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Torts and the Atom: the Problem of Insurance

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INTRODUCTION

THE ATOMIC ENERGY ACT of 1954[1] ushered in what may be a revolution in industry. With it the secrets of the atom, heretofore reserved for military use only, were opened to the general industrial public. Some grandiose claims were made for the future of the atomic industry, but the general feeling was one of mystification. Because of lack of knowledge brought about both by the extended period of secrecy and the relative uniqueness of the field, the initial leadership came from those firms which had done contract work for the Government. Two years later, however, many firms are moving ahead at top speed to enter the field.[2] One principal area of great interest at present is the production of electrical energy by atomic fission.[3] This will be done by the use of heat from a reactor in an otherwise conventional steam operated generating plant. The first commercial atomic energy plant for producing electricity has been begun.[4] It would appear that with

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1 68 Stat. 919 (1954), 42 U.S.C. sec. 2011-81 (Supp. II 1955).

2 Fifty-four private electric companies have invested more than three billion dollars in planning and construction of atomic electric power plants. They are engaged in building seven large and medium reactor plants and two small ones. Ninety-five electric companies are actively engaged in research, planning or study programs. Access permits have been issued to 87 electric companies. "What Others Think," 57 Pub. Ut. Fort. 472 (1956). "In the field of military reactor development, . . . the USS *Nautilus*, powered by the Submarine Thermal Reactor, Mark II, had steamed more than 25,000 miles and the reactor continued to operate satisfactorily. . . . Prospects for nuclear powered flight continue to show promise." AEC, Nineteenth Semiannual Report 40 (1956). Plans for an atomic powered locomotive were discussed by Senator Butler who sponsored legislation to aid in building it. Washington Sunday Star, April 8, 1956.

3 What Others Think, *supra*. note 2.

4 Excavation for the Pressurized Water Reactor at Shippingport, Pa. was begun in July, 1956. Modified reactors have been proposed by Yankee Atomic Electric Co. and Consolidated Edison Co. Report, *supra* at 40-41. The Dresden plant of Consolidated Edison will be built some 50 miles south of Chicago, Ill. at

the technical difficulties overcome that the atomic energy industry would develop rapidly.

However, if the harnessing of the atom has opened a new world for exploitation, it has also brought many new legal problems.[5] The great deterrent to further development and expansion has been the inability of the industry to obtain the necessary protection against third party liability, for a breakdown in a reactor. The grim spectacle facing prospective businessmen wishing to enter the field of atomic power is the possibility of a reactor accident.[6] Accustomed to think of a runaway reactor in terms of the explosions at Nagasaki or Einewetok, the entrepreneur is justifiably cautious.[7] In this vein of thinking his attorney is equally

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a cost of forty-five million dollars (and at a loss). What Others Think, *supra;* AEC, Eighteenth Semiannual Report 103 (1955).

[5] Senator Anderson offered these "legal brain twisters:"

"1. How do you prove or disprove negligence in the atomic energy industry if the operations are shrouded in secrecy?
2. If radiation damage appears, how do you prove which of several possible radiations caused the damage?
3. If radiation damage appears after a long period of time and you can prove where the damage came from, how do you collect of (sic) the organization responsible is no longer in business?
4. If radiation causes damage to the genes in a parent, to whom does the right of action belong—the parent or the deformed child?
5. If it takes an Einstein to understand the theory of relativity, how can a jury decide whether a reactor is run negligently or carefully?"

Address before the Northeastern Regional Meeting of the American Bar Association, Hartford, Connecticut, April 16, 1956.

[6] "We are going to make the Dresden reactor just as safe as it is humanly possible to do. We believe we will end up with a reactor that is so safe that the danger of serious atomic accident will be too remote to cause any apprehension. . . . And in the extremely remote, but nevertheless real, contingency of an atomic catastrophe, the number and amount of claims for resulting injuries and damage may reach very large proportions." Statement of Philip Sporn, President of American Gas & Electric Co. quoted in "What Others Think," *supra,* at 475. "I am not taking the position that these reactors are necessarily a great hazard. I think there is an element of hazard there. . . . As a matter of fact, I do not know why they would not be built right within 50 or 75 miles—at least that far away—from a big city, so in case there was an explosion and a contamination of the area, it could possibly be isolated to a certain extent anyway." Remarks of Rep. Holifield, Hearings before the Joint Committee on Atomic Energy 405-06, 84th Cong., 1st Sess. (1955).

[7] This is probably not the correct view of the hazards involved. "The major hazard involved is not heat or blast, as commonly assumed, but radiation emanating from the highly radioactive fission products accumulated within the reactor as waste during periods of operation. These fission products are more toxic than any substance heretofore known, and more insidious. They can neither be seen nor felt. . . . A major reactor accident could result in the release of large quantities of these fission products into the atmosphere, contaminating a wide geographic area." Speech of Senator Clinton P. Anderson, Chairman of the Joint Committee on Atomic Energy, before the Northeastern Regional Meeting of the American Bar Association, Hartford, Conn. (April 16, 1956).

However, the public at least still is unconvinced. At the recent explosion in the Sylvania Corporation's atomic laboratories in Bayside, New York, the general

somber. Coupled with the thought of unlimited destruction is the equally despairing thought of unlimited liability. Established businesses think in terms of loss of corporate assets, and investors think of destruction of a fledgling business. Such thinking has made businessmen put insurance for third party liability at the very head of the list of necessaries for entrance into the atomic field.[8] But the insurance industry also is aware of the possibility of unlimited destruction and unlimited liability and consequently is reluctant to offer full coverage.[9] In this last respect the field is clouded by the lack of information as to accident possibilities and the scope of injury.[10] The exemplary accident record achieved by the Government during its operation of reactors has had the un-

manager felt called upon to issue a statement "to calm fears." However, 15 firemen and policemen received doses of radiation requiring periodic checkups. The blasts resulted from ignition of thorium metal scrap, a mildly radioactive material used in non-atomic industry process for many years. Washington Post and Times Herald, July 3, 1956, p. 1, col. 8.

The location of the reactor may solve some problems, but what of the mobile reactor plants in ships or railroad locomotives?

[8] "To a certain limited degree a given manufacturer could limit some of his liability by means of careful contract language and indemnity provisions. Such provisions will be of relatively little value particularly against third-party claims because the supplier of the defective component is not necessarily going to be able financially to back up his contract to the degree necessary to save his vendee harmless, and contractual dickering and fencing is not going to solve the broad social problem of protecting the public." MacMackin, Insurance Problems of the Atomic Industry, 1954 Ins. L. J. 726, 727. But a contract cannot save the owner of the reactor. "It is my personal judgment that the Dresden project can not proceed to final completion with the insurance issue up in the air. At some point—and the earlier the better—we need to know that the problem will be solved. Until that point is reached, we are going to have progressively more difficulty in justifying the heavy financial contribution which we are putting into the project and which, without insurance, could leave us at the date of operation with a plant that prudence might not permit us to operate." Sporn, note 6 *supra*. "Assuming that the money to build a reactor would be forthcoming, there remains a very great worry about protection against consequences of atomic accidents. . . . [T]his is not a new worry, but it becomes more acute as we near the day of private operation. This worry is shared by the equipment manufacturers and all others who would have identifiable responsibilities for parts of a reactor or its operation, as well as by the prospective owner of the facility." Statement of Paul W. McQuillen, Hearings, note 6 *supra*, at 257. But *cf.* "One topic which is the subject of a great deal of discussion currently is that of liability and insurance. We do not consider this question a real deterrent in our case. Our system is a large one and accordingly we can assume substantial risks." Statement of H. R. Searing, Hearings, note 6 *supra*, at 403.

[9] See MacMackin, Insurance Problems of the Atomic Industry, 1954 Ins. L. J. 726. The private insurance industry has indicated that it will offer 65 million dollar coverage against third-party liability.

[10] See Report of the Panel on the Impact of the Peaceful Uses of Atomic Energy 126-28 (1956), hereafter called Peaceful Uses of Atomic Energy. "There are several reasons why, at the present time, conventional insurance techniques seem inadequate to cope with public liability insurance against atomic hazards. Fundamental . . . is the fact that the risk has yet to be accurately evaluated, in terms of either (1) the likelihood of an atomic catastrophe, (2) the magnitude of the potential damage, (3) the persons who might, ultimately, be held to share

happy facet of confusing the insurance underwriters. However, American industry, sensing the vast and lucrative fields just over the horizon of the atomic industry, are ever pressing forward.[11]

Although the first case of an action for damages caused by a reactor accident has not yet been handed down, the law which will be applied in the areas of potential liability has become settled over a period of years. The result of such an accident would be to release radioactive waste materials into the atmosphere. Thus there could be injury from exposure to radiation outside the body; i.e. from radioactive material lying on the ground; and exposure and deterioration of body tissues from radioactive materials taken into the body in food, water and air. The three most likely defendants are the Federal Government, the owner or operator of the reactor and the manufacturer of the reactor or its component parts. This paper will attempt to set the problems faced by the atomic energy industry in the perspective of the law of torts. It will be concerned primarily with the possible consequences of a reactor breakdown and the consequent dispersion of radioactive materials into the atmosphere.

The insurance industry recognizing the legal problems involved as well as the possibility of great loss has been trying for some time to adapt itself to meet this new need. This paper will also try to evaluate the insurance problems which will face private business as it enters the new field of atomic power. It will be primarily concerned with insurance as a risk-shifting device for the risk of loss due to legal liability for injuries running from minor health hazards of employees to the extreme of potential damage resulting from a runaway reactor.

LIABILITY OF THE GOVERNMENT

Until the enactment of the Atomic Energy Act of 1954 all atomic activities were carried on by the United States Govern-

in the liability for such a catastrophe, or (4), the basis upon which legal liability may be asserted against such persons." Background Material for the Report of the Panel on the Impact of the Peaceful Uses of Atomic Energy 509 (1956).

[11] See statement of Paul W. McQuillan, note 6 *supra*. "Risks in this stage of the development tend to be high. It seems to us, however, to be much too early for private enterprise to concede defeat on the insurance problem. . . . We are not satisfied that the time has yet arrived to reconsider the need for a Federal atomic insurance program covering peaceful uses. . . . We look on a Federal atomic insurance program as a threat to private atomic enterprise, not a benefit." Peaceful Uses of Atomic Energy 128.

ment. There are no causes brought to court for injuries arising from experiments under the Act of 1946. With the Act of 1954 the use of atomic energy has been opened to the general public under a somewhat restricted licensing program. However, section 52 provides that "all rights, title, and interest in or to any special nuclear material within or under the jurisdiction of the United States, now or hereafter produced, shall be the property of the United States and shall be administered and controlled by the Commission as agent of and on behalf of the United States by virtue of this Act."[12] Retention of title to all special nuclear material is considered necessary to the security and defense of the nation. However, it raises the interesting question of possible joint liability of the government and some licensee involved in a nuclear accident. The Congress must have anticipated such a situation for subsection e (8) states that "the licensee will hold the United States and the Commission harmless from any damages resulting from the use or possession of special nuclear material by the licensee."[13] This is considered to mean and to have the legal effect of providing that the licensees must pay for all damages even though the special nuclear materials which they may be using under license belong to the Federal Government and even though all Commission and local regulations are fully obeyed.[14] This does not exculpate the Government from liability in the event of an accident in a government owned reactor power plant, or some other property of the Government. The fantastic safety record of the Government in this respect does not remove the disquieting possibility of damage caused by the negligence of the Government or its employees in the operation of a Government reactor.

Suits against the Government must depend upon the Federal Tort Claims Act.[15] There is an exception made to exempt any negligence arising out of an act involving discretion or a discretionary function by a Government agency or employee.[16] The

[12] 68 Stat. 929-30 (1954), 42 U.S.C. sec. 63 (Supp. II, 1955).

[13] *Ibid.*

[14] Report of the Panel on the Impact of the Peaceful Uses of Atomic Energy to the Joint Committee on Atomic Energy. Sec. 14.4 (1956); Marks and Trowbridge, Framework for Atomic Industry 103 (1955).

[15] 28 U.S.C. secs. 1291, 1346, 1402, 1504, 2110, 2401-02, 2411-12, 2671-80 (1952).

[16] "The provisions of this chapter and section 1346 (b) of this title shall not apply to—

cases which have arisen against the Government at this date have had to face the discretionary exception to the waiver of Governmental immunity. It would be well, therefore, to recognize the problems faced by a possible litigant in this field.

The case of *Dalehite* v. *United States*[17] is the outstanding authority interpreting the Federal Tort Claims Act and the discretionary exception. In that case there was an explosion of ammonium nitrate fertilizer stored in vessels in Texas City harbor causing extensive property damage and many deaths. There was evidence to the effect that the Government knew that the principal ingredient of the fertilizer was a component of high explosives, and it was charged that the Government was negligent in using such a material without giving notice that it might explode under certain conditions. The fertilizer had been made in powder manufacturing plants which had previously made war materials for the United States. It was being shipped to Europe to aid in relieving famine conditions by increasing productivity. The Supreme Court found that there was no negligence involved, but went beyond this to lay down significant principles. It found that the decisions to institute the fertilizer export program at cabinet level (as well as the decision not to take further safety measures) were discretionary acts. Mr. Justice Frankfurter, speaking for the majority, stated that "where there is room for policy judgment and decision there is discretion. It necessarily follows that acts of subordinates in carrying out the operations of Government in accordance with official directions cannot be actionable. . . . In short, the alleged 'negligence' does not subject the Government to liability. The decisions held culpable were all responsibly made at a planning rather than operational level and involved considerations more or less important to the practicability of the Government's fertilizer program."[18] The Court handled the allegation of liability without fault on the ground that the fertilizer constituted a nuisance with the conclusion that the Tort Claims Act required

(a) Any claim based upon an act or omission of an employee of the Government, exercising due care, in the execution of a statute or regulation, whether or not such statute or regulation be valid, or based upon the exercise or performance or the failure to exercise or perform a discretionary function or duty on the part of a federal agency or an employee of the Government, whether or not the discretion involved be abused." 28 U.S.C. sec. 2680 (1952).

[17] 346 U.S. 15 (1953).

[18] *Id.* at 36, 42.

the finding of some negligent act which was not necessary under the doctrine of absolute liability. "[I]t is our judgment that liability does not arise by virtue either of United States ownership of an 'inherently dangerous commodity' or property, or of engaging in an 'extra hazardous' activity."[19]

The decision of this case would be the first obstacle for the damaged litigant to overcome. The second would be the interpretation given to the term "discretionary function." There have been many conflicting definitions some of which seem to abuse the intention of the framers of the statute.[20]

The Supreme Court refused to allow the application of absolute liability under the Tort Claims Act because it felt this would defeat the concept of liability only for negligence.[21] However, some lower courts have permitted use of the doctrine of res ipsa loquitur in actions for injury against the Government. This doctrine rests on the assumption that no injury could have occurred without some negligent act and therefore would appear to be not in conflict with the theory of the Tort Claims Act.[22] The long successful use of atomic reactors by the Government's contractors without serious accident would indicate that should some disaster occur there must have been some lessening of attention or failure

[19] *Id.* at 45. But *cf.* "Where experiment or research is necessary to determine the presence or the degree of danger, the product must not be tried out on the public, nor must the public be expected to possess the facilities or the technical knowledge to learn for itself of inherent but latent dangers. . . . We believe it is the better view that whoever puts into circulation in commerce a product that is known or even suspected of being potentially inflammable or explosive is under an obligation to know his own product and to ascertain what forces he is turning loose." 346 U.S. at 52, 53 (dissent). It is interesting to note the language here which is particularly apposite to a case arising from an atomic disaster. It can be expected that this language will be much in consideration should such a situation arise.

[20] See Olson v. United States, 93 F. Supp. 150 (D.N.Dak. 1950) where the court seems to equate exercise of judgment and discretionary function. This rationale is criticized in Note, Application of Discretionary Function Exception of Federal Tort Claims Act, 36 Marq. L. Rev. 88 (1952). For types of cases in which this argument has been used see Note, The Discretionary Function Clause of the Federal Tort Claims Act, 23 Geo. Wash. L. Rev. 716 (1955).

[21] The theory of absolute liability without fault of the Government was rejected in United States v. Ure, 225 F. 2d 709 (1955). Here an irrigation supply canal operated by the United States broke flooding land below it. The district court gave judgment for the plaintiff on the theory of absolute liability enunciated in Rylands v. Fletcher, L.R. 3 H.L. 330 (1869). The circuit court reversed and based this portion of its decision on the interpretation given in Dalehite.

[22] This argument was allowed in United States v. Ure, *supra*, even though the circuit court noted that the trial court had mistakenly considered res ipsa loquitur as merely a modern version of absolute liability. See also United States v. Hall, 195 F. 2d 64 (1st Cir. 1952).

to perform some necessary act.[23] The same considerations applying here would also apply to private owners of reactors. This is taken up in more detail in the following pages. However, the lack of information available to the plaintiff in such a case might be increased by refusal of the Government to call witnesses in the interest of national security. In *Williams* v. *United States*[24] a B-47 aircraft exploded and disintegrated over Marianay, Florida, showering flaming debris over the city. Plaintiff's children were burned and died from injuries caused by wreckage which fell near his home. Plaintiff could not prove negligence but based his cause of action on the theory of res ipsa loquitur. The government attorney told the court that no witnesses would be called because of national security. Faced with this dilemma the court took notice of the experimental activities of the Air Force which are the result of decisions made at a cabinet level. Thus the rationale of *Dalehite* controlled and plaintiff was out of court.

The only two cases involving suits against the Government for damages from atomic activities arose out of the atomic tests at the Nevada Proving Grounds. While these tests are more clearly within the area of discretion than an ordinary use of an atomic reactor, the decisions may be milestones in the development of law in this field. In the first[25] plaintiff's ranch buildings were damaged by the violence of shock waves from the atomic explosion. Plaintiff's claims of negligence were based on the alleged failure of a Government testing agent to place microbarographs in the direction of plaintiff's ranch to observe the effect of

[23] The accident rate in 1949 was 4.94 injuries per million man-hours compared to 11.49 in the rest of industry. See Dean, The Impact of The Atom on Law, 12 Pitt. L. Rev. 514 (1951). The operating history of 25 reactors in the United States for the years 1943 to 1954 shows no accidents involving radiation injury sufficient to cause lost time of personnel during some 600,000 operating hours and 17 million man-hours. Speech of Clark C. Vogel, General Counsel of the AEC, before the Seminar in Control and Use of Atomic Energy, (March 27, 1956).

[24] 115 F. Supp. 386 (N.D. Fla. 1953). The court recognized the difficulty of showing how the Tort Claims Act was not applicable since there was no evidence introduced.

[25] Bartholomae Corp. v. United States, 135 F. Supp. 651 (S.D. Calif. 1955). The court also rejected the theories of liability based on absolute liability without fault and res ipsa loquitur. As to the latter it said, "The injury complained of in the instant case is the cracked plaster in the buildings located on the plaintiff's ranch. In the first place the evidence does not establish what 'thing' caused the injury and in the second place that the 'accident' is of such a nature that it ordinarily occurs in the absence of negligence, *i.e.* from temperature changes and earth tremors. The doctrine of res ipsa loquitur has no application in situations such as this."

an experimental testing explosion. It was argued that the discretion of the agent in selection of the sites of the instruments was not of the discretionary character of the exception to section 2680. The court rejected these arguments and rendered judgment for defendant on the ground that the decision to conduct experiments in atomic energy at the particular place was one made at high level and for the public benefit. It felt that to say that the decisions made in carrying out the basic plan are not discretionary would be contrary to the intent of Congress and the *Dalehite* case.

The second such case[26] was brought by sheepherders for injuries to their herds caused by the atomic tests. The government attorneys moved to dismiss the complaint on the ground that the Federal Tort Claims Act does not authorize suit against the Government for negligent conduct of nuclear tests. The court wrestled with the issue and denied the motion to dismiss. Its analysis breaks down the series of decisions necessary to conduct an atom explosion and considers each separately.

> The decision to make the test and the means involved as a matter of necessity or convenience may have been decided in the exercise of a proper discretion. Yet, because of inattention to the minimum requirements of ordinary care, no notice of an impending detonation may have been given to a herder whose flocks were in the area clearly to be affected. There may have been clear knowledge of the danger to the sheep. If the failure to give notice reasonably could be attributed to a discretionary decision at any level that such notice would be impractical or would interfere with the carrying out of the project or would involve wasted time without justification, the Court might not be permitted to weigh exercise of that discretion to see whether it comported with due care or was abused.[27]

The court concluded that negligent performance after discretion has been exercised and not involving any discretionary power is not contemplated by the "discretionary function" exception. It refused to look at the overall nature of the project. Another question arose though it was not argued by the parties. This was

[26] Bulloch v. United States, 133 F. Supp. 885 (D. Utah 1955).

[27] *Id.* at 888-89. The court also flirts with the idea of absolute liability for blasting and the use of explosives. It said that the fact that absolute liability may be imposed under state law against individuals does not relieve the Government where negligence is established.

whether section 167 of the Act of 1954[28] indicates an intention of Congress that there should be relief other than under the Tort Claims Act. The court held that this provision was not inconsistent with the earlier act, and merely indicated an intention to provide for administrative settlement of claims not maintainable under it.[29]

Despite the above case the pattern seems clear that it will be difficult to establish the liability of the Government for atomic accidents. The discretionary functions exception of the Tort Claims Act encompasses almost all activities in this field. The question of liability arising out of ownership of special nuclear material is apparently removed by statute although this awaits a decision which it is hoped will never come. Thus the chance of getting an additional defendant who is always capable of paying the damages seems to be unlikely. It is difficult to see how the present activities of the Government in the atomic energy field could be anything but discretionary. The only possible way of having government liability would be through some quasi-governmental activity. If the Government were to establish a TVA-like corporation to furnish electric power, then the question of liability for the activity would arise. At the present time, however, in light of the experimental nature of atomic industry, it seems that the Government could easily argue that in operating such a plant it was exercising some policy-making discretion to further the development of the industry. Certainly the production of electric power by atomic energy at this stage of its development would be the result of a discretionary decision just as was the decision to export fertilizer in the *Dalehite* case. With this background the chances of government liability seem slim indeed.

LIABILITY OF REACTOR OWNERS AND OPERATORS

The first person likely to become a defendant in a suit for injuries occasioned by a reactor accident is the owner or operator of the reactor. The one in this unenviable position may find himself confronted with more than the burden of proving himself not

[28] 68 Stat. 952 (1954), 42 U.S.C. sec. 2207 (Supp. II, 1955). This section authorized the AEC to settle claims of $5000 or less for injuries resulting from any detonation, explosion, or radiation produced in the conduct of weapons tests under certain conditions.

[29] 133 F. Supp. at 893.

negligent in his operation of the reactor. Just how far his liability will be increased because of his selection of atomic energy as the basis for his industry will depend upon the thinking of the court and the persuasiveness of the attorneys for the plaintiff. As to the latter it is easy to forsee that they will advocate strict liability without fault. In the alternative they will attempt to shift the burden of proof to the owner by use of the doctrine of res ipsa loquitur. While somewhat related in the results achieved, these two doctrines are not similar either in theory or in operation. A knowledge of the two is essential to understanding the problem at hand.

Strict Liability Without Fault

The application of this concept of tort liability does not depend upon the fault of the alleged tort-feasor, but upon his position in society as one better able to absorb and pass on the risk.[30] Whether this theory is consonant with the position of a reactor owner in today's industry will be considered later.

In any argument for strict liability the case of *Rylands* v. *Fletcher*[31] will loom large. In that case the defendant had a reservoir constructed on his land for water. He employed a competent engineer and builder. In excavating the bed of the reservoir five old shafts were found which had been filled in with earth of the same kind as that surrounding them. Unknown to defendant these shafts connected with other shafts which eventually connected with plaintiff's coal mines. When the reservoir was partially filled with water, the shafts burst and water flowed into plaintiff's mines. It was admitted that there was no personal negligence of defendant, but that reasonable care was not exercised by his employees. The Court of Exchequer could find no cases directly in point and treated this as one of first instance. Baron Bramwell thought that plaintiff had a right to be free from "foreign water" that artificially was brought to a place where it would flow on him. But Baron Martin, supported by Baron Pollock, felt that the act of bringing water on the land was not a trespass nor a nuisance, and that the digging of a reservoir was a lawful act. He thought that "to hold defendants liable would

[30] Prosser, Torts 332 (2d ed. 1955); Morris, Torts 243, 249 (1953).

[31] *Fletcher* v. *Rylands* and *Horrocks*, 159 Eng. Rep. 737 (Ex. 1865), rev'd. 35 L.J. Rep., n.s. 154 (Ex. Ch. 1866), aff'd, L.R. 3. H.L. 330, 1 E.R.C. 236 (H.L. 1868)

make them insurer against the consequence of a lawful act upon their own land when they had no reason to believe or suspect that any damage was likely to ensue."[32] Judgment was rendered for defendant. If the case had stopped here, perhaps the field of tort law would be less confused.

However, this case was just beginning its career. On appeal to the Court of the Exchequer Chamber the judgment for defendant was reversed in an opinion by Justice Blackburn which contained the seeds of the confusion which followed it.

> We think that the true rule of law is that the person who, for his own purposes, brings on his land and collects and keeps there anything likely to do mischief if it escapes, must keep it in at his peril, and that, if he does not do so, he is *prima facie* answerable for all the damage which is the natural consequence of its escape. He can excuse himself by shewing (sic) that the escape was owing to the plaintiff's default, or perhaps, that the escape was the consequence of *vis major,* or the act of God. . . .[33]

That such language would be extremely harmful to the defendant reactor owner is obvious. However, the story does not end here either. On further appeal to the House of Lords the judgment for plaintiff was affirmed, but the rationale and language of Justice Blackburn were limited. The true rule of the case was stated by Lord Cairns:

> . . . [I]f, in what I may term the natural user of the land, there had been any accumulation of water . . . the plaintiff could not have complained. . . . On the other hand, if the defendants, not stopping at the natural user of their close, had desired to use it for any purpose which I may term a non-natural user . . . and if in consequence the water came to escape and pass off into the close of the plaintiff, then it appears to me that that which the defendants were doing they were doing at their own peril.[34]

The doctrine of *Rylands* was at first rejected in American jurisdictions probably because of the breadth of the language of Justice Blackburn. But the pendulum has swung to acceptance of

[32] 159 Eng. Rep. at 745.
[33] 35 L.J. Rep., n.s. at 156.
[34] 1 E.R.C. at 258. But *cf.* opinion of Lord Cranworth. "If a person brings or accumulates on his land anything which, if it should escape, may cause damage to his neighbor, he does so at his peril. If it does escape and cause damage he is responsible, however careful he may have been, and whatever precautions he may have taken to prevent the damage." 1 E.R.C. at 260.

it in approximately twenty jurisdictions.[35] It has been accepted by the Restatement of Torts in broad form.[36]

One common area for the application of *Rylands* is that of damages resulting from blasting or use of explosives.[37] In the more modern cases this has been extended to damage even from physical vibrations or shock waves.[38] In a recent Connecticut decision[39] a building was damaged by vibrations from blasting carried on by the defendant at the instance of the United States Government for the purpose of widening the channel of a river to prevent it from flowing into the downtown district of Norwich. The court found no negligence, but held that "a person who uses an intrinsically dangerous means to accomplish a lawful end, in such a way as will necessarily or obviously expose the person of another to the dangers of probable injury, is liable if injury results, even though he uses all proper care."[40] While costly to the enterpriser, this rationale proceeds on the theory that he is the best able to spread the risk and cost. Earlier cases perhaps wishing to encourage initiative and the growth of industry were not so generous to injured plaintiffs. In *Heig* v. *Licht*[41] the defendant kept fireworks in a powder magazine which had been constructed with all due care. They exploded, injuring the plaintiff. The court felt that keeping or manufacturing fireworks does not constitute negligence per se, but that this depended upon the

[35] Prosser, 333-34.

[36] "Except as stated in 521-4, one who carries on an ultrahazardous activity is liable to another whose person, land or chattels the actor should recognize as likely to be harmed by the unpreventable miscarriage of the activity for harm resulting thereto from that which makes the activity ultrahazardous, although the utmost care is exercised to prevent the harm." Rest. Torts 519.

"An activity is ultrahazardous if it

(a) necessarily involves a risk of serious harm to the person, land or chattels of others which can not be eliminated by the exercise of the utmost care, and

(b) is not a matter of common usage." Id. at 520.

It might be argued that subsection (a) might offer an out to the owner of the reactor since apparently the risk of serious harm while potentially omnipresent may be so controlled as to make it not a probability. The record of safety of American and English reactors would seem to support this thought.

[37] Morris divides the theories of liability of a blaster into three groups; liability without fault even where use of explosives was justified; liability only if the action was unjustifiable or improperly done; and, trespass theory for debris thrown on adjoining property. Morris 243.

[38] See Prosser 336 and cases cited therein.

[39] Whitman Hotel Corp. v. Elliott & Watrous Engineering Co., 79 A. 2d 591 (Conn. 1951).

[40] 79 A. 2d at 593.

[41] 80 N.Y. 579 (1888).

locality, quantity and surrounding circumstances and not entirely upon the degree of care used. This decision seems to recognize a sliding scale of care depending upon certain variables. It would seem to require the conduct of a "reasonable explosive manufacturer". It does fail to recognize the superior risk-bearing capacity of the manufacturer.

Both English and American courts recognize an area of no strict liability where there is a sanction given by statutory authority or local law to the acts and some desirable public benefit.[42] Some courts have interpreted the statute as condoning the consequences in advance. In *Northwestern Utility, Ltd.* v. *Gordon Guaranty & Accident Co.*[43] a hotel was destroyed by the escape of gas from a welded joint in a pressure main below the street level belonging to defendant, a public utility company, caused by the operations of the city in constructing a storm sewer. The Privy Council thought that the carrying of inflammable and explosive gas is prima facie within the doctrine of *Rylands* v. *Fletcher* and laid the decision of the case on statutory construction. "Where undertakers are acting under statutory powers it is a question of construction, depending on the language of the statute, whether they are only liable for negligence or whether they remain subject to the strict and unqualified rule of *Rylands* v. *Fletcher*."[44] Thus where otherwise dangerous electric, gas or water circuits are laid under statutory authority, there is no strict liability, and the operator is liable only for negligence.[45]

The question that arises from this analysis is whether the construction of an atomic reactor is natural or non-natural use of the land in question. At the present it would be non-natural, but one would think that at some time in the future atomic reactors would become as natural as steam boilers or automobiles which have not come under the doctrine of *Rylands*.[46] Further, the use of an

[42] Prosser 343.
[43] [1936] A.C. 108 (Privy Council 1935).
[44] [1936] A.C. at 120.
[45] Dumphy v. Montreal Light Co., 76 L.J.P.C. 71 (electricity); Gould v. Winona Gas Co., 111 N.W. 254 (Minn. 1907) (gas); Green v. Chelsea Waterworks Co., 70 L.T. 547 (1894) (water).
[46] In this connection it is interesting to note that the Restatement of Torts in 1939 considered aviation as being ultrahazardous in nature and advocated strict liability. See Rest. Torts 520, comment. Yet there are decisions applying res ipsa loquitur to aircraft accidents because of the feeling that planes do not crash in the absence of negligence. See United States v. Kesinger, 190 F. 2d 529 (10th

atomic reactor for power generation in an industrial area would not be non-natural use of the land unless one continues to think in terms of potential explosions. In England strict liability has been confined to things or activities which are extraordinary or exceptional or abnormal. But at some time or other an activity which is extraordinary because of its novelty becomes a commonplace in our society.

The theory behind strict liability without fault is that the hazardous enterprise, even though socially desirable and valuable, must pay its way and make good any damage resulting from it.[47] After all the enterprise is conducted for profit, and the person profiting is in a better position to bear the risk of losses by increasing prices or taking out insurance. Some have felt that in certain cases the application of the doctrine should depend on a balancing of the risk-bearing capacities of plaintiff and defendant.[48] Thus the enterpriser who sets up a factory near defendant's warehouse can increase the price of his products to pay for insurance better than plaintiff can increase his storage prices.[49] In the case of the atomic energy industry this analysis breaks down because of the present impossibility of getting liability insurance. Thus it may be easier for a home-owner to take out some type of casualty insurance than for the reactor owner to get his own insurance. But the real danger is from the escape of radiation bearing particles. How could the population of an eastern city take out insurance against injury from radiation drifting in from some far-western plant? In addition, there would probably be little enthusiasm for such a project since the type of insurance would have to be of the life variety. Thus it is again clear that the problems of insurance and torts are interwoven and entangled.

Res Ipsa Loquitur

Should the counsel for plaintiff fail to convince the court of the application of the doctrine of strict liability, it is easy to predict that he will attempt to have the court consider the application of res ipsa loquitur. This theory has the effect of a presumption of negligence, and in effect shifts the burden of proof to the de-

Cir. 1951). The earlier view has been considerably modified in many states. See Prosser 346.

[47] Prosser 332 [48] Morris 250. [49] *Ibid.*

fendant to show that he was not negligent. It is significant to note here that even though the burden is shifted, there must be negligence to justify a verdict. Some have felt that res ipsa loquitur is just the doctrine of strict liability under a more palatable guise,[50] but this view seems unjustified since the defendant is at least given the opportunity of disproving the negligence charged. In justification of this statement is the difference in the underlying purposes of the two doctrines. The desire of strict liability is to place the element of risk upon the party most able to bear it; the theory of res ipsa loquitur is to place the burden of proof on the person best able to explain the circumstances. It is this which will have bearing on the application of the doctrine to the field of atomic torts.

The English case of *Byrne* v. *Boadle*[51] is the origin of the doctrine of res ipsa loquitur. There the plaintiff was injured while walking down the street by a flour barrel which fell out of a window of defendant's building. The court found for the plaintiff without the introduction of evidence of specific negligence. It stated: "A barrel could not roll out of a warehouse without some negligence, and to say that a plaintiff who is injured by it must call witnesses from the warehouse to prove negligence seems to me preposterous. . . . I think it apparent that the barrel was in the custody of the defendant who occupied the premises, and who is responsible for the acts of his servants who had control of it. . . ."[52]

This case announces two conditions, which must be present for the application of res ipsa loquitur: the injury would not ordinarily happen in the absence of negligence, and the object causing the injury was under the exclusive control of defendant. To these might be added a third: the absence of the possibility of contributing conduct which would make plaintiff responsible.[53] However, a perusal of the many cases decided under this theory indicates that it has much broader scope in keeping with the underlying policy of it.[54] Thus the element of control was found

[50] Ure v. United States, 93 F. Supp. 779, 788 (D. Ore. 1954), rev'd. 225 F. 2d 709 (9th Cir. 1955).

[51] 159 Eng. Rep. 299 (Ex. 1863).

[52] Id. at 301.

[53] See Prosser 199; San Juan Light & Transit Co. v. Requena, 224 U.S. 89, 32 Sup. Ct. 399, 56 L. ed. 680 (1912).

[54] In an action under the Federal Employee's Liability Act the trial court

in the duty of a common carrier to its passenger to use care in operation of the vehicle.[55] In a more recent case the doctrine was applied to an even broader fact situation. In *Haasman* v. *Pacific Alaska Air Express*[56] an airplane left Yakutat, Alaska and was never again seen or heard from. The plaintiff relied on res ipsa loquitur. The court found that this doctrine was applicable where plaintiff has equal knowledge of the facts, but that equality of ignorance of both parties would not preclude application. It felt that the function of the doctrine was to supply a fact—defendant's negligence—which must have existed in the causal chain which plaintiff cannot because of circumstances know or be expected to prove. This case seems to end the "dubious" condition[57] that the evidence of the true facts in the case must be more accessible to the defendant.

In the field of atomic energy industry there is a likelihood that an accident would not happen in the absence of negligence. The safety record of the industry thus far would almost compel this conclusion.[58] The control of the defendant is also present, and defendant is surely in a better position than the plaintiff to prove or disprove specific acts of negligence. Furthermore, the possibility that plaintiff was a contributing cause would not arise in the absence of a suit by a workman or a trespasser, except in the

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applied the doctrine of res ipsa loquitur. The circuit court reversed on the ground that the defendant must have exclusive control of all the things used in an operation which might probably have caused the injury. Here the non-exclusively controlled factors were clearly shown not to have causal connection with the accident. On appeal to the Supreme Court the judgment was reversed. "We cannot agree . . . [R]es ipsa loquitur means that the facts of the occurrence warrant the inference of negligence, not that they compel such an inference; that they furnish circumstantial evidence of negligence where direct evidence of it may be lacking, but it is evidence to be weighed, not necessarily to be accepted as sufficient; that they call for explanation or rebuttal, not necessarily that they require it; that they make a case to be decided by the jury; not that they forestall the verdict. Thus, the question here really is not whether the application of the rule relied on fits squarely into some judicial definition, rigidly construed, but whether the circumstances were such as to justify a finding that this derailment was a result of the defendant's negligence." Jesionowski v. Boston & M.R.R., 329 U.S. 452, 457 (1947) quoting Sweeney v. Erving, 228 U.S. 233, 33 Sup. Ct. 416, 57 L. ed. 815 (1913).

[55] Capital Transit v. Jackson, 149 F. 2d 839 (D.C. Cir. 1945).

[56] 100 F. Supp. 1 (D. Alaska 1951).

[57] Prosser 201.

[58] See note 23, *supra*. "The operating history of 25 reactors in the United States from 1943 to 1954 discloses no radiation injury sufficiently serious to cause lost time to personnel during 606,686 operating hours and 17,799,000 man-hours. There were two fatalities in accidents occurring in laboratories working with fissionable materials." Speech of Clark C. Vogel, General Counsel of the AEC, before the Seminar in Control and Use of Atomic Energy, March 27, 1956.

event of a known escape of radiation materials and a disregard of safety measures by the plaintiff. Thus, in theory at least, the doctrine of res ipsa loquitur would be available to the injured party.

Ordinary Negligence

Last on the descending scale of aid to the plaintiff is liability of the reactor owner for negligence only. Here the plaintiff would have the customary duty of pleading and proving negligence. The question which must be faced is whether this burden is too great to be applied in this situation in the light of such an "ethereal touchstone" as public policy. The great difficulty of proving proximate cause in such cases might be enough to impress the court with the unequal burdens of the parties. The insidious quality of radiation poisoning and the as-yet unknown effects of it are such as to make proof of it almost impossible. The amount of radiation escaping might be so slight as to make long periods of exposure necessary to cause visible injury. The skill of medical science in this field is still undeveloped. The potentiality of injury may take years to discover, such as mutations in genes or the gradual disintegration of some internal organ resulting in eventual weakness and death. Thus, proof of causal connection would be difficult. At present, at least, the abilities which the plaintiff would be able to bring to bear on the issue of negligence seem too limited to force him to depend entirely on his own skills in proving negligence.

Summary

Whether the doctrine of negligence applied in the case of injuries from some atomic accident is strict liability, res ipsa loquitur or negligence only will probably depend more than anything else on the circumstances and time of the first case. The feeling at present as indicated by the text-writers and law review articles seems to be that strict liability will be applied.[59] This appears to be due to the conception of an atomic accident as some sort of Hiroshima-like tragedy, and to the uncommon quality of reactors. When reactors are as common as automobiles, or at least as com-

[59] Prosser 336; Becker and Huard, Tort Liability and the Atomic Energy Industry, 44 Geo. L.J. 58, 68 (1955).

mon as steam boilers, then the justifications for application of strict liability are diminished. Further, if the government-controlled atomic energy industry had not been so accident-free, perhaps the problems of what legal theory and scope of liability would apply would be simplified. A history of minor accidents would serve to remove from the public mind the explosive force for which the atom has been utilized. The ignorance of the public in this matter at this time will serve to increase the scope of liability of the reactor owner. Should the accident arise at some subsequent date when reactors are more common the courts should be more lenient. However, the dilemma is that of needing a history of the effects of accidents before the first accident case. This seems to be impossible. Until such time as the effects of an atomic accident are known or at least more ably predicted, the position of the owner-operator is indeed precarious.

LIABILITY OF THE MANUFACTURER OR DESIGNER OF REACTOR OR RELATED ITEM

Should the unhappy reactor owner or operator be charged with liability for the accident resulting from radiation escape from his instrument, he may wish to join the manufacturer or even the designer of it. This would offer a desirable reduction or elimination of damages in the event he could prove himself free from negligence and the manufacturer could settle the claims. However, the owner would not have the advantage of some scale-loading device like strict liability or res ipsa loquitur. He would be forced to prove actual negligence of the manufacturer in the construction of the apparatus. That this would be difficult if the reactor were destroyed by the accident is obvious. But, as is more likely, there would probably be some lesser type of damage, and after a sufficient cooling off time, the instrument involved could be examined. At that time the reactor owner would wish to explore the possibilities of "sticking" the manufacturer with the responsibilities for the accident. That he could do this if he could prove negligence is shown by the whole pattern of modern law.

Liability of the Manufacturer

The case that comes quickest to a lawyer's mind when he thinks of the liability of a manufacturer for an accident caused by his article is *MacPherson* v. *Buick Motor Co.*[60] This case was the culmination of a long series of cases and legal thinking and has been the beginning of a further train of cases. There the plaintiff was injured when the wheel of his automobile collapsed throwing him out of the automobile. The wheel was not manufactured by defendant but was purchased from another independent manufacturer. The automobile was sold to a retail dealer and was then resold to plaintiff. It was found that a reasonable inspection by defendant would have disclosed the defect. The issue presented to the court was "whether the defendant owed a duty of care and vigilance to anyone but the immediate purchaser?"[61] The court in an opinion written by the great Judge Cardozo leaped the intervening hurdles of privity of contract. It reviewed the cases of inherently dangerous objects which could be a source of danger to many people if constructed carelessly and the duty of the manufacturer of such an object to see that it was so constructed. In answer to the argument that a wheel of an automobile is not an inherently dangerous thing, Judge Cardozo stated: "If the nature of a thing is such that it is reasonably certain to place life and limb in peril when negligently made, it is then a thing of danger. . . . There must be knowledge of a danger, not merely possible, but probable."[62] Thus, the court overcame the double objections of no privity of contract[63] and not an inherently dangerous object.

It would be impossible to relate the many cases[64] which have been decided under this rationale, but it may be stated that its effect on the law has been profound. Of these many cases a few might be considered as bearing on the problem at hand.

[60] 217 N.Y. 382, 111 N.E. 1050 (1916).
[61] 111 N.E. at 1051.
[62] Id. at 1053.
[63] Prosser 500. In Reed & Barton Corp. v. Maas, 73 F. 2d 359 (1st Cir. 1934), the defendant manufactured a coffee urn which was sold to a caterer who rented it to plaintiff. The urn toppled over spilling hot coffee on plaintiff. The trial judge told the jury that the manufacturer would be held liable for negligence in manufacture to any person using the article for the purpose and in the manner intended even though not a privy to the contract with the manufacturer. This was upheld on appeal. See also Hanna v. Fletcher, 231 F.2d 469 (1956), cert. denied June 11, 1956.
[64] It is said that it is "all but universal law in the United States." Prosser 500.

In *DeVito* v. *United Air Lines*[65] the defendant used airplanes built by defendant Douglas on its lines. The particular model had been grounded after fires had broken out on several occasions. Douglas made modifications which satisfied the CAA, including those on the plane in question. Douglas knew that when the fire control units were sending CO_2 into the baggage compartment, the pilots were adversely affected by the CO_2. Douglas conducted a clinic to ascertain the effects of this, but the report of the findings was not transmitted to United before the accident. The report recommended that pilots wear oxygen masks since the cockpit would be filled with CO_2 should the fire control units be used. The court found the defendant United liable for "the negligence or want of skill of anyone who has been concerned in the manufacture of any portion of the apparatus."[66]

A somewhat similar rationale was used in *Chapman Chemical Co.* v. *Taylor*.[67] There an aerial spraying company bought 2-4-D dust for weeding rice fields from the defendant. Dusting was quite common and experience showed that the dust ordinarily did not drift more than 50 feet beyond the area being treated. Defendant knew from tests of other manufacturers that 2-4-D floated for great distances,[68] but it used it in the same manner that it would use a less volatile item. This resulted in the injury to plaintiff's cotton crop. The court thought that forseeability of injury and not privity of contract was the test. The actual ignorance of defendant as to the carrying power of the dust was not material in its defense.[69]

Out of these and similar cases seems to arise a duty of a manufacturer to warn of any possible dangers which may arise from the use of its product. In one case the manufacturer actually knew of the dangers involved and negligently failed to transmit its knowledge to the user and directly caused the accident in question. But in the latter case the manufacturer was not found

[65] 98 F. Supp. 88 (E.D. N.Y. 1951).
[66] Id. at 98.
[67] 215 Ark. 630, 222 S.W. 2d 820 (1949).
[68] Plaintiff's crop was ¾ths of a mile from the area being dusted.
[69] "If one casts into the air a substance which he knows may do damage to others, . . . principles of elementary justice as well as the best public policy require that he know how far the substance will carry or be conveyed through the air and what damage it will do in the path of its journey, and if he releases such a substance either from ignorance of, or in indifference to the damage that may be done, the rule of strict liability should be applied." 222 S.W. 2d at 827.

to have knowledge of the destructive qualities of its dust. This seems to bring about a sort of absolute liability based on a conclusive presumption of knowledge of all the possible inherent dangers of a product put on the market by a producer. The courts have limited this principle to dangers which are reasonably forseeable.

The *MacPherson* case expressly refused to take up the question of whether the manufacturer of component parts would also be liable.[70] In a later case in the same jurisdiction[71] the court found that the manufacturer of a component part would be jointly liable with the manufacturer of the finished product if both were negligent in not making a reasonable inspection of the product before putting it on the market. Thus the maker of component parts was brought within the *MacPherson* rule.

The only remaining logical extension of *MacPherson* came some 16 years later. In the earlier case the liability was limited to injuries to a person. In *Genessee County Patrons Fire Relief Ass'n* v. *Sonneborn*[72] the court found that injuries to property were just as foreseeable as injuries to persons and it placed property damages within the rule.[73]

Thus the circle of liability was completed. A manufacturer of a defective component which caused an atomic accident could be held liable not only for the personal injuries caused by it but also for the property damage which might ensue. With this in mind the manufacturer of the finished product and the manufacturer of the component parts, if there be two, should stand together to perfect their production and inspection techniques since the probability of liability is clearly pointed out. As yet the manufacturers have not seen fit to seek insurance against this possibility.

[70] "We think the defendant was not absolved from a duty of inspection because it bought the wheels from a reputable manufacturer. . . . It was not at liberty to put the finished product on the market without subjecting the component parts to ordinary and simple tests." 111 N.E. at 1055.

[71] Smith v. Peerless Glass Co., 259 N.Y. 292, 181 N.E. 576 (1932). The component part was a bottle and the assembled product was the bottle filled with soda. See also the Rest., Torts secs. 265, 266.

[72] 263 N.Y. 463, 189 N.E. 551 (1934).

[73] However, the court did find that the product was inherently dangerous. The question is whether the cases following the MacPherson extension of liability can be considered as furthering the doctrine when they deal with items inherently dangerous and which would have brought liability for negligent construction even before MacPherson.

The Vulnerability of the Designer

Two recent cases[74] arising from the same occurrence have raised the question of whether the designer of an object causing injury is liable for negligence in his design. Such a concept extends the *MacPherson* doctrine back to the inception of the product. In a field as experimental as that of atomic energy industry it presents a cloud of colossal proportions.[75] To the owner and operator, the manufacturer, and supplier in the ring of liability must be added the designer of the instrumentality.

A plan was worked out to store natural gas at 260° below zero F. in a liquid form so as to have a reserve for maximum consumption periods during the winter. A "giant thermos bottle type" of tank was constructed with an insulation between walls. The defendant had constructed such tanks in a circular design in 1940. In 1942 the gas company wished to build a larger tank. The new tank was to be cylindrical rather than spherical. After construction the tank ruptured and gas escaped. There was a fire, explosions and a disaster destroying property and taking lives. Suit was brought in the federal court of Pennsylvania on diversity of citizenship.[76] The first theory of liability was one of nuisance. The court found that the Ohio rule made liability depend upon the degree of potential injury compared with the utility of the act and common usage. However, the defendant did not own the tank and only supplied the materials and built it. The second charge of liability was for negligence in planning the tank and in the selection of the materials used therein. The court found for the plaintiff here and was affirmed on appeal.

In a case brought in Pennsylvania[77] for the same accident it was alleged that the construction of the tank was negligently done and that inadequate studies were made in its design. The defense was that the type of tank was agreed upon only after con-

[74] Moran v. Pittsburgh-Des Moines Steel Co., 166 F. 2d 908 (3d Cir.), *cert.* denied, 334 U.S. 846 (1948); Foley v. Pittsburgh-Des Moines Steel Co., 363 Pa. 1, 68 A. 2d 517 (1949).

[75] "The tragic accident in which [the plaintiff] and others lost their lives was a poignant episode in the development of the kind of bold and ingenious engineering for which Americans have become famous. We all enjoy the benefits of the results of these experiments; the question which the courts have to decide is at whose risk they are to be carried on." 166 F. 2d at 911.

[76] Moran v. Pittsburgh-Des Moines Steel Co., *supra.*

[77] Foley v. Pittsburgh-Des Moines Steel Co., *supra.*

sultation with experts. However, the Supreme Court of Pennsylvania affirmed the judgment for plaintiff.

If the decisions in these cases represent the trend of authority, and the two courts of decision did not feel that they were creating any new principles of law, then the liability for negligent construction of a manufactured product may lie against the seller, the assembler of the component parts, the manufacturer of component parts and even the designer of the finished item. This list of possible defendants is not enough to insure sufficient capital to insure against a possible loss but it indicates how many parties could become involved in a disaster of great proportions. In a field as experimental as that of atomic energy the developments will come so rapidly that complete testing may not be feasible. Like the jet-planes of today the finished product may be obsolete before it can be put into production. The fear of possible liability may tend to dampen the enthusiasm of designers of new items. However, a close reading of the cases above indicates that there was much actual negligence involved and an almost flagrant disregard of danger warnings. Thus, it would appear that a failure to make experiments sufficient to resolve the least doubt would not be considered negligent in a proper case. Unlike the manufacturer the designer is not held to know of every possible ramification of his creation. He should be only held to know that which he could reasonably be expected to know.

Some have suggested that this liability might be limited by contract. It is felt that this would not be feasible in light of the desire of the courts to protect the public from harm caused by someone's carelessness.[78]

INSURANCE FOR THE ATOMIC INDUSTRY[79]

Insurance is one of the factors which business men first think of when determining whether or not to invest money in a new

[78] See MacMackin, Insurance Problems of the Atomic Industry, 1954 Ins. L. J. 726, 727.

[79] As pointed out on page one of the Atomic Industrial Forum, Inc., Preliminary Report on Financial Protection Against Atomic Hazards, (1956) the use of the term insurance is perhaps too narrow to describe the problem area. "Because private insurance is the most common method of meeting risks, the problem has generally been called the Atomic 'insurance' problem. We think that designation is too narrow. Insurance is only one of a number of ways in which the risk can be met. . . ."

venture or field. Success in business is to a large degree dependent on the ability of the individual business man's or of the corporate directors' ability to appreciate the risks incident to a particular enterprise and to provide for them. Part of the technique of providing for the risks of loss in an enterprise is to shift the risk of loss to another or others.[80] And this of course requires an identification of the risk and some estimate of the probability of the risk becoming in fact a loss.

One of the sources of loss which a business enterprise is faced with is the destruction of its property by the forces of nature such as fire, flood, and hurricanes; another is industrial accidents such as explosions. Protection against losses of this type is obtained by means of insurance. Insurance also furnishes protection from losses resulting from legal liability imposed on the business due to injuries which it inflicts on persons and property.

THE NATURE OF THE RISKS

Risks Within the Industry

The atomic energy industry like other industries will have to bear the risk of injury to its employees and damage to or destruction of its property.[81] In addition to industrial hazards heretofore familiar to industry, the atomic industry will be faced with the hazard of radiation exposure of employees and the contamination of buildings and equipment by nuclear material.[82]

Workmen's Compensation Acts have in general shifted the burden of financial liability to the employer whether or not the injury to an employee was due to the employer's negligence or his own.[83] Thus, the employer in the atomic energy industry can count on being legally liable for radiation injury to his employees as well as other injuries.[84] In this respect it has been pointed out

[80] Patterson, Apportionment of Business Risks Through Legal Devices, 24 Colum. L. Rev. 335, 359.

[81] *Id.*

[82] Peaceful Uses of Atomic Energy, *supra* note 7, at 126: "Many States have already modified their workmen's compensation laws and regulations to permit coverage for radiation injuries." Gray, Canadian Experience With a Major Reactor Breakdown, Third Annual Conference, Atomic Energy in Industry 162 (1955). Braideck, The Problems of Insurance in Atomic Energy Development, 1955 Ins. L. J. 743.

[83] Prosser 382.

[84] *Supra* note 9.

that accidents involving radiation injuries introduce two new aspects into industrial risk: all of the workmen in a plant may become casualties at the same instant, and radiation injury may go undetected for a long period of time.[85]

In addition to the familiar industrial hazards, the atomic age will have that of the loss of "use and occupancy"[86] due to contamination by escaping fissionable material.[87]

PUBLIC LIABILITY

It is generally assumed that the doctrine of liability without fault or strict liability as first enunciated in *Rylands* v. *Fletcher* will be applied by the courts to the new atomic industry. The doctrine of *MacPherson* v. *Buick Motor Co.*[88] is also expected to apply. As they pertain to the atomic industry these doctrines enunciated in the preceding sections, if applied by the courts after an accident in which a runaway atomic reactor introduces radioactive material into the atmosphere or pollutes a body of water with the resultant widespread property contamination and personal injuries that could occur under the right weather conditions, could result in enormous financial liability.[89] For example if a reactor at a power plant near a large city should, due to a malfunction, eject a large amount of radioactive material into the atmosphere and that material be borne to the city by a prevailing wind, damage to persons and property in excess of that at Texas City[90] might well occur. In this case the reactor operator as well

[85] Bratter, Reactor Insurance Risks Still Unsolved, 55 Pub. Ut. Fort. 755 (1955).

[86] Vance, Insurance 1029 (3rd ed. 1951) describes use and occupancy insurance as follows: "This form of insurance, sometimes referred to as 'business interruption' insurance, is designed to protect the insured from loss to his business due to his inability to use the building destroyed by fire during the time required for its reconstruction." For examples of loss of use and occupancy due to radioactive contamination see Braideck, The Problem of Insurance in Atomic Energy Developments, 1955 Ins. L. J. 743.

[87] Braideck, The Problem of Insurance in Atomic Energy Developments, 1955 Ins. L. J. 743.

[88] See note 31, *supra.*

[89] Weil, Hazards of Nuclear Power Plants, 121 Science 315 (1955). It has been suggested that even if no one is killed, a large city or a major watershed area might have to be abandoned, McCullouch, Miles and Teller, The Safety of Nuclear Reactors 13 (1955).

[90] If the Government had not escaped liability for the Texas City disaster it is estimated that it would have had to pay a bill of about $200,000,000. See Dalehite v. United States, 340 U.S. 15, 17, 73 Sup. Ct. 956, 97 L. ed. 1477 (1953) relative to Government liability in that disaster.

as the designer and manufacturer, under the *Rylands* and *MacPherson* doctrines might well be held liable in damages in amounts heretofore unheard of.[91]

EFFECTS OF THE RISKS UPON THE ATOMIC ENERGY INDUSTRY

Effects of Risks Within the Industry

The problem of insurance against liability for injury to employees and for damage to the reactor and plant appears to be capable of solution by private insurance companies and the atomic industry.[92] Enough data has been compiled during the operation of AEC installations and the experience gained insuring employees of the AEC to form a basis for risk calculation for private insurers.[93] The Chalk River incident[94] has furnished some data as to loss of "use and occupancy" to be expected while decontamination is carried out.[95] This accident and the experiments or tests conducted by the AEC[96] have also furnished some basis for the evaluation of property damage to the reactor and the plant. Private insurance groups have indicated their willingness to insure against the risk of loss from these sources.[97] There is no indication

[91] See Speech of Clark C. Vogel, note 58, *supra*. Total damage from a reactor accident has been estimated to range from $13,000,000 to $950,000,000. See Parkes, Financial Aspects of a Major Reactor Accident.

[92] Stratton, Underwriting of Risks Within Plants of United States Atomic Energy Commission, 17 Insurance Counsel 431 (1950). Colonel Stratton of the Travelers Insurance Companies relates how, by a coding system, security at AEC plants could be penetrated to give insurance companies the data necessary to evaluate the risks involved and to insure workers. Peaceful Uses of Atomic Energy, *supra* note 7, art. 127: "The insurance industry can cover the atomic power plant risks involved to the same extent it normally does in hazardous industries."

[93] Dean, The Impact of the Atom on Law, 12 Pitt. L. Rev. 514 (1951) states that only two men have been killed in atomic projects for the millions of man-hours worked. Col. Stratton, quoted in the Problem of Insurance in Atomic Energy Developments, 1955 Ins. L. J. 743 (1955), speaking on insuring personnel within AEC plants: ". . . [T]hrough continuous resurveys and the application of coding, together with a reasonable quantity of actuarial experience, underwriting requirements have been lessened until today better than 99.7% of all persons working in AEC installations can obtain their insurance exactly as if they were working in an ordinary industrial plant."

[94] Accident involving the release of fissionable material from the Canadian NRX reactor located at Chalk River.

[95] Canadian Experience With a Major Reactor Breakdown, *supra* note 9. Gray, Reconstruction of the NRX Reactor at Chalk River, 36 Engineering Journal 1269 (1953).

[96] Dietrick, Experimental Determinations of the Self-Regulation and Safety of Operating Water-Moderated Reactors 21-25 (1955.)

[97] Interview with Mr. George Norris, Counsel, Joint Congressional Committee on Atomic Energy. Mr. Norris answered the following question in the affirmative: Have the insurance companies expressed a willingness to undertake on their own the insurance of the personnel within an atomic power plant?

that private capital is reluctant to enter the atomic industry due to fear of loss due to damage to the industry's own plants or equipment—or from fear of liability for injury to its employees.[98]

EFFECTS OF THE RISK OF PUBLIC LIABILITY

The possibility, however remote, of a reactor accident of catastrophic dimensions with the attendant damage to persons and property over a wide area appears to be one of the major deterrents to the investment of private capital in the atomic industry.[99] The liability for damages arising from such an accident would be beyond the capabilities of the industry to absorb[100] and beyond the capabilities of the insurance industry to underwrite.[101] The problem was stated by the Chairman of the Joint Congressional Committee on Atomic Energy[102] as follows:

> For its own part, the Congress now faces two problems of great importance for the future of the atomic industry. . . . I refer to the problem of securing adequate insurance for private firms wishing to build atomic reactors. . . Companies exploring the possibility of building atomic reactors have discovered that they are unable to obtain adequate insurance against the remote possibility of a major reactor accident, such as could conceivably result in the radioactive contamination of a large area.[103]

The matter of insurance was discussed by several witnesses during the Joint Committee's hearings in February and March of 1955. General Electric's Vice President, Francis K. McCune, expresses concern about the inability to obtain adequate insurance for atomic risks. That inability might impede adequate financing and widespread and rapid development, he said.[104]

Another witness, General Electric's director of research and

[98] *Ibid.*

[99] Atomic Industrial Forum, Inc., Preliminary Report on Financial Protection Against Hazards, 12-13 (March 1956).

[100] Estimates (of damage from a reactor accident) vary from one to two hundred million up to many times those amounts. Preliminary Report, *supra* note 99, art. 6.

[101] Coverage in the amount of approximately $60,000,000 is said to be available from private insurance sources. Preliminary Report, *supra* note 99, art. 11 n. 24. Time, March 19, 1956.

[102] Rep. W. Sterling Cole (R-N.Y.) January, 1955.

[103] Quoted in Bratter, Reactor Insurance Risks Still Unsolved, 55 Pub. Util. Fort. 755 (1955).

[104] Hearings, Joint Committee on Atomic Energy, *supra* note 6.

Chairman of the National Association of Manufacturers' subcommittee on atomic energy, Dr. C. G. Suits, testified at some length. Risks are part of the normal costs of doing business, Dr. Suits said, but atomic risks may well be regarded as abnormal. Compared with the latter, those risks involved in the Texas City disaster or the accident in the Chicago power station[105] were minor. A reactor accident with escaping fission products could be a real catastrophe. The witness elaborated:

> ... [T]he potential damage might be much greater in dollar magnitude than the net worth of the station operator or the manufacturer of the generating equipment and auxiliaries, and hence self-insurance is not possible. Insurance companies have thus far not been willing or able to write insurance for this extraordinary risk. From an insurance standpoint this kind of an accident is extraordinary in two respects. First, careful design and proper location of reactor plants will reduce the probability of serious atomic accident almost to zero. Secondly, however, if extremely improbable combinations of circumstances should occur, leading to a serious accident, the resulting damage claims might be very great. It is this extremely improbable but not entirely negligible accident for which insurance has been sought unsuccessfully.[106]

Members of both the insurance industry and the atomic power industry have expressed the view that the development of the atomic industry will be delayed if adequate public liability insurance is not available; and that the insurance industry can not furnish insurance in amounts necessary to cover a major reactor accident.[107]

PROPOSED SOLUTIONS TO THE PROBLEM OF PUBLIC LIABILITY IN THE ATOMIC INDUSTRY

As noted previously in this paper the insurance companies are willing to insure both employees and property within the atomic industry. Their real problem is one of protecting the in-

[105] Moran v. Pittsburgh-Des Moines Steel Co., 166 F. (2d) 908 (3d Cir. 1948).

[106] Hearings, *supra* note 6.

[107] MacMackin, Insurance Problems of the Atomic Industry, 1954 Ins. L. J. 726; Bratter, Reactor Insurance Risks Still Unsolved, 55 Pub. Util. Fort. 755 (1955).

dustry and the public against losses due to a reactor accident of catastrophic proportions. This portion of the paper will be concerned with a consideration of the solutions which have been proposed to this problem.

Due to the fact that the largest insurance coverage written to date is $10,000,000[108] and the insurance industry by pooling its resources is now able to afford liability protection to the atomic industry for only $65,000,000,[109] it is generally agreed that some form of governmental action will be needed to protect both the public and the new industry.

It is estimated that an atomic reactor accident of major proportions might result in liability in the amount of $500,000,000.[110] The largest liability suit up to this date was for $200,000,000.[111] Suits totaling $9,000,000 have arisen out of an industrial accident.[112] The difficulty faced is that there is no experience by which to estimate, or even make an educated guess, as to the magnitude of losses which may be expected due to a major atomic disaster.[113] Nor is there any experience in dealing with liability problems which are said to be conceivable in this new industry.[114] It seems necessary that preparation must be made to handle public liability claims to an unlimited amount, at least in amounts beyond the capabilities of the insurance industry.[115] The opinions of representatives of industry[116] who are potential developers of

[108] Warren Unna, A-Reactor Insurance, Washington Post and Times Herald, March 24, 1956.

[109] See note 101, *supra.*

[110] See note 91, supra. Mr. George Norris, Counsel, Joint Committee on Atomic Energy, used the figures $500,000,000 during my interview.

[111] See note 90, *supra.* [112] See note 105, *supra.* [113] See note 91, *supra*

[114] The Preliminary Report on Financial Protection Against Atomic Hazards, (March 1956) includes an analysis of four measures, existing or proposed, for dealing with various catastrophes. The Report concluded that the experience obtained in these areas was not applicable to the atomic problem. The measures considered were:

(1) Federal Deposit Insurance,
(2) War Damage Insurance,
(3) Crop Insurance, and
(4) Proposed Flood Insurance Program.

[115] "No unlimited liability-insurance contract is written in the United States. Such a contract would be in violation of a common statutory provision which limits the amount for which an individual insurer may assume liability on any one risk to a proportion of its surplus to policyholders, and it seems improbable that an insurer would be willing to write an unlimited contract, even if it were permissible." Mowbray and Blanchard, Insurance 164 (4th ed. 1955). See note 100 and 101, *supra.*

[116] Francis K. McCune, Vice President of General Electric Corp.; Paul W. McQuillen, General Counsel of Detroit Edison and Chairman of the legal committee of Atomic Power Development Associates.

private atomic power as well as members of the insurance industry[117] have been that some action on the part of the Federal Government is necessary before the atomic industry can develop.

Federal Underwriting

In response to this need for protection of the public and the atomic industry for loss due to a major accident in the new industry, three bills have been introduced in Congress by members of the Joint Committee on Atomic Energy. A bill introduced by Mr. Price[118] reads as follows:

> Be it enacted . . . that—(1) for a period of ten years from the date of passage of this Act the Atomic Energy Commission shall, upon request, indemnify each owner, operator, manufacturer, designer and builder of a production facility, as defined in the Atomic Energy Act of 1954, and each supplier of equipment, material or services for such facility, as interests appear, against unincurred liability to members of the public for bodily injury or death and property damage arising from nuclear hazards, subject to the condition that primary non-governmental insurance against such liability has been procured in amounts deemed reasonably adequate by the Commission to provide against normal contingencies; and
>
> (2) each indemnification shall be evidenced by an agreement which shall become effective upon its execution and shall cover liability for events occuring thereafter and during the useful life of the facility.[119]

Mr. Cole, also of the Joint Committee on Atomic Energy, introduced a bill to deal with the same problem in a somewhat different manner.[120] This bill provides:

> That section 2[121] of the Atomic Energy Act of 1954 is amended by adding a new subsection to read as follows:
>
> i. In order to encourage the development and operation of production or utilization facilities, the liability of those persons responsible for the design, construction, or operation of

[117] Colonel Reuel C. Stratton of the Travelers Insurance Companies. See MacMackin, Insurance Problems of the Atomic Industry, 1954 Ins. L. J. 726 for a summary of the views of the insurance industry.

[118] Rep. Melvin Price (D. Ill.).

[119] H R. 9701, 84th Cong., 2d Sess. (March 1, 1956).

[120] H.R. 9802, 84th Cong., 2d Sess. (March 7, 1956).

[121] "Sec. 2 Findings.—the Congress of the United States hereby makes the following findings concerning the development, use, and control of atomic energy: "a. . . . h. . . ."

> such facilities shall be limited in the case of damages caused by the malfunctioning of such facility.
>
> Sec. 2. The Atomic Energy Act of 1954 is amended by adding thereto a new section, and by making the appropriate amendment to the Table of Contents:
>
> Sec. 242. The Limitation of Liability—The licensee of a production or utilization facility shall not be liable in damages for the malfunctioning of such facility in an aggregate amount more than twice the original capital cost of such facility. The aggregate of this limitation shall extent to, and include all contractors and subcontractors of the licensee in the design, construction, or operation of such facility. In the event that claims for damages caused by such malfunctioning exceed twice the original capital cost of such facility, the licensee may apply to an appropriate District Court of the United States having jurisdiction of licensee in bankruptcy matters for an order limiting the liability of the licensee, including his contractors and subcontractors in accordance with the provisions of this section, and for a further order apportioning the payments to be made to such claimants upon appropriate proof of damage."

The Chairman of the Joint Committee, Senator Anderson, introduced a compromise between these two ideas on May 25, 1956.[122] In essence it provides that the licensee for the operation, possession, or use of a production or utilization facility shall be required to have such an amount of private insurance as the Commission shall determine to be adequate. In addition,

> The Commission shall, until August 1, 1966, agree to indemnify and hold harmless the owner, operator, manufacturer, designer, or builder of a production or utilization facility and each supplier of equipment, material, or services for such facility . . . in the event of claims arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or by-product materials . . . against that liability to members of the public for bodily injury or death or property damage . . . which is in excess of the amount of financial protection required, but not to exceed $500,000,000 in the aggregate for each facility within the United States and for each incident.[123]

[122] S. 3929, 84th Cong., 2d Sess. (May 25, 1956).
[123] It should be noted that this blanket provision will include almost all those

For this service the Government would make a minimum charge with the proceeds to be devoted to the AEC's research and development program.[124]

The basic ideas contained in these three bills, *i.e.*, indemnification by the Government above a stated or determinable amount of obtainable insurance, or legally fixing the maximum liability of the operator of atomic installations, are the only solutions that have been proposed to the problem of public liability in the private atomic industry.[125]

Summary

The bills of Congressman Cole and Senator Anderson seem to adequately protect the atomic industry by making its public liability definite and certain, and, therefore, capable of being planned for. An ascertained risk may be shifted by self-insurance or insurance. But an unknown and perhaps major part of the risk is being shifted to the public. Congressman Cole's bill is not clear as to what is meant by a "malfunction." This may mean a failure to function properly although no negligence is involved, or it may also include failure to use due care in operation. Senator Anderson's bill is much broader on this point and would seem to include both. While shifting part of the burden to the injured public if no negligence on the part of the operator was involved may be acceptable, it is contrary to our legal concepts to let the loss lie where it falls when one party has been negligent. It is

engaged in the design, manufacture and use of atomic facilities. The following subsection states that subcontractors and suppliers are included.

Another point of interest is that there is an allusion to the prospect of the Government paying additional claims should it seem desirable. "The owner, constructor, or operator . . . shall not be liable for damages . . . in an aggregate amount of more than the amount of the financial protection required by the Commission to be obtained, together with the sums set forth in subsections c. and d. above, and any other sums which may be made available by the Congress for the payment of such damages." See Conclusions, infra.

[124] See subsection f. of S. 3929.

[125] The Preliminary Report, note 99 *supra*, at 29 supports the idea of full reparation by the Government above the coverage offered by private insurers which is the essence of Congressman Price's bill, but goes on to say that if the burden is too great, Congress can re-examine the whole atomic power problem.

Mr. William M. Cousins, Assistant Director for Business Operations, Armour Research Foundation, Illinois Institute of Technology, in a speech delivered at a meeting held by the Atomic Industrial Forum, Inc., September, 1955, suggested that a legal upper limit to the public liability of a reactor operator be set. Mr. Cousin's idea was that not only should there be an upper limit to the public liability of the reactor operator, but also a maximum limit to the amount recoverable by a member of the public.

likely that a limitation of liability to twice the investment in the plant which has caused the damage as proposed by Representative Cole could be challenged on constitutional grounds.

The bill introduced by Congressman Price seems to have more merit in that it furnishes protection to both the public and the atomic industry. The requirement that the operator of the atomic facility have insurance would give the Government the benefit of the insurance industry's safety policing of atomic facilities as well as the benefit of their organization and experience in evaluating claims. Mr. Price's bill is thought to be defective, however, in having the Government undertake unlimited liability for atomic hazards. As there are no experience factors in the atomic field or any analogous situations, it seems unwise to commit the Government to a financial obligation which conceivably might prove too onerous. In other words, there is undoubtedly a limit to the liability which even the Federal Government can underwrite.

As a compromise measure in essence the bill introduced by Senator Anderson while eliminating most of the doubtful provisions of the other two bills, still retains some which might be objectionable. It is not subject to the same degree of criticism as the bill of Congressman Cole in that it limits liability to a much more realistic figure. However, the constitutional objection inherent therein still remains. It must be remembered that this measure of Government underwriting is only of a temporary nature until the private underwriters can compile enough knowledge to offer complete coverage in the field. Furthermore, the limitation of liability to $500,000,000 does not mean that claims in excess of this amount will go unsatisfied. Precedent for settling damage claims by private bills was established in the Texas City disaster. But it seems reasonable to set some limit upon the liability of the Government.

GENERAL CONCLUSIONS

While there is no case law[126] in the field of atomic energy to suggest what theory of liability will be imposed by the courts

[126] cf. "The Commission shall have authority to settle or approve the settlement of claims without regard to the rules of legal liability in the State of the accident, and regardless of whether liability has been established by the judgment of any court." One wonders whether this is an attempt to set up a uniform federal standard of liability without regard to the case and statutory law of the jurisdiction where the accident occurred.

when and if cases involving atomic accidents have to be dealt with, the writings on the subject generally agree that the doctrine of strict liability will probably be adopted by the courts. This seems likely inasmuch as this doctrine is in harmony with the social policy of shifting losses to those most able to absorb them or further distribute them which is of growing importance in the law of torts. As has been pointed out, even with a policy of holding reactor owners and manufacturers liable only where negligence is found, juries are likely to be very sympathetic and generous with innocent members of the public who have been injured by instrumentalities of large corporations.

What theory the courts use to take their money is of no great concern to business men. Whether the judgment is a result of a ruling of law by the court or a manipulation of the facts by a warm hearted jury is of no real concern to the business man; he is concerned with the foreseeability and magnitude of his liability. If he can calculate the risk he can provide for it as a part of the cost of doing business. One common method of shifting risks and distributing losses is by insurance. But insurance is a business of calculating risks and distributing losses also, and the insurance people will not contract to underwrite losses for accidents of unknown magnitude. So in these formative days of the new atomic energy industry which the Federal Government wants to encourage private enterprise to enter, business men have expressed an understandable reluctance to engage in an activity where one accident might possibly result in liability for damages to the public of such a magnitude that the entire assets of the corporation or business man might be lost.

In view of the expressed opinions of industrial leaders that the rapid development of the new atomic industry will be delayed unless the threat of financially ruinous public liability for accidents in atomic facilities is removed or made calculable, and in view of the fact that the insurance industry is either unable or unwilling to insure against liability of the magnitude that may be incurred, it appears that legislative action by Congress is necessary if private enterprise is to be induced to help develop the atomic energy industry to the fullest extent. In enacting laws to encourage private industry to enter the atomic field Congress should bear in mind that there are other interests to be con-

sidered and not just those of business. Any legislation should give consideration to the following factors:

(1) Protection to the public from injury to person and property due to atomic accidents;

(2) Encouragement of private capital to invest in the atomic industry;

(3) Protection of the financial interest of the Government; and,

(4) The traditional concepts of liability in our legal system.

It is believed that neither the bill introduced by Congressman Cole nor that of Congressman Price is adequate if evaluated in the light of these criteria. Shifting possible losses of unknown magnitude to either the public or the Government for the benefit of business appears to be unduly solicitous of the welfare of business.

The writers feel that a more satisfactory solution would be for the Government to undertake to indemnify the atomic energy industry against public liability up to a specific amount such as the $500,000,000 set in Senator Anderson's bill. To be eligible for this protection the owner or operator should be required to have public liability insurance for the maximum amount obtainable from private insurance companies. This amount has been set at about $65,000,000 at present. Thus, the bill of Senator Anderson seems in these respects to offer the best solution to the dilemma which has beset the atomic energy industry. But, it is felt that this bill might be improved by going further than it does at present.[127] In the event that an accident did occur which resulted in more than the maximum liability assumed by the Government, the Congress considering the welfare of the United States as a whole could decide whether additional indemnity should be provided to the industry or whether to let the additional loss be borne by the industry up to the limit of its assets and then furnish relief for the individuals who have been damaged by the catastrophe. The further development of the United States as a leader in the field of atomic industry must not be forestalled by the excessive caution of the insurance industry, yet the safety of the people must not be sacrificed to the ideal of progress. Since the problems are only

how to best further the good of the people, the solutions can not be far off.

[127] That even Senator Anderson does not consider his bill to be final is evinced by the following words: "This bill, like the principles outlined in my April 26 letter, should be regarded merely as a basis for careful review and suggestions, both from the standpoint of substance and of drafting. Any comments on the bill would therefore be welcomed." Statement of Senator Clinton P. Anderson on Introduction of Indemnity Bill S. 3929 in the Senate, press release No. 56, Office of Joint Committee on Atomic Energy (May 25, 1956).