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THE MACHINE-AGE MIND AND LEGAL DEVELOPMENTS

Like modern builders of a Tower of Babel, we today are engaged in the erection of a machine culture that may be our undoing. The dominance of the machine is perhaps the outstanding characteristic of present-day civilization; the idea of progress probably the reigning conception.¹ Our dependence on the machine is very great and appears to be becoming greater. Reliance on it is so complete that fanciful predictions have been made that eventually the machine would destroy our civilization.² The presence of the machine has created innumerable problems in industry, in the relations between sovereign States, in the family, in the distribution of population, its birth and death rate, in the growth of crime, and in the field of legal relationships. The urge to find markets for mass production of the machine has created a host of legal problems, some socially good and others socially bad. The effect of the machine in solving many problems due to space has created a network of relationships of interdependence and solidarity of national and international action and viewpoint which no longer permit any nation to live unto itself.³ Consequences of machine supremacy cannot now be envisaged, but the future is certain to bring about numerous transformations in political alignments, birth of constitutional doctrines, and changes in structural industry that will be far reaching.⁴ The American Bar must understand and appreciate the philosophy of these developments in order both to lead and to guide the forces of machine culture; the judiciary must be in tune with machine-age symphony in order to pre-

² Such books as Spengler’s “Decline of the West,” Austin Freeman’s “Social Decay and Regeneration,” and Butler’s “Erewhon,” illustrate this type of thought. And see further, E. M. Forster’s work on “The Development of Mechanics.”
elude discordant notes in decisions that are not in harmony with its furtherance. For law is in part the ordered control by the State of this entire process of machine evolution for the public welfare; and, if development of machine control over our activities is inevitable, as now appears, legal rules, doctrines, and institutions must cooperate, not obstruct, in the unfolding web.

**INDICTMENT OF THE AGE OF MECHANICAL CONTRIVANCES**

Before discussing probable effects of machine culture upon the law, it may be well to pause and to consider the indictment urged against our machine civilization or that of mechanical contrivances. Our attitude toward these charges will play a role deciding whether or not machine culture and its by-products should be welcomed or repelled by legal means. If the machine has dominated over man, we have a materialism in which there is little room for anything but mechanism and a machine mind; if man is still master, our machine age, with its asserted evils, may be only a passing phase of human existence; and human ingenuity with legal aid, will find some means of circumventing complete mechanistic dominance.

Technological civilization, it has been said, is standardizing life in such fashion that man is losing his personality, being lost in the multitude, with few, if any, original ideas. Individual greatness in the fine arts is declared to be a rarity; human genius is all absorbed with machine culture problems, where rewards are great in that machine supremacy is being furthered. Moreover, machine civilization is said to have a deadening monotony about it, creating in the workers performing routine and highly specialized tasks, a dullness, a blankness, of appreciation of higher sentiments and aspirations. The outer life, the life of machine activity, is charged with killing the inner

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*The indictment of mechanical civilization is well presented, but at the same time challenged, by Dr. Alberto Pirelli, in "Lights and Shades of Modern Mechanical Civilization" (International Chamber of Commerce address, Washington, D. C., May 7, 1931).


*Such books as Arthur Pound's "The Iron Man," and Dubreuil's "Robots or Men?" discuss various phases of this tendency. Stuart Chase, in his recent article on this subject, has shown that in America, out of 43,000,000 people gainfully employed, only about 13% do so-called monotonous or robot work (supra, note 5).
life, the life of contemplation, of philosophy, of artistic tempera-
ment. The uniformity of modern technical culture, it is
asserted, is causing the disappearance of individualism, by
reducing the range of choice and tending to level differences in
taste and expression. The omnipresence of radio, the telephone,
the clamor and uproar of city streets, the noises of industry and
transportation, tend to drown out contemplation and solitude,
with consequent disappearance of new and original thinking.
The tempo of the age is one of jazz, not of higher symphonic
idealism; one of superficiality and display, not of thoroughness
and modesty. Spiritual values are subordinated to the quest of
the material.8

That the balance between the physical and the spiritual has
been overthrown must be admitted, and that the technical
machine age has evils cannot be denied. But in my judgment,
this disequilibrium will be only temporary, and from this cradle
of relationships there will probably emerge a new and better
intellectual and spiritual progeny. Every age must pay its
share toward the betterment of the next, and sometimes the pay-
ment exacted is harsh. On the other hand, strong defense can
be made of machine culture, of the age of mechanical contriv-
ances, were there nothing else ahead. The machine has made
for greater leisure in that, in the words of one of its greatest
advocates, Henry Ford, it has "liberated man from brute
burdens and released energies to the upbuilding of his intel-
lectual and spiritual powers for conquests in the field of thought
and higher action." And the spiritual life of man is far from
dead; courage, tenacity, self-sacrifice, flashes of genius, noble
feats, have accompanied the development, and extension, of
machine culture. Labor-serving devices, as well as labor-saving
expedients, have given to the masses a standard of living, and a
comfort of existence, possible only to those who in earlier days
had numerous slaves to do their bidding. The average com-
bined animal and machine horse power per person in the United
States, the leading industrial nation in the world, in 1928, was
over seven, which was equivalent to one hundred and seventy-
five slaves, measured in terms of man power.9

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8 James B. Beck, "The Lost Sense of Values" (Commencement ad-
dress at Loyola University, Chicago, Ill. June 10, 1931).
9 Walter Dill Scott, "The New Universe," ch. 1; also in a Prologue
universal monotony in ages past, may yet be gradually eliminated as mechanism increases and cheapens production, shortening the working day, and giving ample time for satisfaction of wants not possible in a non-machine age, where wages were low and hours of employment long. If this should be the sole accomplishment of the machine age, it would probably be worth all it has thus far cost, in its effect, as a by-product, on our mental and spiritual life. But mind is superior to any other reality in our present existence, and this mind will dominate machine culture, preserving its best features, and discarding that which is bad. Human nature appears an unchangeable element in a changing world, and this fact is of vital significance in our attitude toward the indictments urged against machine culture. However we may view these problems, machine civilization is here to stay.

**IS A MACHINE-AGE MIND EVOLVING?**

An important effect of this hegemony of machinery in our modern life may be to create a "machine-age mind," a collective corpus of conceptions shared by a large, if not a prevailing, number, of persons, which mind may, without our conscious perception, be affecting the law, its institutions, and its administration. It is probably impossible to create conviction beyond reasonable doubt that this "mind" (conceding its existence) has been the sole factor, or even a prominent factor, in occasioning certain movements or developments in the law. But, in the words of Maitland, history is a "seamless web," so that in a given social mind there is an intertwining of beliefs and forces that interact upon one another in subtle ways, not discernible without analysis of causes and effects and a probing beneath appearances. Often in human experience inferences rest upon slender premises; human reason must bridge the hiatus between fact and unproved fact by means of reasonable deduction.

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11 Raymond B. Fosdick is a leading exponent of such a "mind." And see further, John Herman Randall, "Our Changing Civilization," ch. 2; and Walter Lippman, "A Preface to Morals," ch. 3.
12 "In the affairs of life, where much is often obscure, men have to draw inferences of fact from slender premises. A plaintiff or claimant must prove his case. The burden is upon him. But this does not mean that he must demonstrate his case." Loreburn, L. C., in *Marshall v. Owners of S. S. "Wild Rose*" (1910) A. C. 486.
same may be true of the existence and influence of a machine-age mind in its effect upon the law, its institutions, jurisprudence, developments, and tendencies. The presence of the machine has created numerous problems not present before its advent; there is a certain unique legal mind engaged in solving these problems, and in the process law, as one mode of social control, is variously affected.

Although the basis for this so-called machine-age mind is largely theoretical, and without actual "judicial" proof such as we lawyers very much desire, or not desire, as occasion may require, nevertheless a brief in its behalf is substantially as follows: Mechanical horse-power and electrical energy dominate our lives. We think in terms of ingot production, kilowatt hours, and horse-power. The uniformity of output of the machine is the main characteristic of the machine itself, in fact, its very purpose. Identical types of automobiles, hats, shoes, radios, household appliances and fashions, created by mass production and owned by millions of people, may lead to a standardization of thought and viewpoint in other fields. Bertrand Russell has raised the query whether we can have a machine civilization without a mechanistic viewpoint in thoughts and mental habits. Perhaps that is crediting or blaming the machine too much, but men may tend to think alike if there is mass distribution of ideas, so feasible by means of the radio in millions of homes, as well as by identity of output of the machine through quantity production. Individual self-assertion may be subordinated to collective viewpoint; the lone voices may be given scant credence. The advertising value of a unique or antique display or idea forcefully brings home to the mind how the unusual attracts attention in an age of sameness. The natural instinct for solidarity can become a righteous majority, with hallowed authority; sameness or uniformity of articles in use all about us tend to a similarity in thought and action; range of choice is narrowed; action is restricted. These are declared to be some of the elements of the so-called machine-age mind, a crystallized body of conceptions drawn from machine dominance and machine symbols.

But in the realm of ideas, standardization will mean death and stagnation; hence, if there is a machine-age mind we must be on our guard not to be completely controlled by it. But in
my judgment, the machine age itself has created an antidote as a partial saving factor, namely, the spirit of inventiveness, the quest for ever new and better ways of accomplishing objectives of machine control and development. This spirit tends to make for experiment with new ideas and reception of new views, at least so far as greater efficiency of the machine is concerned. It has a potential danger in that ideas that might seek to limit machine development, production of goods, or marketing of its products, are regarded as of doubtful value, and may be sought to be repressed. Thus a cross-current of inventiveness may neutralize a tendency toward uniformity of viewpoint that the machine’s presence may tend to foster. Moreover, the influence of the general idea of progress cooperates to this same end.

ADVENT OF THE MACHINE AND LEGAL CHANGES

The machine’s presence has affected our ways of doing and looking at things and solving our problems, and from this development it has been asserted, as indicated, that we have developed a machine-age mind. However this may be, it is quite obviously true that the machine itself has been the progenitor of numerous economic and legal changes; all admit this because it cannot be disputed. In the labor world, the machine’s presence has caused innumerable industrial injuries, disease, and death. It has compelled labor to organize in self-protection against the machine’s universal or continuous use, in securing shorter working hours and the cry for the five-day week. In industry it has meant mass production, which at present has meant over-production, due to a variety of world-wide causes, but in part to a faulty system of distribution.13 The machine has led to concentration of capital in few hands, despite the more recent widespread stock ownership by the public; to the location of dense population in small areas, to nation-wide chains of various types for the better disposal of the machine’s products.14 In the political and financial realm, the

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13 Hon. Rufus Dawes, “The Machine and Unemployment” (Commencement address, Northwestern University, June 15, 1931).
14 “From a technical point of view we are today in a twilight zone between an old machine industry that rested on steam power and, a new machine industry that will rest on electric power. Between the two there is a difference as wide as the world. In a machine industry resting on steam power, the worker must go to the power; for steam is stationary motive power. In a machine industry resting on electric
machine has caused wars, alliances, armaments, and heavy taxation; in the United States, machinery and electric power, knowing no artificial political boundaries, are tending to break down the semi-sovereign position of the constituent States, perhaps in future making them merely administrative units for federal purposes, or, if this is too extreme a view, restricting them more and more to purely local affairs while gradually enlarging the orbit of federal powers. Are our component States to become in future mere "geographical expressions"?

Shrinkage in earthly space which comes from employment of machinery gives us a solidarity of outlook and sentiment that tend to break down sectionalism and parochialism. The speed of the machine age has a tendency to create a nervous impatience with methodical or slower methods of attaining objectives, with the laborious processes of research and thoroughness, with painstaking investigations and calm reflections, unless it be in the laboratory of the physical and natural sciences. Our age of hurry and pressure gives rise to poorly drafted and ill-considered, and perhaps unwise, laws, making our courts much additional work in overthrowing such legislation on the claim of unconstitutionality or construing it in accordance with sense and reason. The struggle for existence, not only in industry but in all walks of life, under highly competitive conditions and in the employment of machinery, has caused heart failure to become the leading factor in the death rate, raising numerous legal problems. The legal profession is already acquainted with a medico-legal terminology, in workmen's compensation, and in torts.

Organization and centralization in government, industry, and in the labor world, for the control of the machine and its products, for reaching markets, for raising capital for expansion and exploitation of resources, for self-protection of the workers, have become watchwords of the machine age. We think in

power, the power can be taken to the worker, for electricity is transmissible motive power. A machine industry resting on steam power must centralize; a machine industry resting on electric power may decentralize.” Glenn Frank, “Business and Politics in the American Future,” vol. cxlix, The Annals of the Amer. Acad. of Pol. & Soc. Sci., pp. 173 et seq.

Fry, L. J., in Mogul Steamship Co. v. McGregor, Gow & Co., 23 Q. B. D. 598, at p. 630, expressed a similar view; and so also did Carter, J., in Kemp v. Division No. 241, in 255 Ill. 213, at pp. 235, 236.
terms of efficient centralization, combination, and associational activity; these are inevitable by-products of the machine’s presence. Whether or not government can, through anti-combination laws, prevent these developments, seems doubtful; perhaps these laws can act only as emergency brakes in future, reaching only the most glaring types of illegality; perhaps they will be jettisoned entirely as pressure of new problems for safeguarding industry and furthering it press for attention. But these networks of national and international organizations tend to dampen individualism, and to prevent experimentation along new lines. The delicate balance which organization has set up must not be upset by permitting innovations, for stabilization of industry is more to be desired. Thus hyper-centralization and super-organization may crush out individual effort, may result in stereotyped thinking, may embalm certain views and practices, all for sake of the machine and its supremacy. A cradle of conservatism results; and the legal profession, as the servant of this machine master, may itself be enslaved, and thus fail in leadership in general human progress. In fact, are not the engineers and scientists already the real leaders of our machine-age, rather than the lawyers?

THE URGENT TO LEGAL UNIFORMITY

Perhaps it is impossible to indicate what, if any, legal effects the machine, as contra-distinguished from the machine-age mind, has originated; the two cooperating with each other have, however, been responsible for certain developments. An outstanding characteristic of present-day legal tendencies is the passion for, and the movement toward, uniformity. Perhaps the source of motivation is that of national consciousness. A feeling that we are one nation, despite the peculiar structural mold of federalism in which our national, state, and local governments are cast; and that therefore there should be uniform laws and decisions throughout the length and breadth of the country. A more likely motive, however, or one cooperating with that already suggested, is to be found in the presence of the machine and its concomitants. The machine knows no State boundaries, neither do its standardized products. The laws of the machine operate the same everywhere; its uses, its dangers when in use, its regulation by law, are, and should be, the same
everywhere. Businesses grow up through machine use and cooperation in the several States that frequently compete with one another, and are regulated by one State but not by another. Federal laws cannot reach so-called intra-state or reserved affairs, hence cooperative State endeavors are necessary, either through or apart from the method of the inter-state compact, but at least by uniform legislation. In other words, the spread of machine culture called for uniformity of legal regulation, not only of the machine’s use, but of all the myriad of relationships of modern activity directly or indirectly due to the machine’s presence. Some of these uniform laws, more than others, directly and specifically related to machine development. A uniform negotiable instruments law furthered commerce, and of course commerce was an indispensable prerequisite for perpetuation of machine-age culture. The proposed uniform State law for aeronautics is highly pertinent in this connection, as well as those proposed for the sale and purchase of firearms, use of automobiles, etc.

The movement to restate the basic common law principles as found in court opinions, was primarily concerned with bringing unity and harmony of viewpoint among the forty-eight jurisdictions so far as judicial law was involved. But a deeper motive was probably also present, namely, to remove from our machine civilization the incubus of numerous conflicting decisions merely because artificial governmental units, unknown to business, existed in a federal union where, instead of one supreme judicial tribunal for legal questions, there were forty-eight, each with its own legal doctrines and viewpoints as to what the law of common principles was or ought to be. Thus in both uniform statutory, and uniform judicial doctrine movements, we have witnessed in America attempts to bring coherency and unity into legal regulations, to furnish fresh starting-points in advancing machine culture, because of the inability of the central government, under constitutional inhibitions, to furnish the necessary legal uniformity. Owing to the fact that in human relations nothing is static, or long so remains, it has been questioned by some whether or not these two uniform urges will accomplish their objectives, for in both statutory enactment and judicial formulation, there will be interpretation and construction in concrete issues, leading to a
gloss of judicial pigmentation where, once again, variety and diversity will originate themselves. But however this may be, the important point is that a fresh starting point has been made by both movements, and this is decidedly worth while in maintenance and furtherance of machine culture, where certainty and assurance of legal operation are most desirable.

Closely allied to the uniformity in law movement is the trend toward federalism, not only in Congressional invasion of intra-state affairs through statutory enactment, but also in judicial decision on the part primarily of the Federal Supreme Court. A philosophy of centralization in the interests of trade and commerce and therefore the machine, has dominated, and still dominates, our legal or constitutional thinking; pragmatic considerations of uniformity, unity and ease of administration, and furtherance of nation-wide business, play the leading roles, with federal governmental structure acting largely as emergency brakes. Are we creating in our constitutional doctrines and analyses, principles of expediency for machine culture, which will ebb and flow as a majority of judicial personnel come and go in national development? Governmental urging to cooperation in agriculture, transportation, and petroleum, may make for further friendly treatment in judicial decisions where issues of unduly large-scale business practices and statutory prohibitory enactments or complaints of competitors present themselves.

**IMPROVING MACHINERY OF GOVERNMENT AND JUSTICE**

It is, of course, unsound to attribute to one single factor at any point in the stream of history various social developments. This is equally true with regard to the reactions of the machine-age upon legal developments, and particularly those movements in American legal thought relating to reform of governmental structure and the methods according to which it operates. But thus far, during the twentieth century, hundreds of amendments to the Federal Constitution alone have been proposed, many dealing with the fabric of government only, on the general theory that our governmental machinery was unsuited in some of its phases for machine culture; that it might have functioned quite well for the ox-cart stage, but not for the high-powered machine age of the present. In my judgment, the
presence of the machine, making for quick access to all parts of the American continent, the urge to speed and efficiency inaugurated by machine methods, have been the real motif behind many of these proposals. The same can be said of reforms urged in judicial procedure, court organization, commercial arbitration, and administrative law developments. We need speed, certainly, and enlightened concepts in business dealings above all, if not in all, justiciable problems. With the right sort of governmental and judicial machinery, it is probable that astounding results could be achieved in disposition of the duties of government and the settlement of justiciable controversies. By analyzing governmental structure, disassembling it and seeing how it may be improved, we perform not only the inestimable work of the legal scientist, but also that of the social engineer; by engaging in the program of judicial reform in all its phases, as represented by the American Judicature Society and the American Law Institute, and by research programs in our higher university law schools, we further the highest duty of man on earth, the administration of justice. But in this process, we are part of a machine-age that wants results and is impatient with obsolete forms of government and out-worn judicial technique. In other words, we must adjust these social or legal devices to the requirements of a machine civilization.

More adequately to train the future leaders of the legal profession in America, and at the same time to give them a truer picture of law as life unfolds it, thus enabling them better to succeed at the bar, some of us are throwing the spotlight of criticism on the content and arrangement of our legal curricular studies, as well as devising means to make the future lawyer, judge, and legislator a more independent, creative legal thinker. Thus we desire to enrich our legal curricula in the universities by introducing legal studies with reference to industrial problems, the judicial process, governmental structure, scientific crime detection, and various legal clinics. The fact that the manner of instruction, the content of legal materials in university study, and the attitude toward legal principles became

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fixed before the machine age hit its stride, should make us pause and inquire whether or not now improvement cannot be made, but that which was good of the older system kept and used to greater advantage. Life does not stand still; many factors enter into the web of legal life; constant improvement should be made in organized legal study, with no predilection for any particular pedagogic.

**Is a Machine Jurisprudence Developing?**

Others have pointed out how our industrial age is developing an industrial jurisprudence, much as the Law Merchant, centuries ago, grew out of customs and usages of merchants in trade.\(^1\) Dean Pound has also familiarized the American legal profession with a "mechanical jurisprudence,"\(^2\) which arose from the judiciary applying legal principles in an abstract fashion, without regard to concrete considerations and actual working out of the rules as applied. That type of thinking came from common law training, without consideration on the part of the judiciary of the great changes that had occurred in our civilization. The machine jurisprudence which it is believed is now developing, arises largely out of industrial injury relationships, a vast field of law, through its ramifications of common law, workmen’s compensation, federal employers’ liability, admiralty and maritime schemes of relief for personal harms to workingmen. Perhaps this attitude of legal mind is present also in other judicial fields. But before the machine’s advent, with the absence of conditions in industry making for a vast number of personal harms, tort principles were applied in rigid and unyielding fashion, to their "drily logical extremes." But when the era of mechanical contrivances developed, where the machine when in use greatly increased the number of personal harms, we found our doctrinal repertoire lacking. With statutory aid, largely of pre-existing judge-made rules, certain principles were added, particularly abolition of assumption of risk, allowing recovery for harms sustained “arising out of and in the course of” the employment, imposition of liability with-

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out fault, etc. Since 1910, when workmen's compensation relief as an industrial injury scheme made its American debut, our courts have been busily engaged in developing a machine jurisprudence through the construction not only of the statutory principles laid down, but also in so liberalizing these principles as in effect to create others. Administering justice within a maze of legal doctrines and formulae is a decidedly intricate task; and it may rightfully be said that he who operates a business where the machine plays so necessary and hazardous a part, ought to be legally liable for personal harms received in the employ, barring willful or self-inflicted injuries, because of the general principle that no one should profit by his own wrong. The fact that the business is insured against such risk, the fact that the injured or deceased employee cannot himself bear the burden of injury and death as well as the employer in his superior position; the impersonal relations between employer and employee in large-scale businesses; the great number of these personal harms sustained—these seem to be becoming the real basic principles of a machine jurisprudence, due to the omnipresence of the machine and its hazardous character when in use.19

While machine jurisprudence appears most clearly in industrial injury relationships, where, instead of logical analyses, broad humanitarian doctrines are being practiced by commissions and courts in their opinions, nonetheless the machine's presence can also be credited with creating the "family purpose" doctrine in automobile liability; in statutory requirements providing some sort of insurance or money guarantee as a condition precedent to obtaining a license to operate an automobile; the imposition of stringent legal liability upon aircraft carriers, which have not yet met the searching scrutiny of the courts;20 the refusal to sanction statutory exemptions of liability for personal harm inflicted by railroads; the zoning of radio broadcasting and allocation of wave lengths; and restrictions as well as locations of businesses harmful to the public welfare, under broad principles of the "police power." The proposed "unit plan" of cooperative action in the oil

19 These developments in case material are illustrated in my "Cases on Industrial Law," pp. 96 et seq.
industry due to excessive output by machine methods and common-law idea of property in oil, are forcing new ideas of the nature of property.\(^{21}\) The use of the airplane over lands of others is also changing our property concepts. All these developments were not present in the law antecedent to the machine; when they did make their appearance in America, constitutional principles were strained to the utmost, and continual employment of "police power" and "implied" powers was made. They are with us now as part and parcel of our legal fabric.

**Conclusion**

There are likely other legal tendencies attributable to machine culture that may not now be discernible, and their presence may affect other human relationships in turn. The fact that the laws of mechanics operate inexorably and relentlessly, once was partly, if not largely, responsible for a mechanical cosmology, and a theism that culminated in skepticism. In the popular mind, positive law may also be thus regarded; whatever does not work pragmatically, does not fit into the scheme of natural human things, is not law, and need not be obeyed. But more recent thinking in philosophy and science abandons mechanism in metaphysics, perhaps because of the influence of radio-activity and newer biological discoveries, and substitutes a more flexible, dynamic conception of continuous creation. So in our machine civilization. While this form of human culture is spreading—the East is taking it from the West, Communism from Capitalism—nonetheless it is not a super-civilization, and has its limitations. The important point is that, as lawyers and jurists, we live in a machine culture that may be vitally affecting our thinking, and certainly our practice. How to use this age of machinery for the law's best ends, and how to use the law for the machine's legitimate purposes, are two related problems, resolvable in the higher embracing conception of the furtherance of the general welfare.

**Edwin F. Albertsworth.**

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\(^{21}\) Various discussions on this problem are to be found by Messrs. Nyce, German, and Oliver, in the May, June, and August (1931) numbers of the American Bar Association Journal.