

## THE HAZARDS OF TRAVEL

October 19, 1951.

Just forty-one days ago the one millionth American to die fighting for his country fell on some Korean battlefield.

Sometime near the end of this year, the one millionth American will die as a result of a motor vehicle accident. In other words the automobile has killed one million people since it came into general use in 1910, and war has killed the same number since the first Minuteman fell in the Battle of Lexington on April 19, 1775.

None of us would halt the march of civilization but each new invention seems to exact a toll of lives, particularly in the field of transportation. A review of the modern transportation methods shows that fatalities follow a regular pattern, as the use of the method expands the number of deaths increase until regulations are imposed. Where these regulations are effective, the death toll is rapidly reduced. This is the case in public transportation. For example, the following figures represent passenger fatalities for one billion passenger miles of travel:

	<u>1949</u>	<u>1950</u>
Railroads	1	6
Motor Bus Lines	2	2
Air Lines	13	11

During the past eleven years the air lines have shown a progressive reduction in their accident rate. During the same period the railroads and bus lines have remained almost

unchanged. However, in the earlier years of these facilities their improvement was similar to the air lines.

The exception to this rule, of course, is the figure for railroads during 1950 which was very high as a result of two bad wrecks on the Long Island Railroad.

It will be interesting to trace the accident records of railroads since the Baltimore and Ohio Railroad opened for traffic on May 24, 1830, using a horse drawn rail car, or since the first train drawn by a steam locomotive ran from Albany to Schenectady on August 9, 1831.

Here are three clippings from the Albany Argus printed during January 1833:

"Stage Accident: The American Sentinel mentions that on the 9th instant one of the Washington stages on its way to Baltimore, was upset and some of the passengers injured".

Albany Argus Jan. 21, 1833

"Accident: We learn by a passenger who came in on the railroad on Saturday from Philadelphia that on passing a 'turn out' owing to the carelessness of the driver, a car ran off the track and was precipitated down a declivity of 15 or 20 feet. A person who was asleep on top of the car was thrown to the foot of the bank where the vehicle landed directly upon him. He was so much injured that his attendants could only learn from him that he lived in this city and was a native of Ireland. He died in about two hours after the accident occurred. One or two of the passengers were slightly injured,

but the rest about 20 in number escaped unhurt N.Y. Standard".

Albany Argus Jan. 8, 1833

"On the Petersburg Railroad, a few days ago, a party of gentlemen were transported by a locomotive engine between Petersburg and Belfield, a distance of forty miles, in the space of two hours".

Albany Argus Jan. 21, 1833

A boiler explosion on the Harlem & New York RR in 1834 and another on the Baltimore and Ohio RR in 1836 each killed one man. There were less than 2000 miles of track in these years.

With the expansion of rail service and the increase in speed the number of deaths increased rapidly until in 1907 the railroads killed 11,839 persons and injured 111,016 including passengers, employees and trespassers. The slaughter was so great that public opinion was aroused, forcing government action. Numerous laws were passed about this time to increase the safety of the operation of railroads.

"\*\*\*\*\*Under the Hours of Service law an 8-hour basic day has been established, with a limitation of 16 hours during which certain employees may be continuously employed. Under the Safety Appliances Acts, and other requirements of regulatory authority, certain devices, such as automatic train control apparatus, cab curtains, power reverse gears, and automatic fire-box doors, must be installed and maintained. Locomotive boilers must conform to prescribed standards and be inspected periodically. Car equipment, in such things as couplers,

ACCIDENTS TO STEAMBOATS

Coastal & Inland Waters

<u>YEAR</u>	Number of:	
	<u>Accidents</u>	<u>Deaths</u>
Prior to 1830	72	1805
1830	19	185
31	8	62
32	6	183
33	12	98
34	21	79
35	18	190
36	33	239
37	39	940
38	54	648
39	11	78
1840	16	614
41	11	474
42	8	115
43	8	102
44	8	247
45	14	166
46	11	204
47	21	262
48	13	149
49	9	651

Table I.

## PASSENGER FATALITIES ON REGULARLY SCHEDULED TRIPS

YEAR	Railroads		Air Lines		Motor Bus Lines	
	Deaths	Rate	Deaths	Rate	Deaths	Rate
1920	229					
21	205					
22	200					
23	138					
24	149					
25	171					
26	152					
27	88		11			
28	91		13			
29	114		18			
1930	61		24			
31	46		26			
32	27		25			
33	51		8			
34	38		21			
35	30		15			
36	41		46			
37	34		51			
38	81		25			
39	40		9			
1940	87	4	35	30	60	2
41	48	2	35	23	70	2
42	118	2	55	37	100	2
43	281	3	22	13	130	2
44	271	3	48	22	140	2
45	157	2	76	22	120	2
46	130	2	75	12	140	2
47	86	2	199	32	140	2
48	62	2	83	13	120	2
49	35	1	93	13	120	2
1950	178	6	96	11	100	2

Rate = Passenger fatalities per billion passenger miles.

ladders, hand holds, running boards and brake apparatus, must conform to specified standards and the adequacy of the maintenance of such equipment is checked by governmental inspection."

As time went on these laws were rigidly enforced and proved to be effective; so that in 1950 the number of persons killed and injured by the railroads were less than 30% of the casualties in 1907.

There is no doubt that the greatest killer among the various means of controled transportation <sup>was</sup> ~~were~~ the early steamboats. From records available today we know that boiler explosions, fires and collisions on steamboats killed over 940 passengers in 1837. This record was not even approached until 1907 when the Railroads killed 610 passengers. And in the 70 years that had elapsed between these two records the population of this country had increased from 17 million to 92 million.

There are indications that the hardy souls who took the steamboat in the early years of the last century expected to be blown up. A popular song of 1842 contains the following verse.

The ice ran down the Ohio,  
The steamboat it impeded,  
At last we got away from snow,  
Of which we so much needed;  
No accident did us befall,  
Tho' steamboat was a shaker,  
I was not then blown up at all,  
Except by Betsy Baker.

And most of us recall John Hay's eulogy to John Bludso.

All boats have their day on the Mississip,  
And her day come at last.  
The Movastar was a better boat,  
But the Belle she wouldn't be passed;  
And so come tearin' along that night,--  
The oldest craft on the line,  
With a nigger squat on her safety valve,  
And her furnace crammed, rosin and pine.

The fire bust out as she clared the bar,  
 And burnt a hole in the night,  
 And quick as a flash she turned, and made  
 To that willer-bank on the right,  
 There was runnin' and cursin', but Jim yelled out  
 Over all the infernal roar,  
 "I'll hold her nozzle agin the bank  
 Till the last galoot's ashore."

Based on a contemporary report to Congress the "number of lives annually exposed to the dangers of steam navigation", i.e., passengers carried on the Mississippi and its tributaries was slightly over 4,000,000 persons in 1837. Of this number 453 are known to have been killed in explosions, or one in every 9,000 passengers. The worst record for the railroads was made in 1907 when one in every 1,433,000 passengers was killed.

A review of the known accidents to steamboats in inland and coastal waters during 1838 throws considerable light on the situation. From many sources I have gathered a list of 54 accidents causing 648 deaths. These accidents may be divided as follows:

Snagged or sunk, Mississippi and tributaries	31 accidents - 1 death
Went ashore or collision, coastal waters	5 accidents - 1 death
Fire, no details as to cause	2 accidents - 53 deaths
Boiler explosions	16 accidents - 593 deaths

These figures clearly show that the boilers created the great hazard of navigation: They may even have been the cause of the destruction of the two boats listed as destroyed by fire.

A further breakdown of these early explosions brings out two factors resulting in the high loss of life. First, an almost complete lack of knowledge of thermo-dynamics, pressures and strength of iron under heat, not only by boiler operators but by designers, builders and inspectors. Second, a complete indifference to the safety of the passengers on the part of the officers of the boats particularly when a record was at stake. Of the 16 accidents caused by explosions, eight were attributed to carelessness on the part of the ships officers, 4 to faulty construction and 4 to unknown causes.

House Document no. 21 dated December 14, 1840 states that there had been an enormous sacrifice of human lives in the previous ten years. The general opinion as to the cause is given as follows:

"This shows a large amount of human happiness sacrificed to the cupidity of a few reckless steamboat owners, whose occupation and habits of life are such as to lead them to place but little value on the lives of their fellow-men, when brought in competition with their own pecuniary interest.

It will be seen from the above statement, that the laws already passed to prevent accidents on board steam vessels have done but little towards diminishing their number, or the disastrous consequences arising from them. This may arise from the fact that the primary cause of those accidents is seldom known, and that legislation has been done in ignorance of the causes which produce the most disastrous effects.

This statement also shows that, though steamboats are liable to a great variety of accidents, yet the lives of

passengers are subject to injury by only a few. Explosion of boilers, and fire, are the two great causes of the destruction of life; which would seem to imply that but little legislation is required to preserve the public from such disastrous results, inasmuch as all other accidents are easily avoided by ordinary care of officers and owners of boats.

"This is doubtless true. And could our legislators be satisfied of the true causes of those accidents, I think they would find that the enactment of a few laws would be sufficient to protect the public, and guard against so great a destruction of life and property."

One of the clearest descriptions of the destruction of an early steamboat was written by Charles Cist, Collector of Customs at Cincinnati. In 1848 he wrote an account of the explosion of the Moselle which he had witnessed 10 years before. The Moselle was a new boat, had made two or three trips, up to that period among the quickest ever known, and the captain, Perine, a young man ambitious of acquiring and maintaining a reputation for beating every boat in that trade. She had taken her cargo and most of her passengers at the public wharf, and although crowded with the latter, passed up to the lower ship yards, just at the upper edge of Cincinnati, to take in another party of emigrants with their effects, from a raft that lay there. The Moselle was not a large boat, but having four boilers, had great power. With her reputation for speed she had become crowded, with eighty-five deck passengers, of whom a large share were Germans emigrating west. These, with the crew, some thirty, made an aggregate of two hundred and eighty. The probability is,

that there were a few more who escaped notice, as they did record, in the brief space which intervened before the tremendous explosion which followed and the final gathering on board.

The bow of the boat was shoved off, and at the second or third revolution of the wheel an explosion ensued, which destroyed every part of the upper works as well as the machinery of the boat. The hull drifted a considerable distance, and was landed just below the city water works, where it sunk a perfect wreck. The passengers were unhappily on deck and especially, as is usual, forward, as affording the broadest platform, and were immediately over the boilers. More than two hundred human beings of all ages and conditions were instantaneously projected a prodigious distance in the air.

There can be little doubt that the cause of this explosion was simply the subjection of the boilers to inordinate pressure. It was ascertained that she came up to the raft under a steam pressure of a hundred and twenty-five to a hundred and fifty pounds to the square inch. She lay there with boilers closed and a furnace as hot as dry wood could make it, for twenty minutes or more. This must undoubtedly have more than doubled that pressure. There can be no dispute of the quality of the iron. Pieces of the boilers may still be seen in the Cincinnati museum, which determine the fact that the iron drew out to half its thickness before the fracture took place.

The first engineer, Madden, was well known to be one of the most reckless men in that capacity on the river, and had been drinking freely before coming on board, just as the boat started from the dock. He, too, shared the feeling of the captain, that no boat should be suffered to pass the Moselle, and there can be no doubt that the steam was suffered to accumulate for the purpose of making a meteor-like transit by the public wharf, which had to be passed on the way to St. Louis.

Obviously the accounts of these explosions were spectacular enough so that they appeared in the daily press. In fact the burning of the steamboat Lexington on Long Island Sound in 1840 was the occasion for the publication of the first illustrated extra in history. This extra edition of the New York Sun was headed, "Awful Conflagration of the Steamboat Lexington" and was published by N. Currier of Currier & Ives fame.

This publicity aroused public opinion to the point that laws were passed in 1838 and again in 1843 which were intended to reduce the hazards of steamboat travel.

The law passed on July 7, 1838, provided for the appointment of inspectors by district judges. It listed the duties and fees for these inspections, and explained the type of certificate to be issued when a boat was approved.

The law provided that the inspection should be at regular intervals, and there was one specific provision i.e., that the safety valves of all vessels should be opened during the time that the vessel was not moving.

The enforcement of this law was based on a ~~sentence~~<sup>charge</sup> of manslaughter against the officers of the vessel when death occurred from negligence. Since the law provided that any accident was prima facie evidence of negligence, it was generally felt that enforcement of this provision of the law was too harsh.

The act of 1843 provided that ropes should be eliminated in the steering of the vessel and chains substituted. This was brought about by the failure of the steering apparatus on steamboats in case of fire.

Soon after the law was passed there were numerous suggestions as to how it could be improved. Actually the law itself was not changed but the steamboat inspection service created in 1838 brought about the gradual modification of the enforcement of the law. As a result the safety of steamboat travel increased and the number of explosions became less and less. For many years we continued to have serious explosions but the number of such accidents diminished each year.

In checking the most serious disaster in the history of American travel, we can not but be impressed by the destruction of the Sultana ~~by~~ an explosion on the Mississippi which occurred on April 27, 1865. As a result of this explosion, 1450 lives were lost, mostly exchanged Union prisoners of war. Details of this accident are very meager even in contemporary literature. All the newspapers at that time were taken up with the death of President Lincoln and as

Booth was shot the day before the Sultana exploded, it was not surprising that nothing appeared in the papers about the disaster.

Although the General Slocomb burned in 1904 and the Empress of Ireland was sunk in collision in 1914, each with very heavy losses of life, the destruction of steamboats due to boiler explosions had become so rare that on July 16, 1946 the Bureau of Marine Inspection and Investigation was abolished.

We have seen above how fatal accidents have been eliminated where Government regulation can control the operation of methods of travel. This brings up the question of why over 35,000 annual deaths caused by private automobiles <sup>are</sup> ~~is~~ not reduced.

The situation has been well described by Captain W. L. Groth, Deputy Administrator, Governor's Highway Safety Committee. He recently made the following statement:

"A strong accident factor, perhaps the strongest, is the moral attitude of the public. Because a proper ethical code for driving and walking has never been accepted, the reckless, irresponsible or drunken driver suffers no social disrepute. He can saturate his brain with alcohol and become a deadly menace on the highway, yet, in the eyes of the very people whose lives he endangers, he suffers far less social disrepute than if he were arrested staggering along the sidewalk. Should an individual deliberately handle a pistol carelessly or leave a fire untended close to his neighbor's house and refuse to remedy the situation upon request, the neighbor would have no hesitation in calling the police and it is safe to say that diplomatic relations between the complainant and arrestee would be somewhat strained.

Let the same offender tear down a residential street at 50 and not one word will be said, not only to him but to the police. This stands in the face of the marked disparity in deaths caused by the three agents.

It is my belief that public opinion has not yet been aroused to a point where the individual is ready to sacrifice any of his so-called rights for the general good.

As an example of this there are methods of clocking the speed of an automobile by radar with remarkable accuracy. Yet, to my knowledge, few states permit an arrest for speeding unless an officer has followed a car for a specified distance.

There are a few simple laws which if passed and properly enforced would save thousands of lives in this country.

1. Revision of the speed law requirement that an officer actually follow a speeding car.
2. Complete elimination of irresponsible drivers including minors.
3. More careful inspection of the condition of cars allowed on the highways. It is to be noted that Virginia is far ahead of other states in this requirement.
4. A requirement that all drivers be financially responsible for the damage they cause either through insurance or by posting bond.
5. Elimination of the widespread habit of drivers getting out on the left of their cars in the middle of the street.

Until the American public is ready to accept controls such as those outlined above, the automobile will continue to be a greater killer than the wars of this nation.