting the southern coast of the County of Cork was Vodii, or dwellers in a woody country. Many of the old names of hill and plain are words implying forests, groves or trees. In describing Ireland in the *Cantos of Mutability*, Spenser speaks of the "woods and forests which therein abound." A century afterward the author of a Chorographical Description of the County of Meath complains of the want of timber of bulk "wherewith it was anciently well stored," and recommends to Parliament the making of provision for planting all sorts of forest trees. Only a few years ago we rested our case for soil conservation upon general examples like these until methodical enquiry startlingly disclosed our own impending plight. The soil profile in many cases showed good soil in a thin layer-remnant only. Crops were still barely possible. A few years more and what looked like uneroded country would be skinned of its surface layer of fertility and tilth. The Tennessee Valley is such a marginal area. Caught between political fires, challenged from the standpoint of widening social control by the federal government, the fundamental truth that the soils of much of the Valley were on the brink of destruction has been obscured. How to save and improve them might be disputed. There could be no dispute about the heroic scale of required measures.

There is a saying in England that the ships and therefore the victory of Nelson was made possible by the tree-planting of John Evelyn in the 17th century. England's timber was thinning at an alarming rate when a man in a passion about it made himself England's primate in forestry. But for his work more than a hundred years before Nelson there could have been no Nelson. This may be pushing the argument too far, but it is not pushing the moral too far.

The day will surely come when similar instances will be cited in America, when niches of fame, well-earned on behalf of the general good, will be filled with the names of those who have fed migratory birds, dramatized thinning soil horizons in terms of human want and decline, taken steps to save from spoliation the diminishing stock of whales, and created wilderness shrines for wildlife, but more importantly for man, as an example and a warning and as a lesson in social conscience.

I spend a part of each summer near Wolfeboro, New Hampshire, and during the past summer I reread the town history. On one page the sole record of a citizen is confined to the statement that he made a watering trough that lasted for 150 years. It set me to wondering whether I had made anything that would last that long, and how many other men had done so. What are the memorials of our present effort, of the worth of you and me? What permanent things have we created? Here in America we can yet have it said in times to come that we have made the greatest thing in the world. We have made America a place where the free will of 130,000,000 people, trained to think in terms of the general good, have found a permanent form of self-expression through self-discipline; a place where men were not "most boastful of their intelli-

gence but proudest of their wealth," but rather a place where a moral conscience grew amongst a whole people, where a sense of the majesty of *Maat* or right became pervasive.

It was a professor in another state university in this region who said that institutions have to be created as systematic reminders of good ideas. Conservation is not only a good idea; without it there will cease to be an America as we know it. When and if that time comes it will not be the Mississippi that will be to blame or a change of climate or European wars. It will be man—the men and women of America—you and I—who created the problems where once there was bounty and balance in nature. The structure that we have met to dedicate symbolizes an idea, a morality, a common good, right. Though time crumble its walls, if the idea of common good survives, the purpose of the building will have been fulfilled. Backed by a passion for human welfare, its staff will reach out into every part of the state to earn dividends upon the public investment which it represents.

According to Livy it was an ancient Roman custom to enclose any place that had been struck by lightning and keep it inviolate ever after. In such a place a stone was buried to represent the lightning. The enclosure was called a "puteal" and it was sacred. This building may be called a modern form of puteal. It represents interest in the forces of nature, forces unbalanced by man and now striking back with lightning effect. It is a place inviolate from those who talk freedom and are silent about the common good. Our puteal may last like that watering trough at Wolfeboro for 150 years, or like the sense of *Maat* in Egypt for a thousand years, according to the will and the conscience and the intelligence of the people of Illinois at work upon their own problems and, like the men of the Plymouth Plantation, forever intent upon the changing question of their better ordering and preservation.

STATUS OF BIO-ASSAY OF THE DIGITALIS GROUP[1]

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THE bio-assay of digitalis is made necessary by the fact that pure principles are not generally available, and most of the practice is confined to the use of crude material or mixtures of glucosides. There are no satisfactory chemical methods for their estimation. Numerous methods have been suggested for the assay of digitalis, embracing a wide variety of animals and techniques.

The U. S. Pharmacopeia has taken a hand in the problem with the view of providing digitalis of uniform potency. Every specimen labeled U.S.P. digitalis is compared with a standard digitalis powder on a qualified batch of frogs. All digitalis labeled U.S.P. is supposedly of the same strength within the limits specified, namely, ± 20 per cent.

TABLE 1

TINCTURES OF DIGITALIS ASSAYED BY THE FROG METHOD IN 1907 BY EDMUNDS

No.	Toxic dose (cc)	Origin of plant
1	.08	From German leaves.
2	.11	From English leaves.
3	.12	From leaves obtained from manufacturer of tincture No. 5.
4	.13	
5	.15	Physiologically assayed.
6	.16	From physiologically assayed leaves.
7	.175	Physiologically assayed.
8	.18	
9	.18	From German leaves.
10	.19	
11	.20	From English leaves.
12	.21	
13	.26	"German tincture."
14	.27	
15	.28	
16	.29	From English leaves.

Table 1 shows how variable digitalis was before the pharmacopeia described a method of assay. These data were used in 1907 by Edmunds[2] in support of his recommendation for the inclusion of the frog method into the pharmacopeia. He assembled a number of preparations of digitalis and assayed them by a frog method. He found the strongest about three times as potent as the weakest. Since then a fairly large literature has accumulated on the subject of digitalis assay, and statistical refinements have been introduced into the treatment of assay data for the purpose of improving the accuracy of the methods.[3, 4]

About six months ago we assembled a number of the outstanding brands of tincture of digitalis, labeled U.S.P., supposedly of similar potencies. We assayed them by the cat method,[5] and the results are presented

[1] Based on an address given before the Cornell University Medical College Research Society, November 7, 1940. Part of the material represents work carried out at the Beth Israel Hospital, and the Hospital for Joint Diseases, New York City, in collaboration with Dr. Nathaniel T. Kwit and Dr. Milton Kramer, later to be published *in extenso*.

[2] C. W. Edmunds, *Jour. Am. Med Asn.*, 48: 1744, May 25, 1907.

[3] C. W. Chapman and C. A. Morrell, *Jour. Pharmacol. and Exp. Therap.*, 46: 229, October, 1932.

[4] L. C. Miller, C. I. Bliss and H. A. Braun, *Jour. Am. Pharm. Asn.*, 28: 644, October, 1939.

[5] The technique employed in this laboratory involves intravenous injection, either continuously or in equal fractions at 5-minute intervals, until death in an average period of between 60 and 90 minutes in the cat under very light ether anesthesia.