

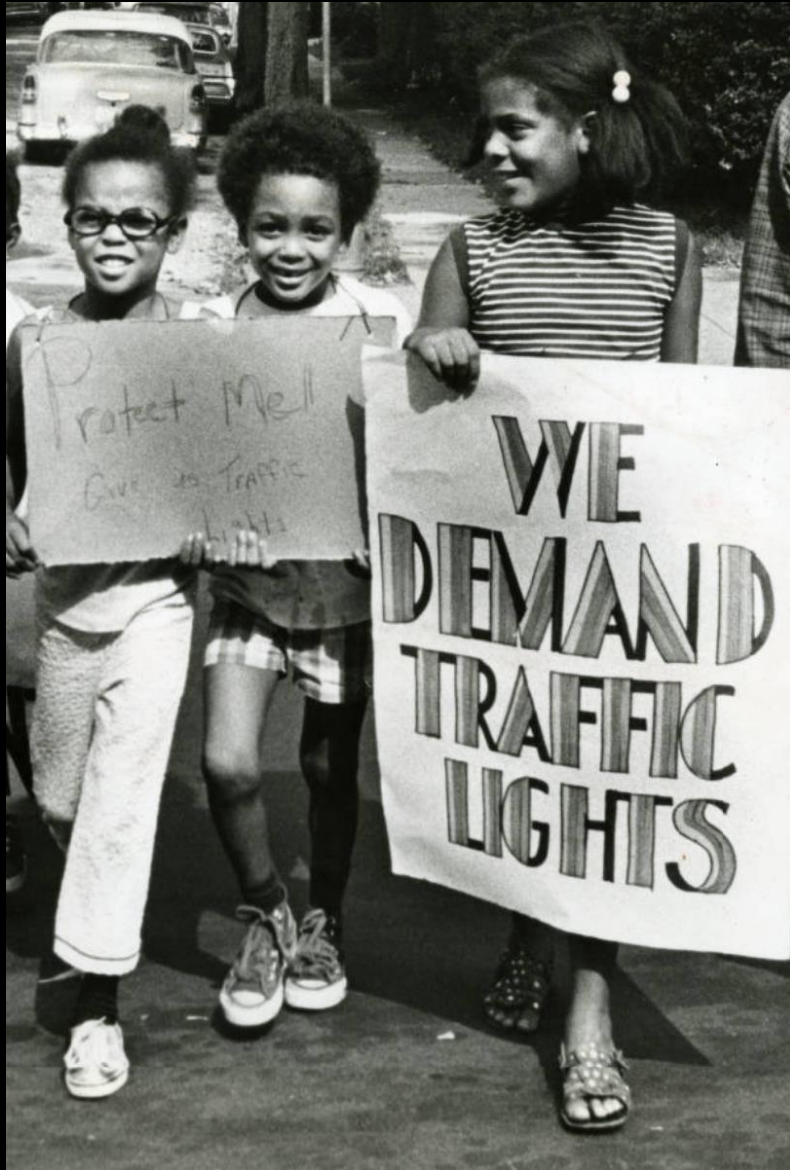
# Autonorama

## *A contrarrevolução perpétua*

Peter Norton  
Department of Engineering and Society  
University of Virginia

[norton@virginia.edu](mailto:norton@virginia.edu)

São Paulo  
October 24, 2023



Phila. Evening Bulletin, Sep. 28, 1972 / Temple Univ. Libraries

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The streets are for all conditions of persons. (*McIntyre v. N. Y. Central R. R. Co.* 37 N. Y. 538.)

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*Schierhold v. North Beach and Mission Railroad Co.*  
(1871)

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— E.J. Mehren, *Engineering News-Record*, Nov. 9, 1922.

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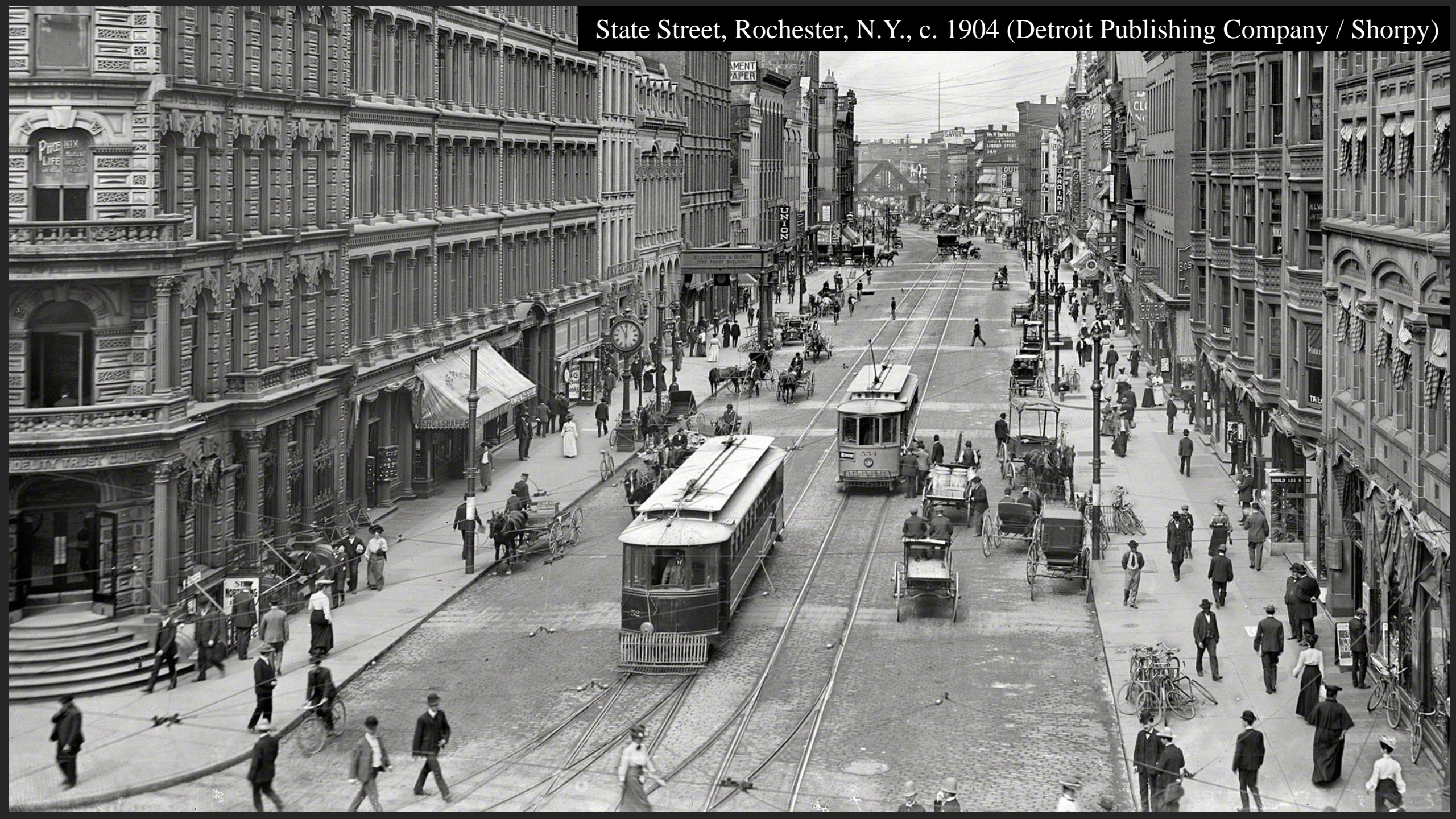
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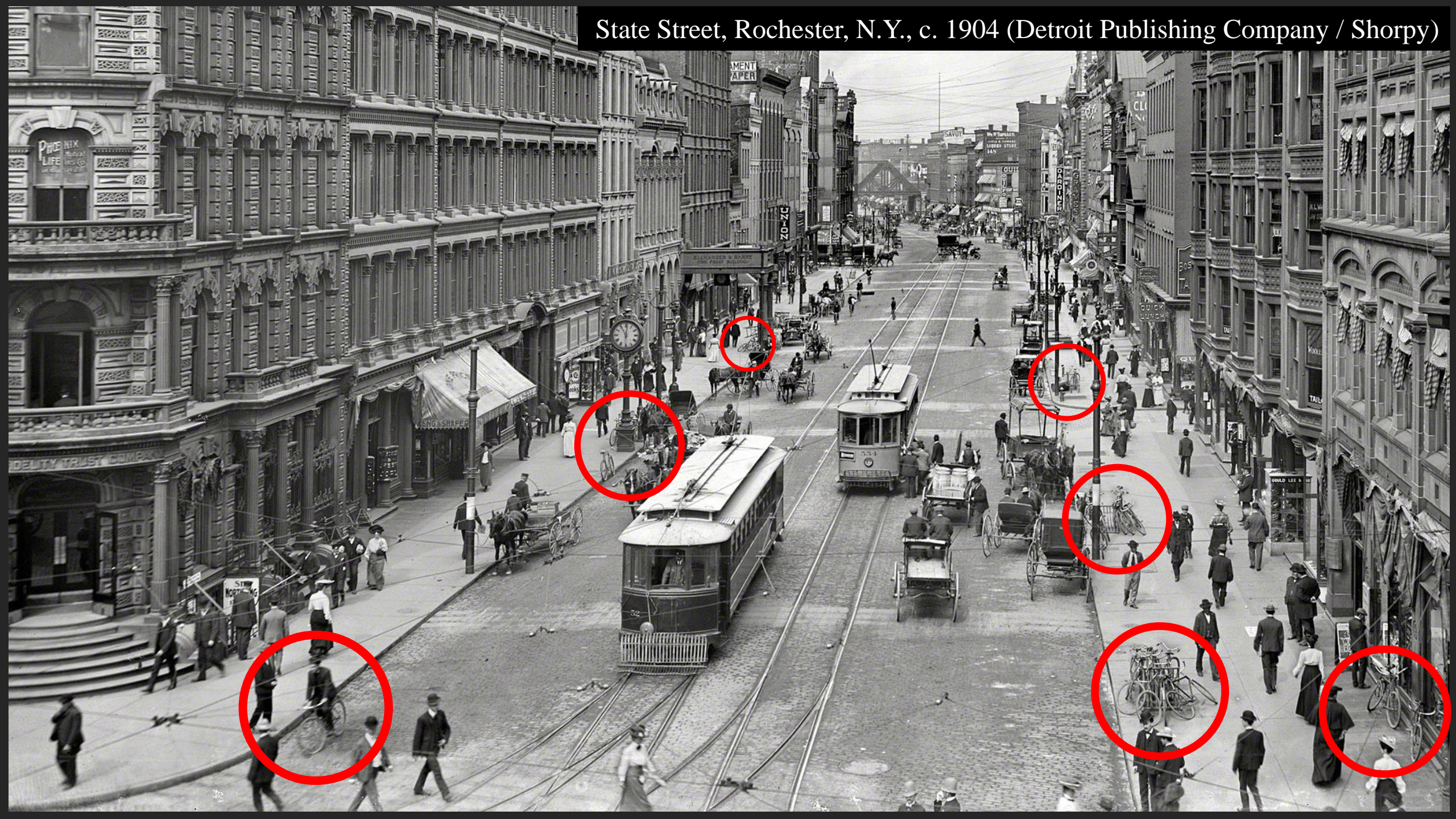
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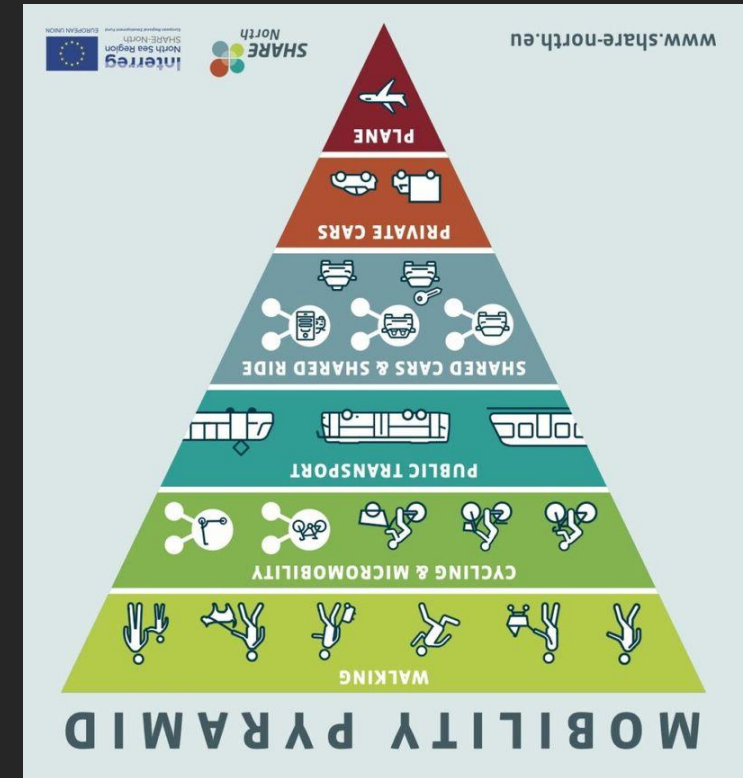
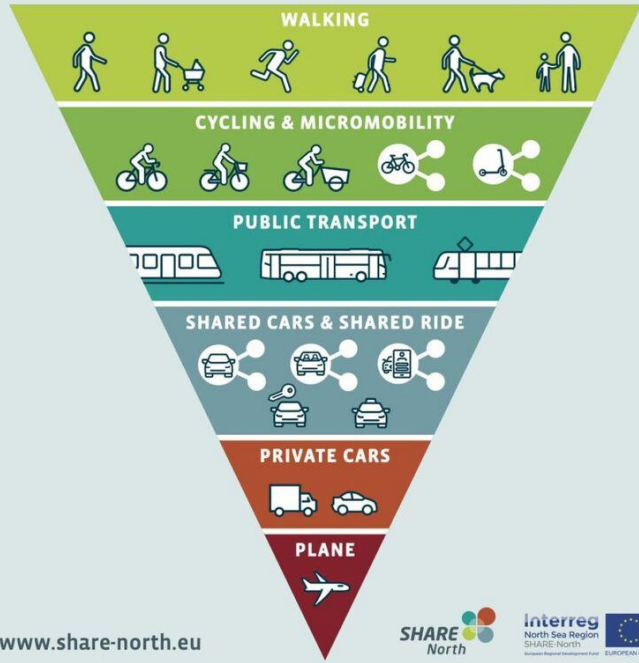
State Street, Rochester, N.Y., c. 1904 (Detroit Publishing Company / Shorpy)

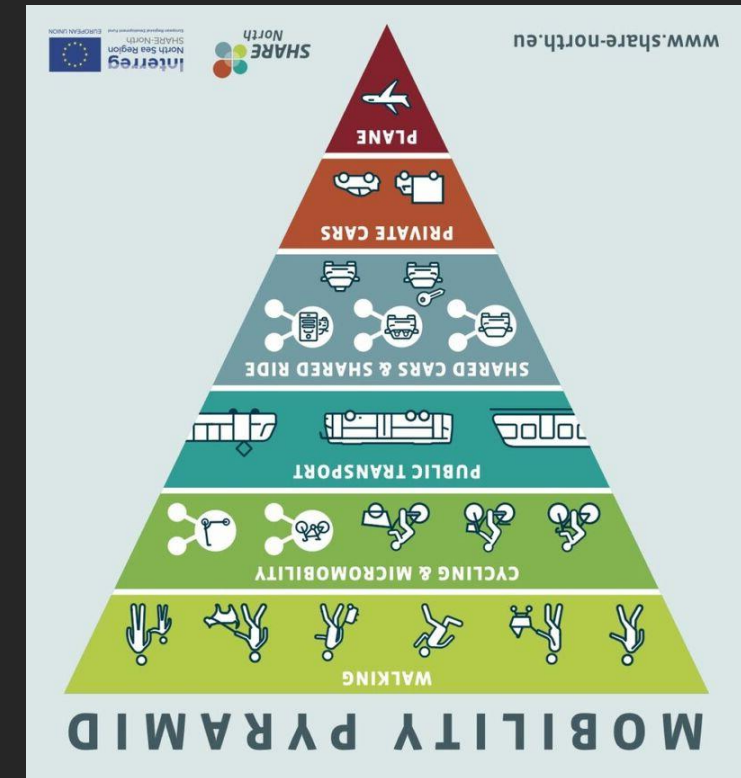
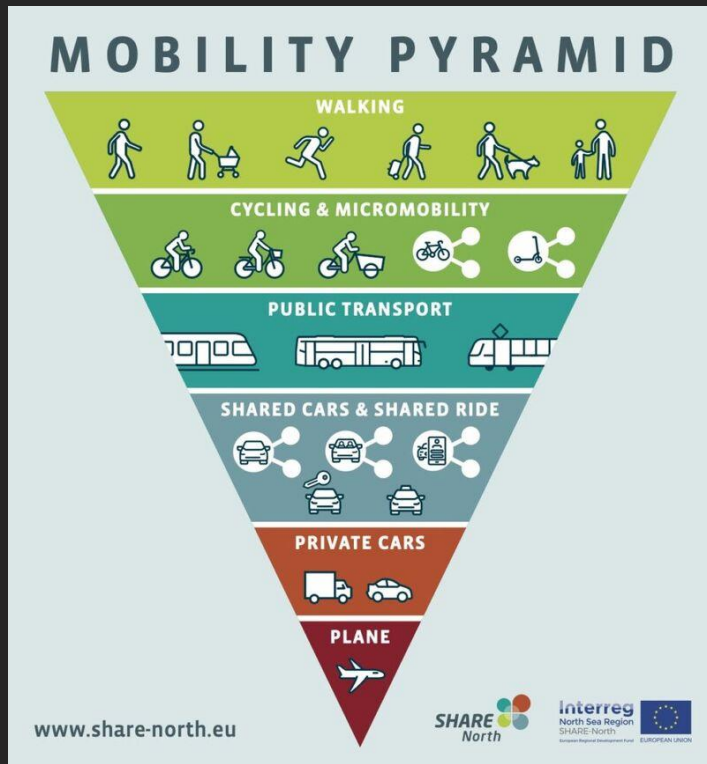


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# MOBILITY PYRAMID



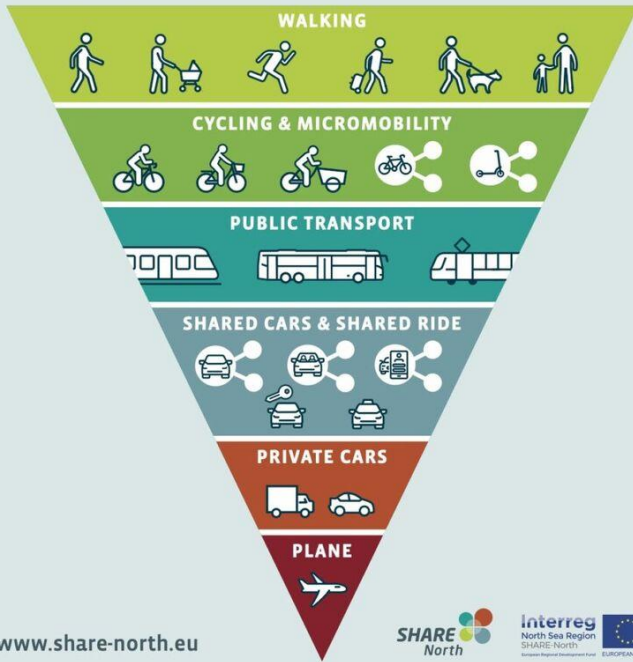


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# ENGINEERING NEWS-RECORD

DEVOTED TO CIVIL ENGINEERING  
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R. J. MEHRMAN  
Editor

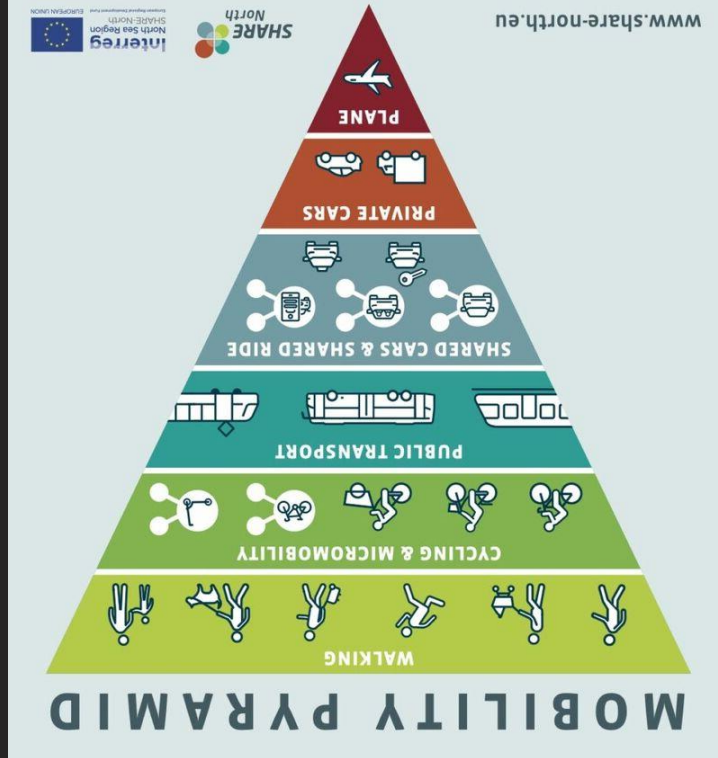
Volume 89

NEW YORK, NOVEMBER 9, 1922

Number 19

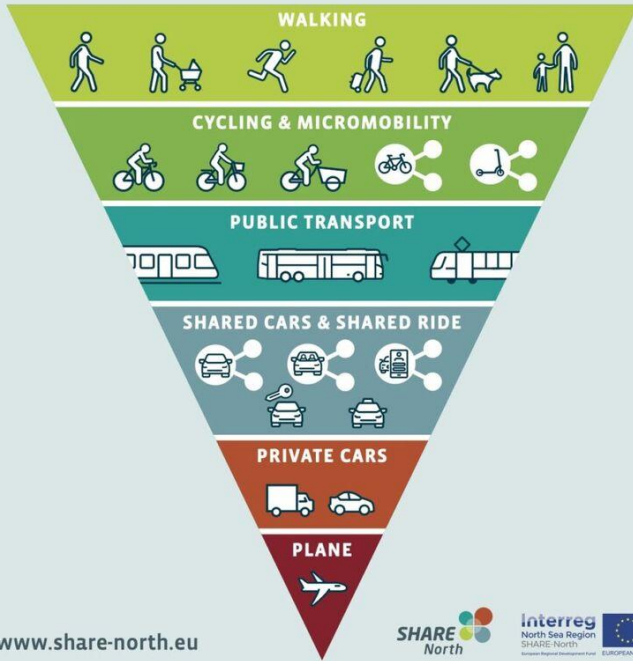
## Motor Killings and the Engineer

IN the year 1921, the Bureau of the Census announces, 10,168 deaths from accidents caused by four-wheeled motor vehicles occurred within the registration area of the United States, which contains about 82 per cent of the population. This is a death rate of 11.5 per 100,000, an increase of 28 per cent over 1917. Further than that, the increase in rate is itself increasing from year to year, and the rate in the sixty-five largest cities averages about 15 per 100,000. These are alarming statistics. Couple with them the statement just made by Chief Magistrate McAdoo of New York City, that before long all of Manhattan below 14th St. will have to be one-way streets barred to pleasure vehicles, and that there are 2,000 unprotected crossings in the city where policemen are needed, and the seriousness of the motor traffic problem will be realized. Part of the trouble is due to the laxity of the driver license requirements, part to the carelessness of drivers and their common assumption of superior right-of-way over the pedestrian at crossings, but mostly it is the inevitable result of an increase of motor use far beyond the capacity of a city street system laid out for slow moving traffic in small volume. There is little chance of this motor use decreasing or even of remaining stable. Driver and traffic regulations can only remove a part of the difficulty. The obvious solution, then, lies only in a radical revision of our conception of what a city street is for, and this reduces to a problem for the engineer. Motor boulevards, second-story streets, under or over crossings for pedestrians, all are probabilities of the near future in our congested centers and engineers responsible for our city developments must take account of such things as actualities and not as dreams.





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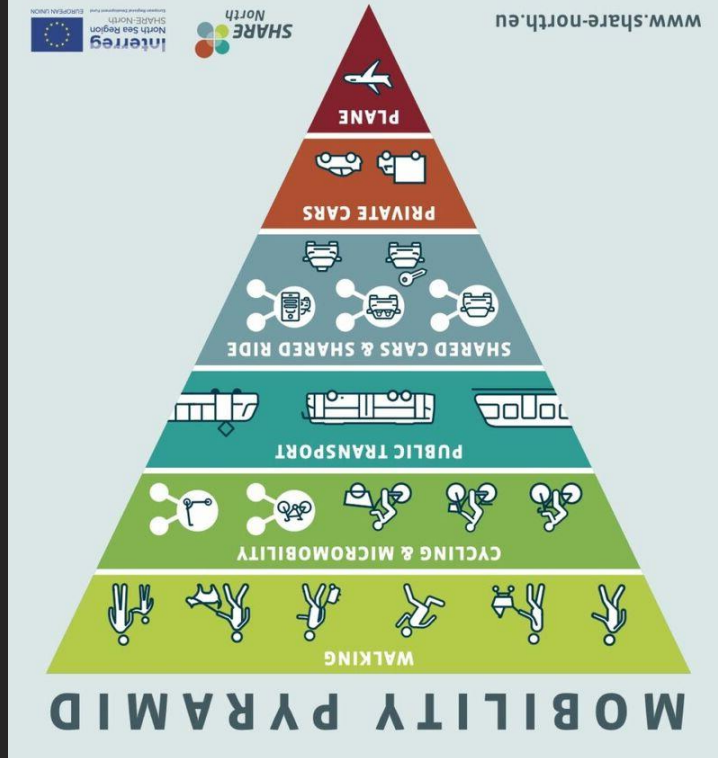
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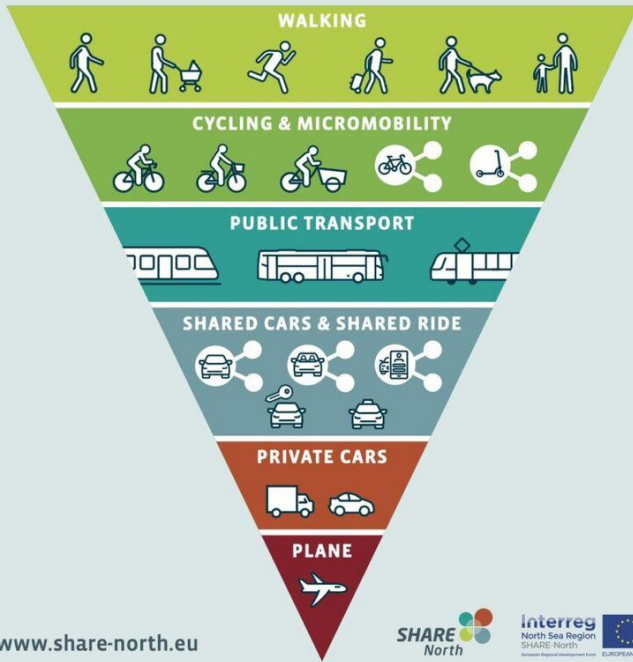
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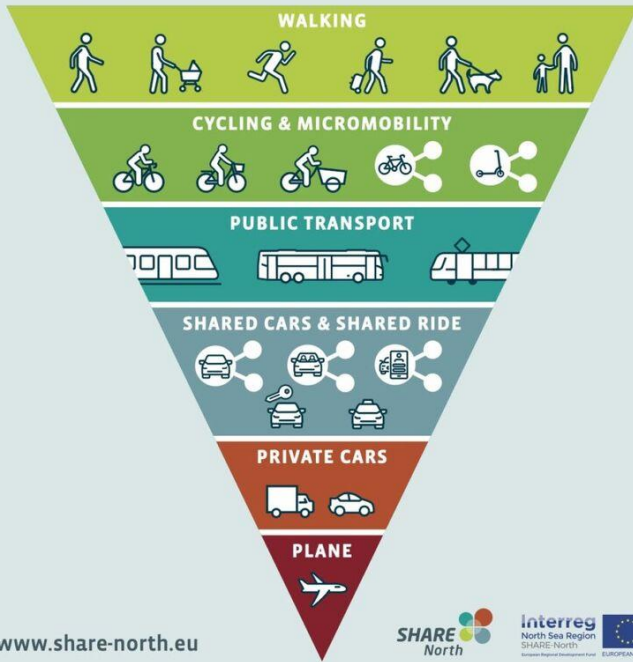
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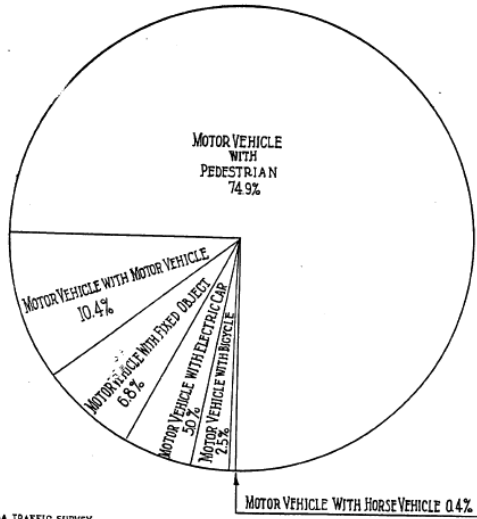
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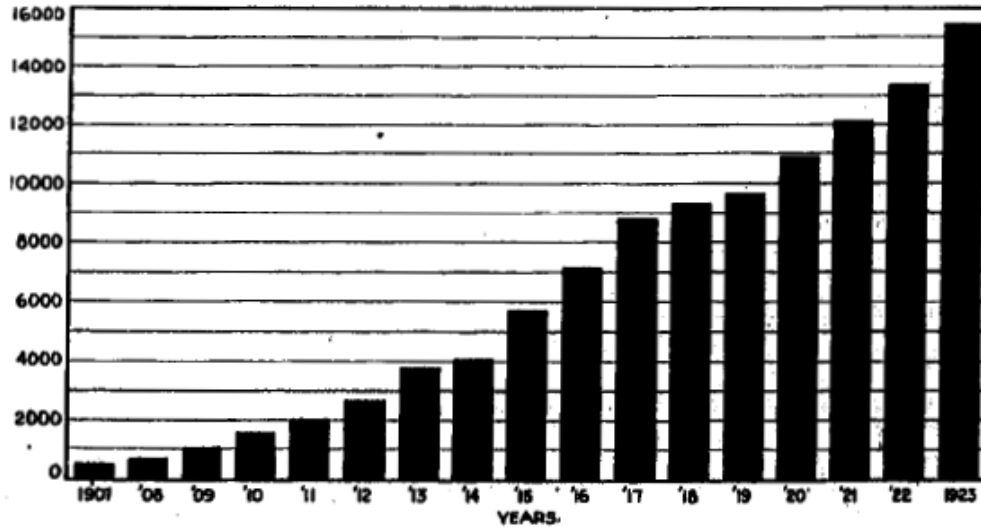
DEATHS DUE TO MOTOR VEHICLES  
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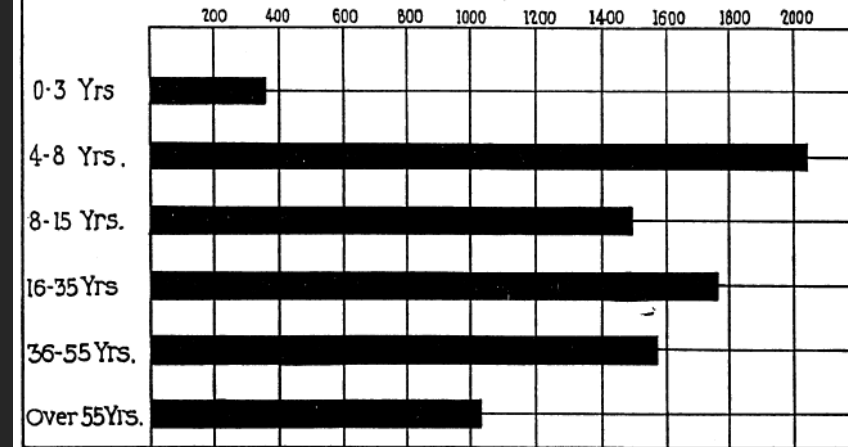
PHILADELPHIA TRAFFIC SURVEY  
PREPARED UNDER THE DIRECTION OF  
MITTEN MANAGEMENT INC.  
PHILADELPHIA, PA.

Compiled from Phila. Police Dept. Records

### GROWTH IN NUMBER OF AUTOMOBILE FATALITIES IN THE UNITED STATES



VEHICULAR ACCIDENTS BY AGE GROUPS OF PEDESTRIANS  
CITY OF PHILADELPHIA  
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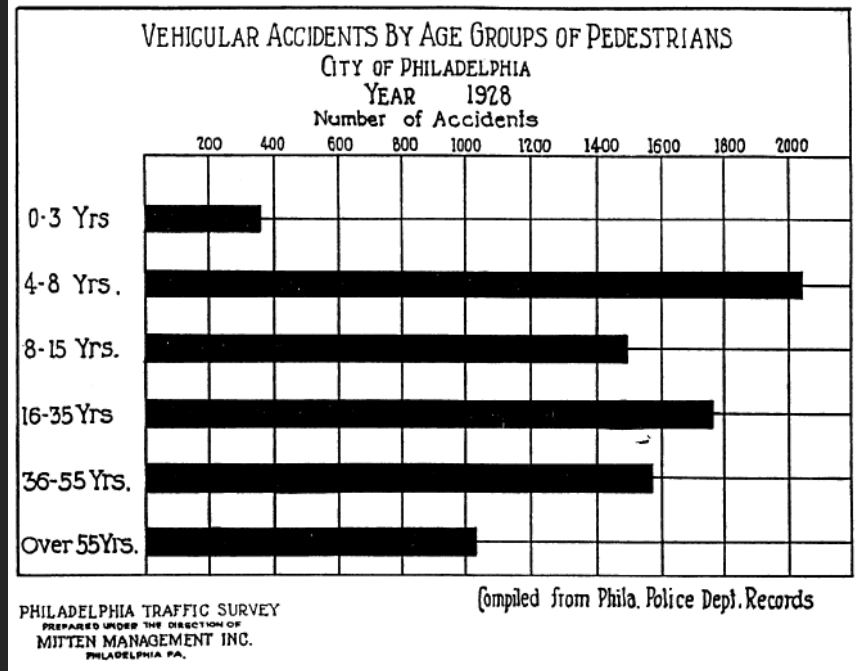
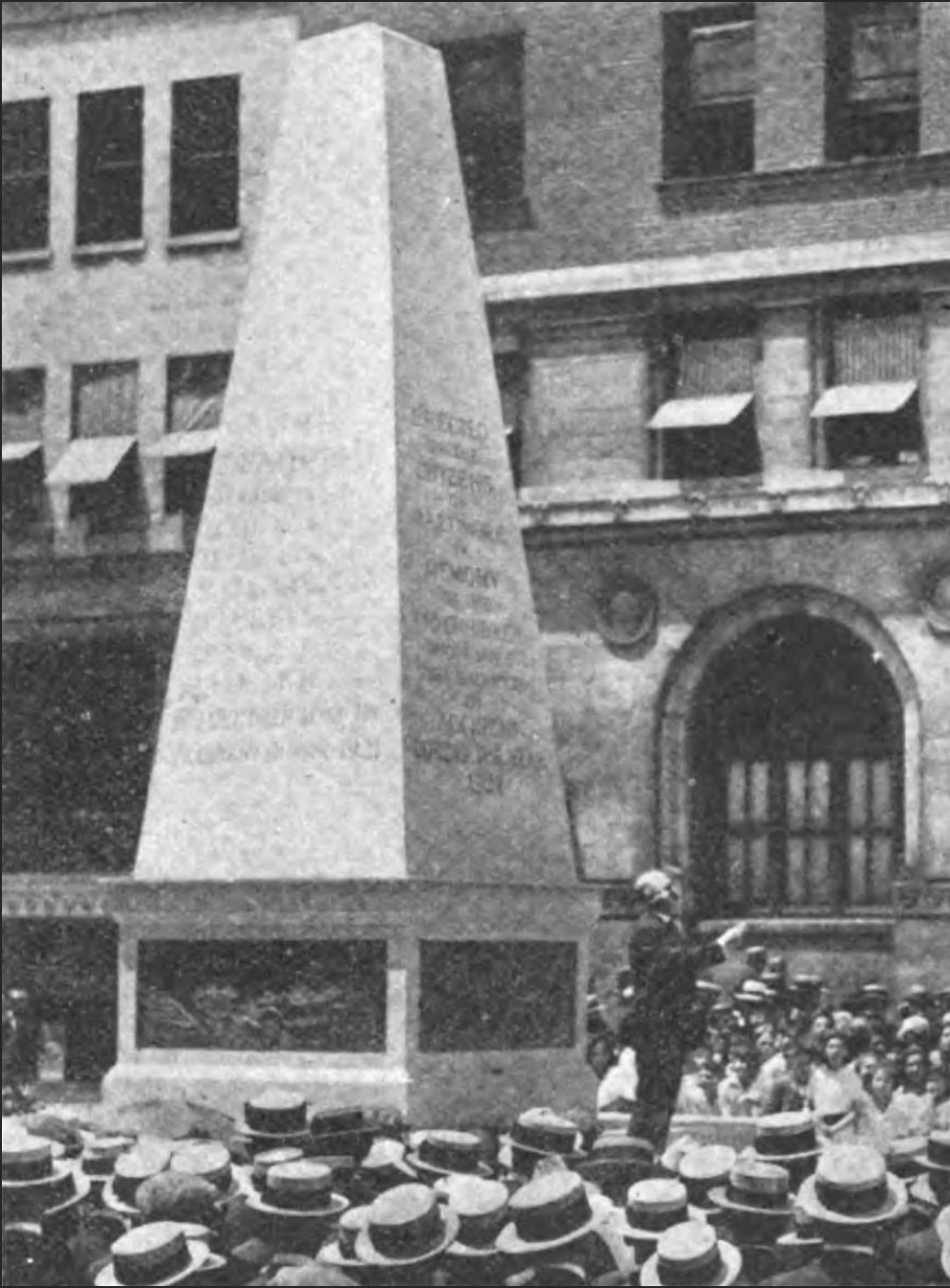
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Mitten Management, 1929

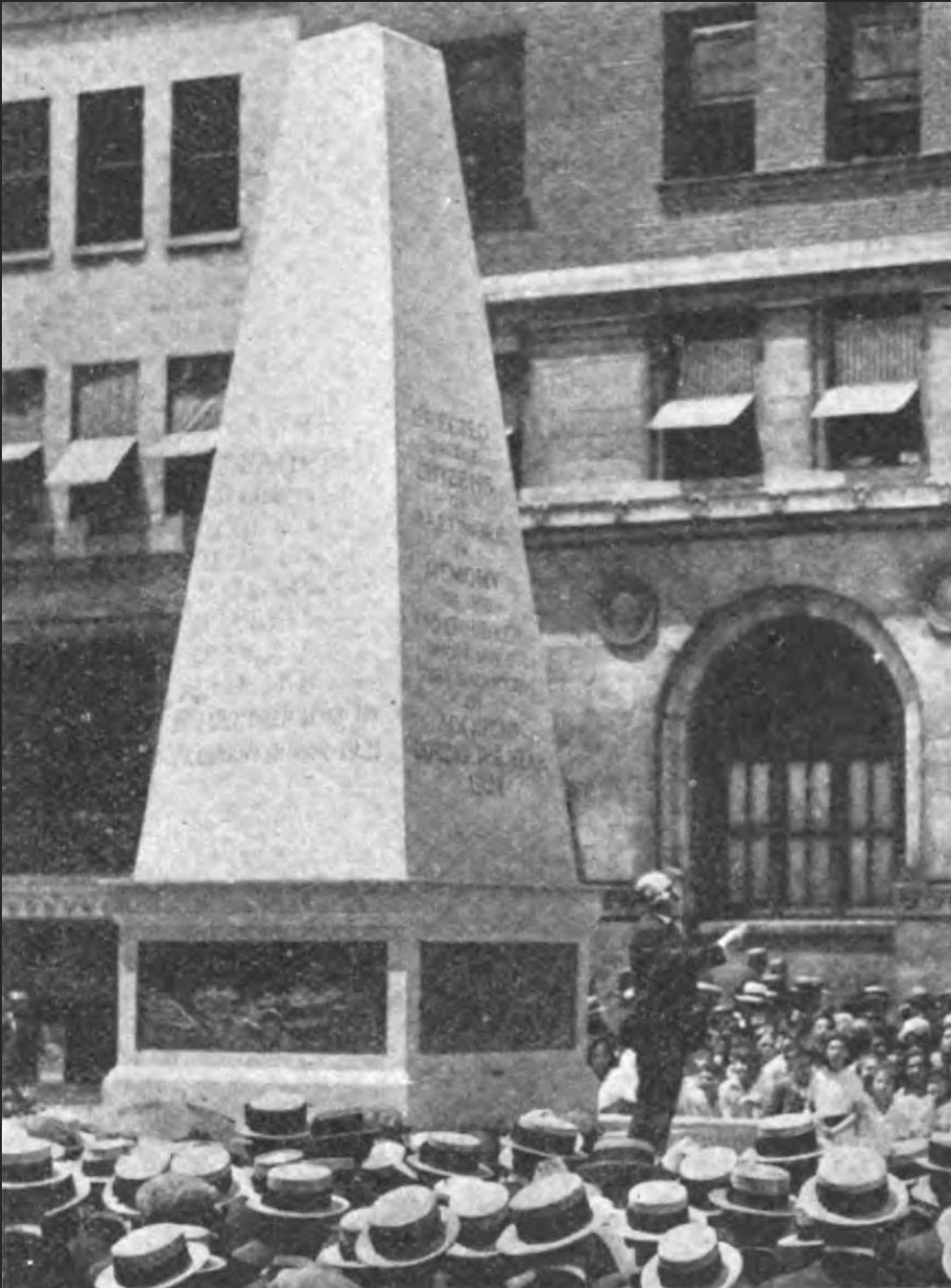
Journal of American Insurance, Nov. 1924 / NSC

Mitten Management, 1929

National Safety News, Aug. 1923



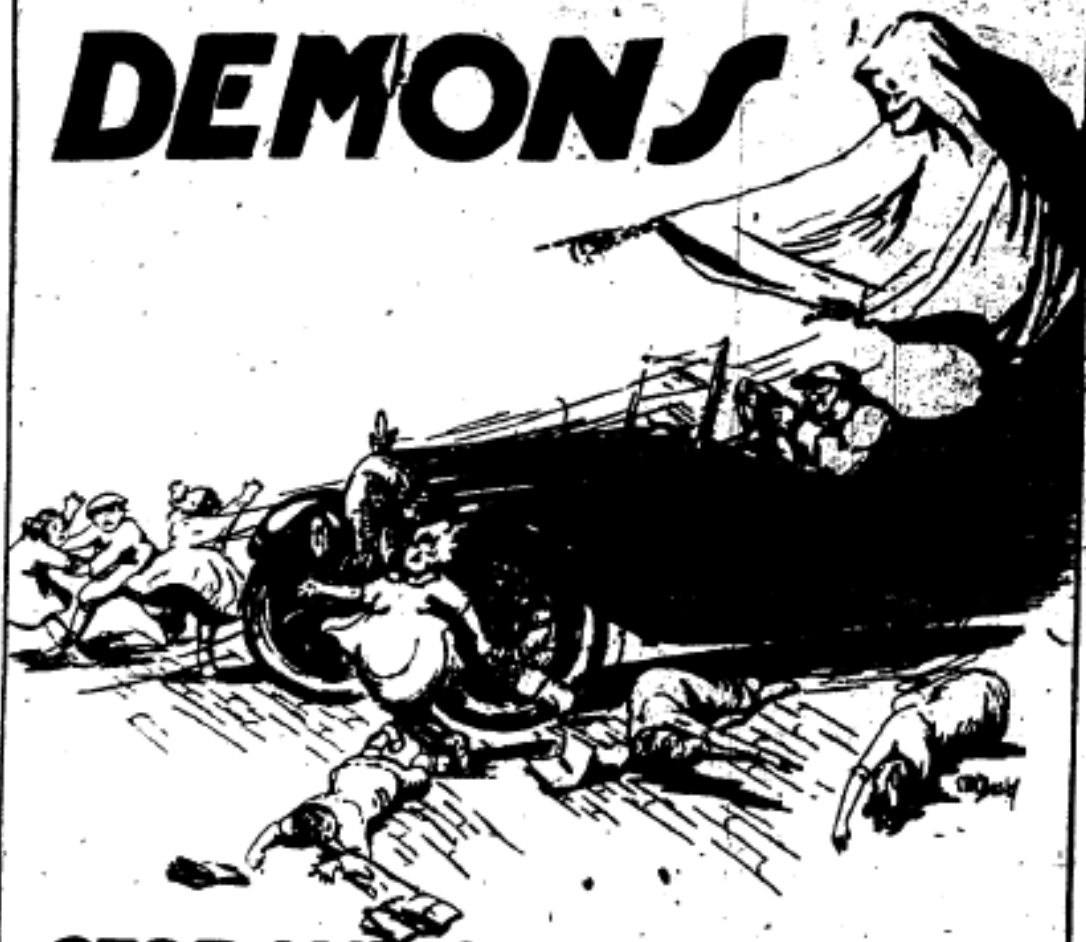
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**This Mother Is Teaching the Most Important Safety Lesson to Her Children**

# **SPEED DEMONS**



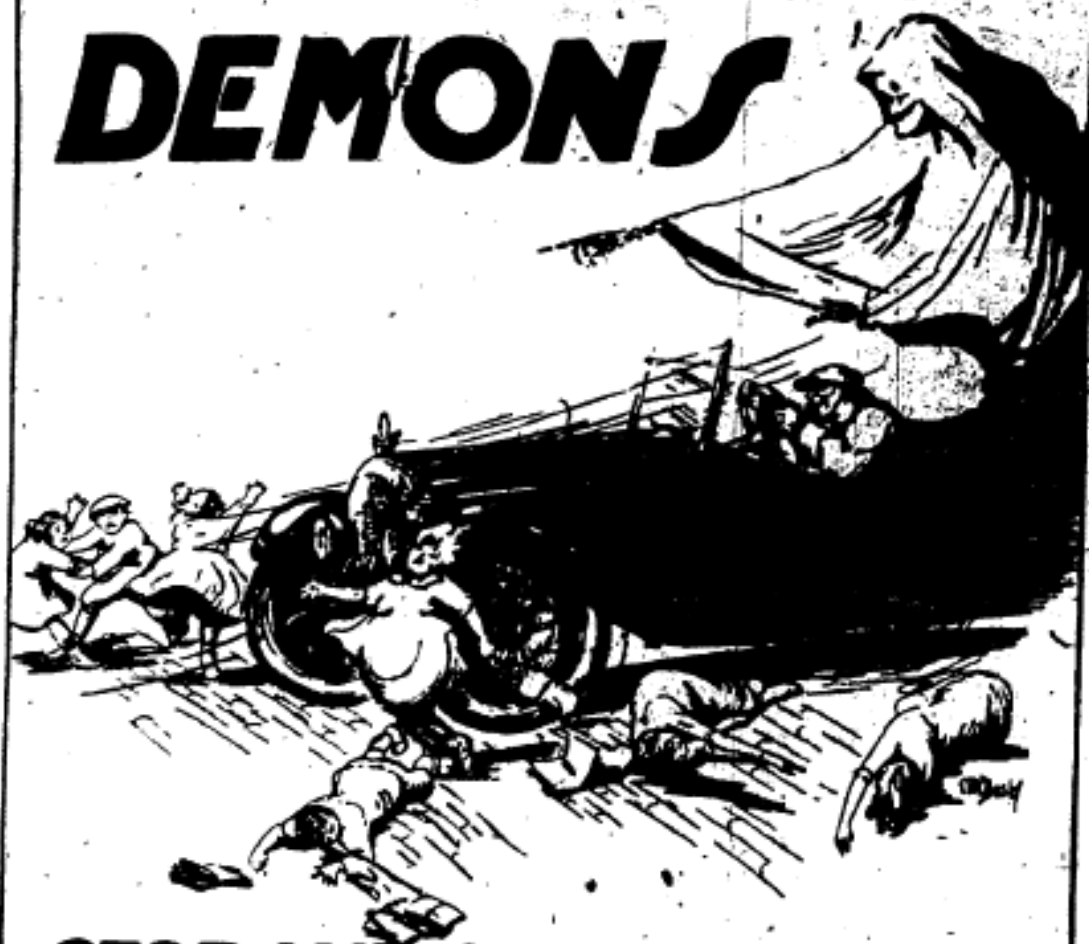
**STOP, AND CONSIDER OUR  
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# **SPAWD**



*— a menace  
to life and limb*  
**STOP IT!**



**VOTE "YES"**

**On the Ordinance to Curb Speeding**

*Which Shall* A Limit of 25 Miles Per Hour and SAFETY  
*It Be---* or

No Limit and the Lurking Danger  
of DEATH!

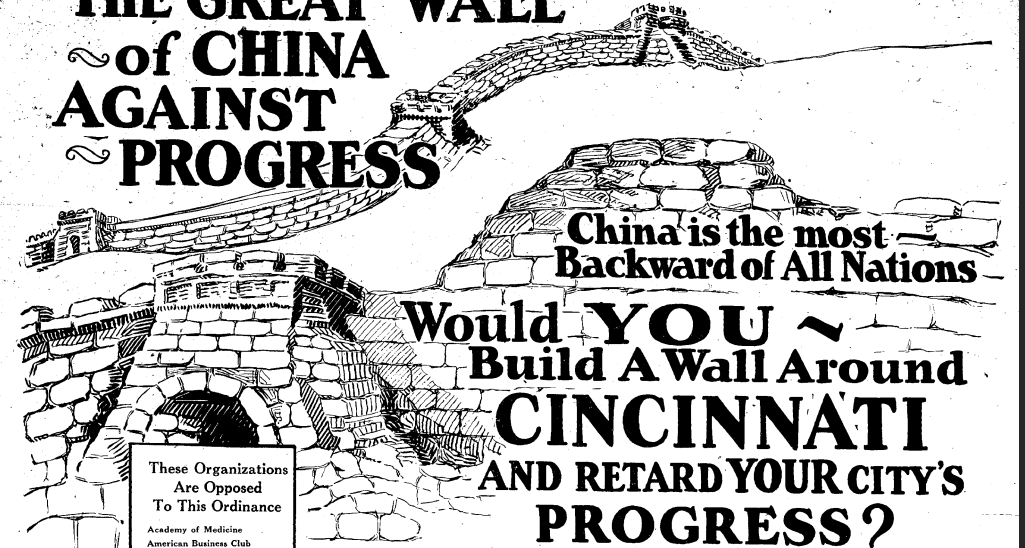
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# THE GREAT WALL of CHINA AGAINST PROGRESS



China is the most  
Backward of All Nations

Would YOU  
Build A Wall Around  
**CINCINNATI**  
AND RETARD YOUR CITY'S  
**PROGRESS?**

**Defeat the Motor Governor Ordinance**  
It Will NOT Curb, Reckless Driving!

**These Organizations  
Are Opposed  
To This Ordinance**

- Academy of Medicine
- American Business Club
- Business Men's Club
- Central Labor Council
- Cincinnati Automobile Club
- Cincinnati Automobile Dealers' Association
- Cincinnati Automotive Trades Association
- Cincinnati Chamber of Commerce
- Cincinnati Motor Club
- Cincinnati Retail Merchants' Association
- Cincinnati Team and Motor Truck Owners' Association
- Cincinnati Association
- Fairview Civic League
- Federated Civic Association
- Industrial Association
- Merchants and Manufacturers' Association of Cincinnati
- Seventh Street Business Men's Association

These are the things that will happen if the use of the so-called Motor Governor is made compulsory:

- 1—Accidents will increase
  - (a) Because the motorist is deprived of full control of his machine.
  - (b) Because the careless motorist will be given a false sense of security thus being privileged to drive at the rate of 25 miles an hour.
  - (c) Because traffic congestion would be increased, thereby endangering pedestrians.
  - (d) The loss of business to Cincinnati will be enormous, for the ordinance builds a wall around the city excluding every motor car city and make Cincinnati the butt of national ridicule.
- 2—While the Police Department already crippled, are devoting their time to the enormous task of sealing and inspecting their devices on 50,000 automobiles, the city will be wide open to the criminal elements.
- 3—The enforcement of the ordinance will cost the taxpayers approximately \$250,000 a year.

- 4—If the governor should get out of order—and this is liable to happen every time an automobile goes over a bump—the owner will be sent to jail without the benefit of a trial—a violation of the fundamental principles of American justice.
- 5—The manufacturers of motor governors will get wealthy overnight. Automobile owners will be compelled to pay them between \$25 and \$100 for each device—a matter of over \$1,250,000. THE CITY WILL NOT GET ONE CENT OF THIS MONEY.
- 6—Even if the ordinance is adopted, the careless driver would still be with us—AND CARELESS DRIVING IS THE CAUSE OF MOST ACCIDENTS.

The Motor Governor Ordinance will not offset or cure these facts:

- That the largest number of accidents occur when the auto is traveling at a speed of less than 20 miles an hour. (The Governor Ordinance permits 25 miles.)
- That it is easy for anyone with slight mechanical knowledge to tamper with the device between inspection periods.
- Automobile governors are not new. If they were successful every automobile would carry a governor as part of its standard equipment today. They are easily got out of order—are worthless on hills—dangerous in emergencies and absolutely unnecessary.

**Present Laws Are Adequate**

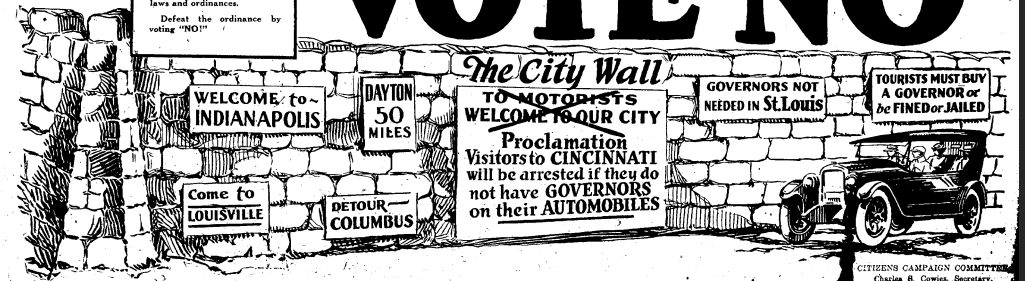
The laws and ordinances we have now are adequate to curb not only speeding, but what is more important—careless, reckless driving.

The cure for speeding and careless driving is strict enforcement of these present laws and ordinances.

Defeat the ordinance by voting "NO!"

Do Not Help To Build a Chinese Wall Around Cincinnati  
Let's Make It Unanimous and—

# VOTE NO

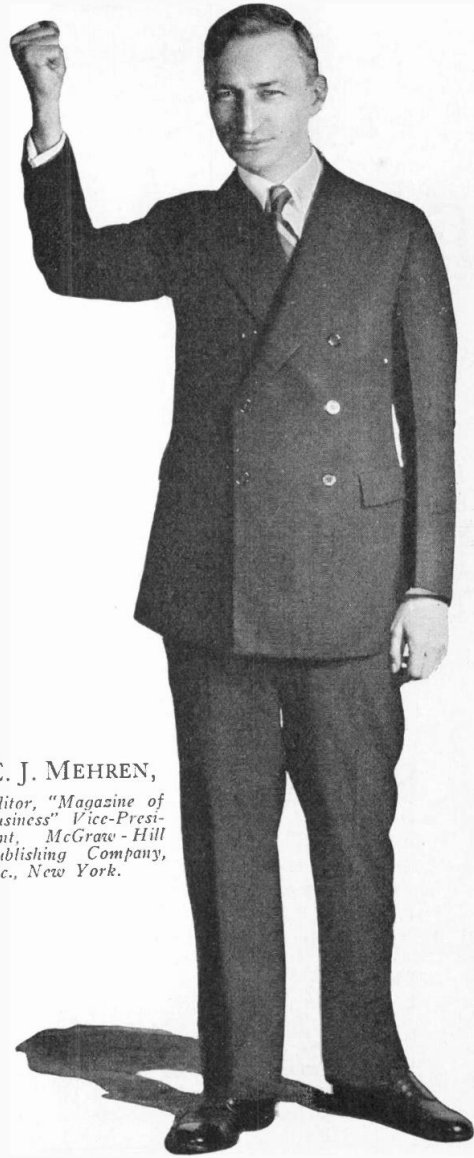


CITIZENS CAMPAIGN COMMITTEE  
Charles B. Conner, Secretary

## VOTE "YES"

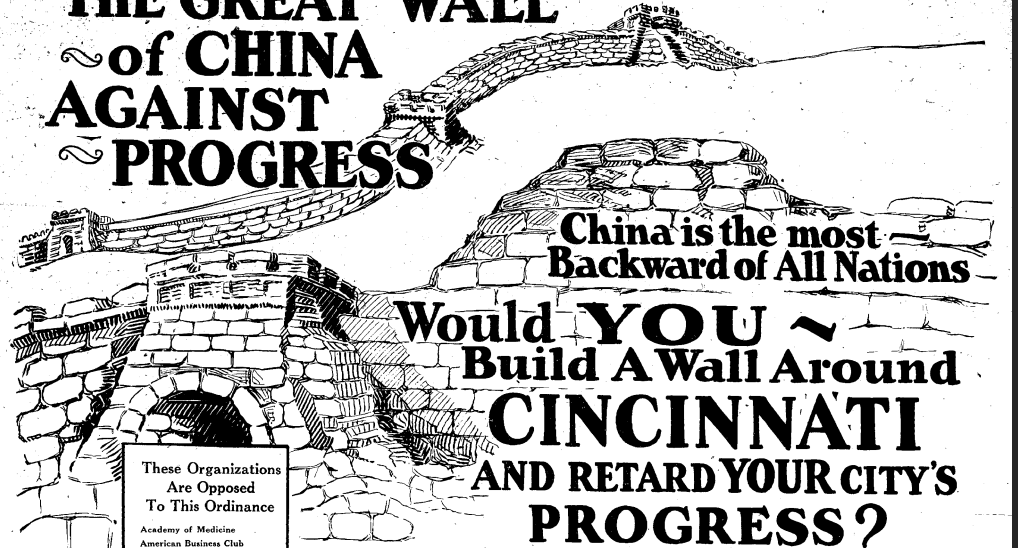
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*Insurance experts believe that accidents will increase if the ordinance should pass. And, therefore, are anticipating an increase in rates.*

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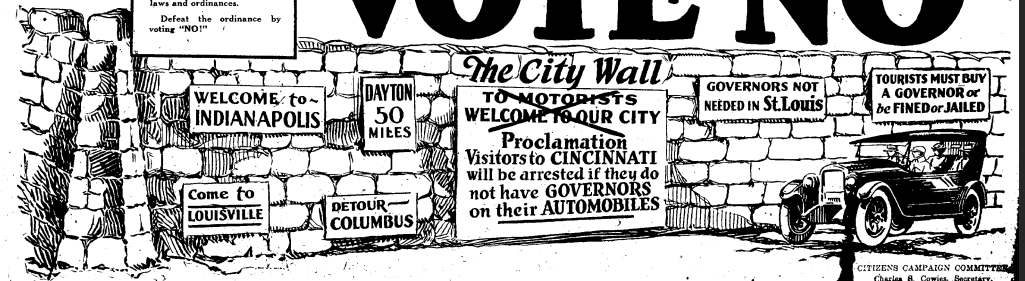
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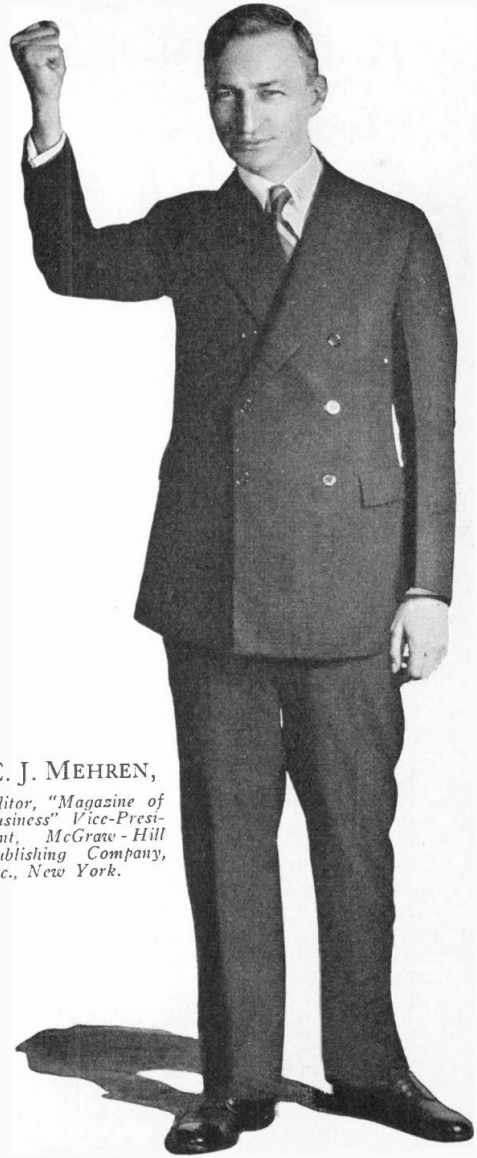
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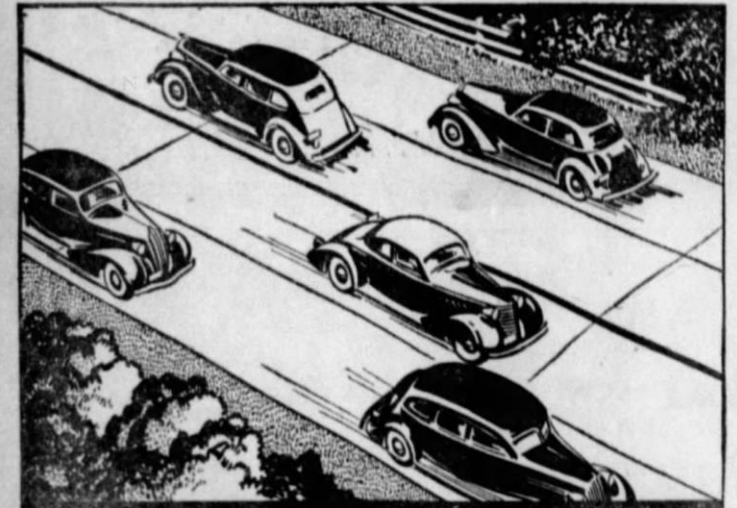
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CITIZENS CAMPAIGN COMMITTEE  
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E. J. MEHREN,  
Editor, "Magazine of  
Business" Vice-President,  
McGraw-Hill  
Publishing Company,  
Inc., New York.



WIDEN YOUR  
ROADS WITH **CONCRETE**

**RELIEVE CONGESTION  
SPEED TRAFFIC  
INCREASE SAFETY**

**N**O community today can afford narrow, congested roads and streets.

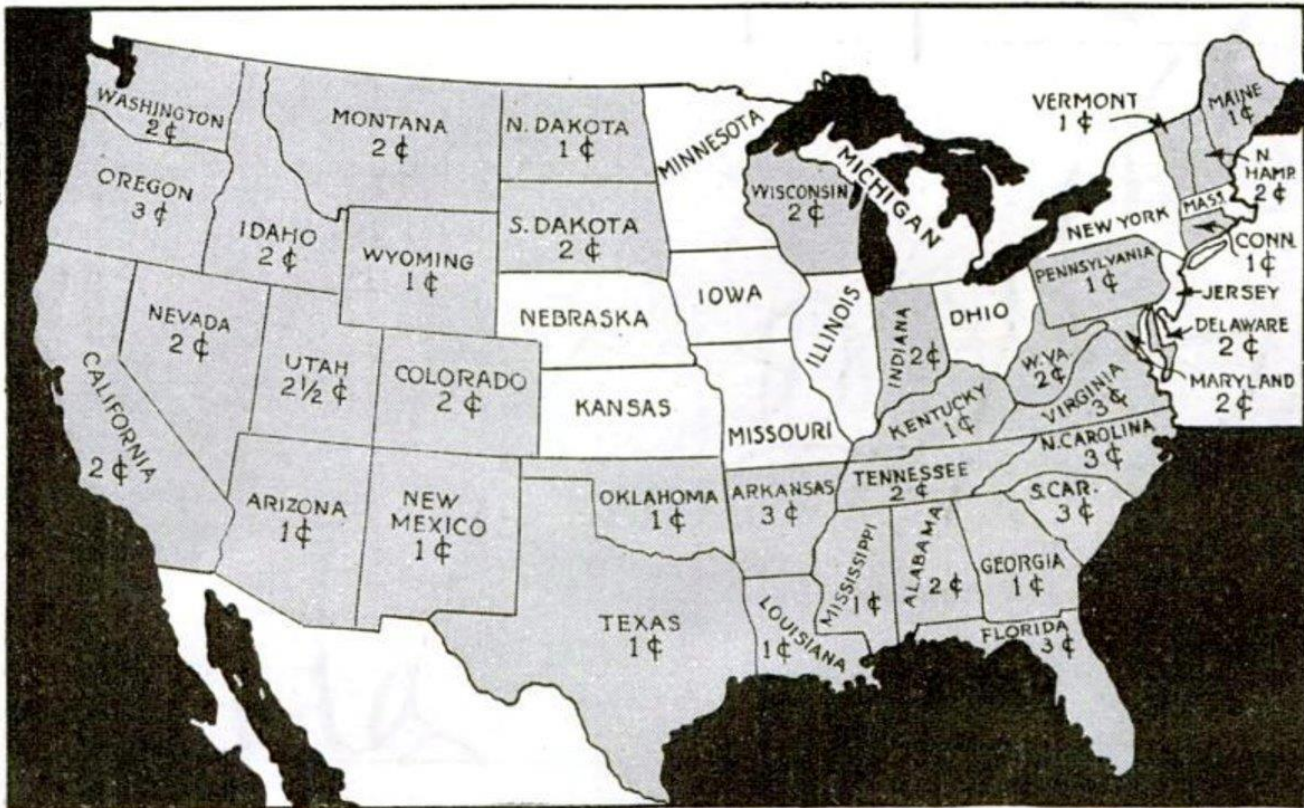
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Whether you build new roads or widen old, be sure to demand concrete—the safest and most economical pavement for modern traffic.



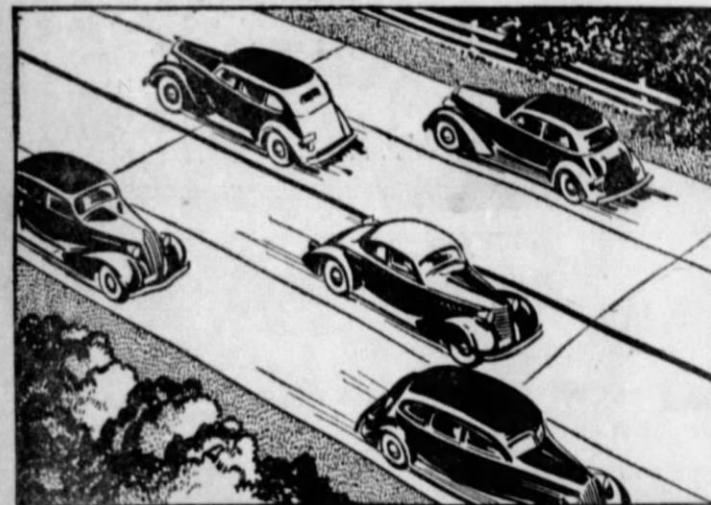
**PORTLAND CEMENT ASSOCIATION**

30 W. Broad St., Columbus, Ohio



Shaded portions show the 36 states that have gasoline taxes, and the rate in each case

*Popular Science, Jan. 1925.*



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NATIONAL CONFERENCE  
ON STREET AND HIGHWAY SAFETY

REPORT OF THE  
**Committee on Measures for the  
Relief of Traffic Congestion**

APPOINTED BY  
THE SECRETARY OF COMMERCE



Committee on Measures for the Relief of Traffic Congestion  
E. J. MEHREN, Vice-President, McGraw-Hill Publishing  
Company .....Chairman

WASHINGTON • D C • MAY 1, 1930



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INCREASE SAFETY**

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Today's swollen traffic clamors for "elbow room." The practical answer is to widen crowded roadways with concrete. Restores normal speeds. Eliminates congestion. Provides ample room for passing. Saves countless hours. *Increases safety.* And wider roads boost business.

Whether you build new roads or widen old, be sure to demand concrete—the safest and most economical pavement for modern traffic.



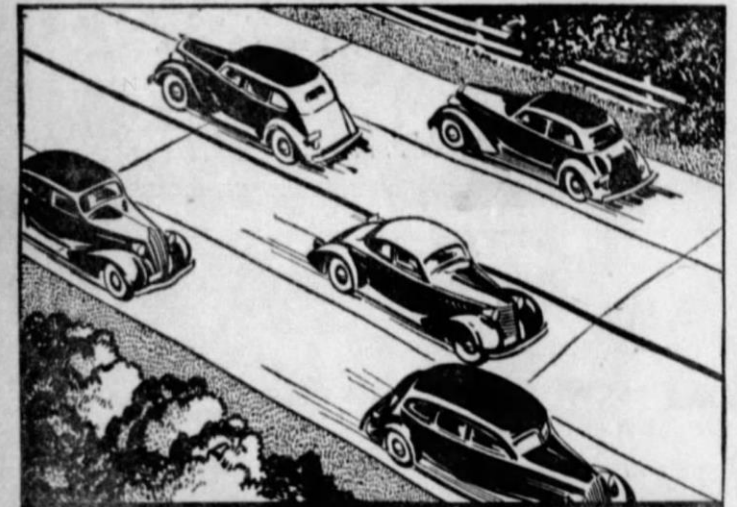
**PORTLAND CEMENT ASSOCIATION**

30 W. Broad St., Columbus, Ohio

# HIGHER SPEED LIMITS ADVOCATED BY A. A. A.

Wants to Relieve Congestion  
and Make for Safety.

PROGRAMME IS OUTLINED



WIDEN YOUR  
ROADS WITH **CONCRETE**

**RELIEVE CONGESTION  
SPEED TRAFFIC  
INCREASE SAFETY**

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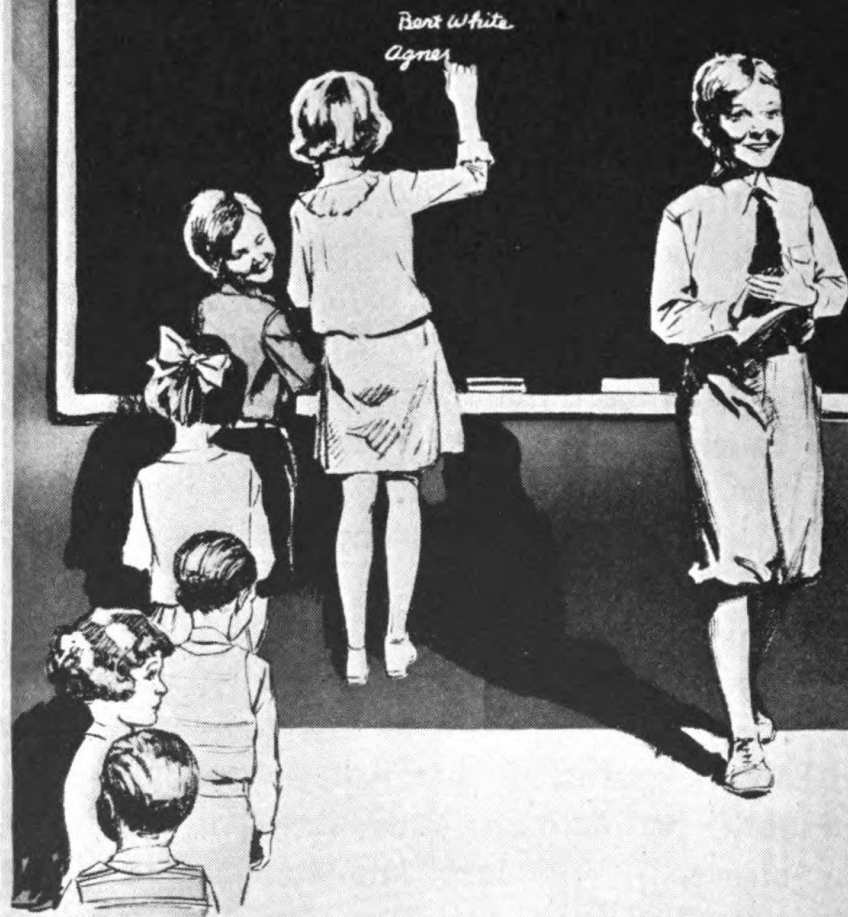
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I RESOLVE TO  
CROSS STREETS CAREFULLY



Are you ready to sign up?



# HIGHER SPEED LIMIT ADVOCATED BY A. A.

Wants to Relieve Conges  
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PROGRAMME IS OUTLINED

# WINNING *the* WAR *on* TRAFFIC ACCIDENTS

By Paul G. Hoffman  
President The Automotive Safety Foundation

WHILE vast strides have been made toward reducing the rate of highway accidents, this lowered rate must be even further reduced, while more people ride more miles each year. Here is a paradox challenging the automotive industry today.

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*Popular Mechanics*, Oct. 1939

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Portland Cement Association, 1948

## In the City of TOMORROW—

*you'll loaf along at 50-  
right through town*

"Complete separation of traffic moving at three different speeds within 'the City of Tomorrow' will end today's confusion," predicts Norman Bel Geddes, authority on future trends.

"If you drive 10 blocks or more, you'll use Express Streets allowing speeds up to 50 miles an hour with no stop lights... no intersections... no pedestrians to slow you down.

"For short trips, you'll use one-way Local Streets, made wider by the elevation of sidewalks... elimination of parked cars and loading trucks. You'll walk and cross streets at the second-story level. Loading and parking facilities will be inside buildings..."

## .but TODAY, 4 miles in 5 are Stop and Go

**Y**OU average 30 stops every day. And one stop can waste enough gasoline to drive you 5 city blocks.

Today's stop and go is the COSTLIEST kind of driving!

While traffic authorities are planning "the City of Tomorrow," Shell engineers have developed a fuel, Super-Shell, to meet today's driving problem. They found a way to rearrange the chemical structure of gasoline...to balance it.

Automotive engineers describe Super-Shell as "motor-digestible," because at all motor speeds it is converted so QUICKLY, so COMPLETELY into power.

Your regular use of Super-Shell will save on stop and go. There's a Shell dealer in your neighborhood.

## SUPER-SHELL





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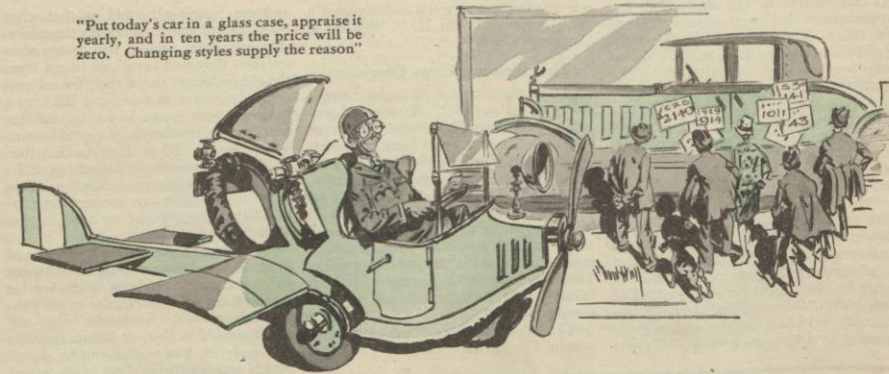
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# SUPER-SHELL





"Put today's car in a glass case, appraise it yearly, and in ten years the price will be zero. Changing styles supply the reason"



## Keep the Consumer Dissatisfied

By CHARLES F. KETTERING

General Director, General Motors Research Laboratories

Cartoons by Stuart Hay

**N**OT LONG ago one of the great bankers of the country said to me:

"The trouble with you fellows is that you are all the time changing automobiles and depreciating old cars, and you are doing it at a time when people have three or four payments to make on the cars they already have.

"Yesterday I got an engraved invitation from one of your companies to see a new model. Out of curiosity I went. I darn near bought one. I didn't because you people wouldn't allow me enough money for my old car."

A few weeks later I was again talking with this banker. He appeared to be greatly disgruntled.

"I bought that new model," he barked. "But it was a rotten shame that I had to accept so much depreciation on my old car. You are the fellow who is to blame. You, with all your changes and refinements, made me dissatisfied with the old model."

He paused, then added, mournfully, "And that old car ran like new."

I told him I thought it was worth what he paid—that is, the difference between the old and the new model—to have his mind changed.

He didn't argue over that but he did say something to the general effect that "the only reason for research is to keep your customers reasonably dissatisfied with what they already have."



"Those ideas are coming from the younger generation"

I might observe, here and now, that he was right.

A few weeks back I was sitting with a group of executives. All were admiring a new model.

"It is absolutely the best automobile that can be made," enthused one. I objected to that statement.

"Let's take this automobile which, you say, is the 'best that can be made' and put it into a glass showcase," I said. "Let's put it in there—seal it so no person can possibly touch it. Just before we seal it in the case let us mark the price in big letters inside the case.

### Depreciates Without Use

**L**ET us do that and come back here a year from today. After looking at it and appraising it, we will mark a price on the outside of the glass. It will be a price something less than what we think the car is worth today. Probably \$200 less. Then, let's come back once every year for ten years, look through the glass, and

mark a new price. At the end of ten years we won't be able to put down enough ciphers to indicate what we think of the car. That is, of course, eliminating its value as junk.

"In those ten years, no one could possibly have touched the car. There could be no lessened value through handling. The paint would be just as good as new; the crank case just as good; the rear axle just as good; and the motor just

as good as ever.

"What, then, has happened to this car?

"People's minds will have been changed; improvements will have come in other cars; new styles will have come. What you have here today, a car that you call 'the best that can be made,' will then be useless. So it isn't the best that can be made. It may be the best you have made and, if that is what you meant, I have no quarrel with what you said."

Another prominent banker once said to me:

"You research people are always disrupting things. You cause us more trouble than any other group. I, as a banker, will make a loan to a firm and am apt to discover, in a few days, that you fellows have put this concern out of business. All because your research methods have found different ways for doing things. Perhaps they are better ways, but what of it? The old ways were satisfactory.

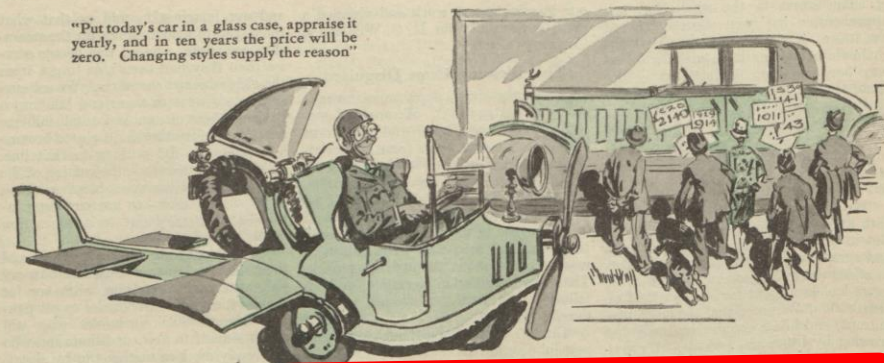
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Prosperity has nothing to do with dol-





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TO NEW  
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# FUTURAMA 1

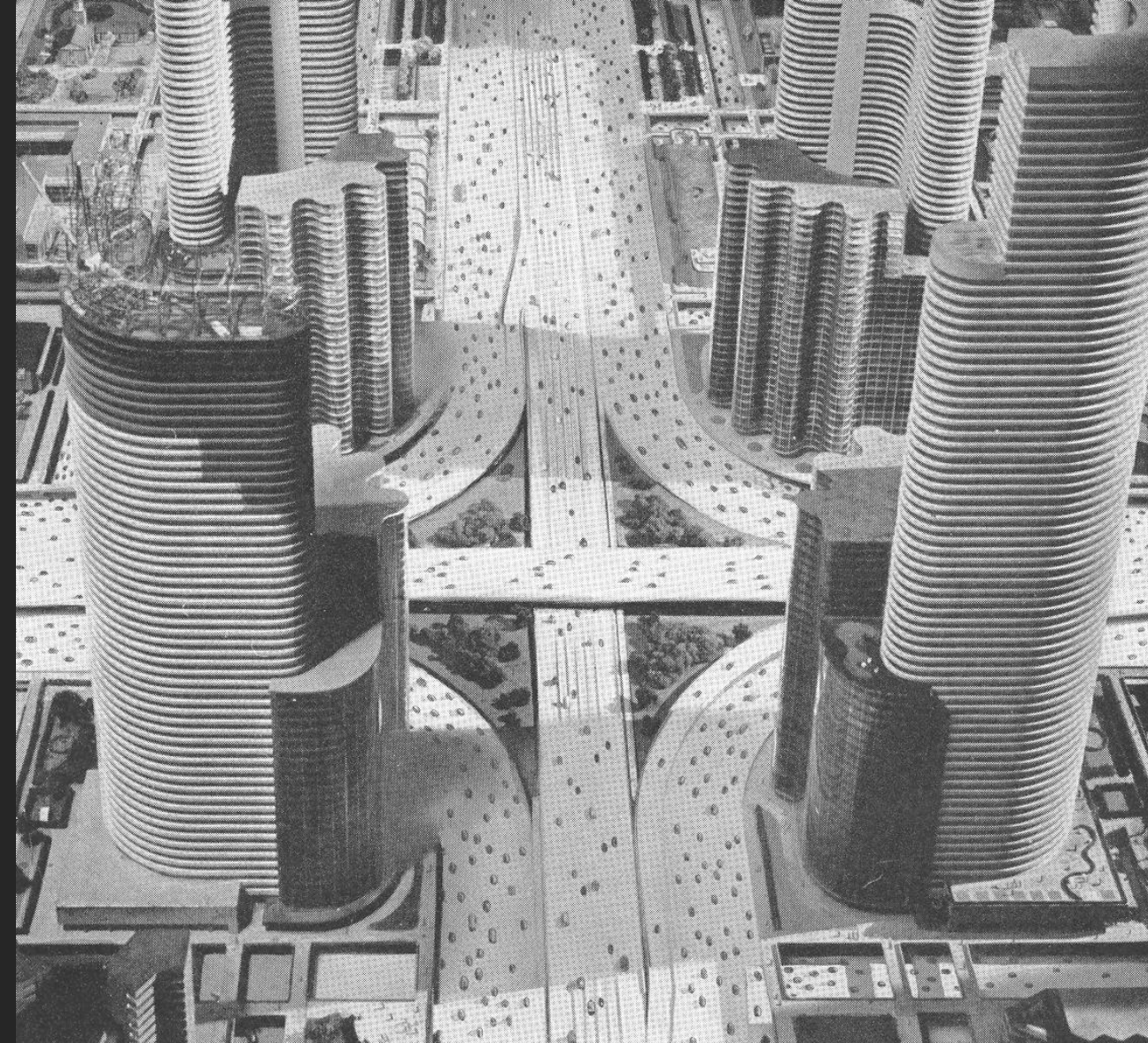


General Motors, 1939

# FUTURAMA 1



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General Motors, 1939



Portland, Oregon, 1962 (*The Oregonian*)

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## *Cure for Congestion*

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Chrysler Freeway, November 29, 1961 (Detroit Historical Society)



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*left: Hastings Street, March 19, 1959; right: Chrysler Freeway, November 29, 1961 (Detroit Historical Society)*

Chrysler Freeway, November 29, 1961 (Detroit Historical Society)



*left:* Hastings Street, March 19, 1959; *right:* Chrysler Freeway, November 29, 1961 (Detroit Historical Society)



# THE DEATH AND LIFE OF GREAT AMERICAN CITIES

JANE JACOBS



✎ They've put up gleaming stone and glass file cabinet housing which breeds delinquency and crime.

✎ They've built spacious green park areas that are avoided by everyone but bums and hoodlums.

✎ They've condemned and destroyed entire city blocks that are not slums, but attractive places to live.

✎ They've zoned our cities into intolerable patterns of dullness.

Jane Jacobs says this and much more in her explosive new book, *THE DEATH AND LIFE OF GREAT AMERICAN CITIES*. Mrs. Jacobs shows that the city

planners have failed because they have overlooked the realities of urban life, and stripped our cities of the vitality and diversity which make them exciting places to live. She offers concrete, practical alternatives that can save our cities from the blunders of orthodox planners.

Harrison Salisbury of the *New York Times* hails this book as "the most refreshing, stimulating and exciting study of this greatest of our problems of living which I've seen. It fairly crackles with bright honesty and good sense."

William H. Whyte, author of *The Organization Man*, calls it "magnificent. One of the most remarkable books ever written about the city."

# The Death and Life of Great American Cities

By JANE JACOBS

\$5.95, now at your bookstore

RANDOM HOUSE







THE DEATH  
AND LIFE  
OF GREAT  
AMERICAN  
CITIES

JANE JACOBS



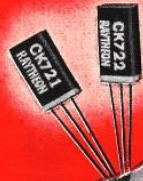
**ELECTRONICS' THREE C's**  
Computers, Controls, Communications

RCA (1960)

# NOW AVAILABLE!

PNP GERMANIUM JUNCTION

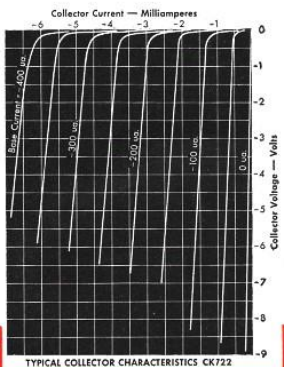
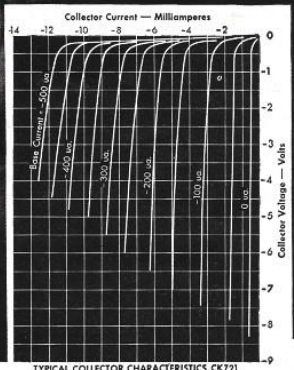
# RAYTHEON TRANSISTORS



**AVERAGE CHARACTERISTICS AT 30° C**

	CK721	CK722
Collector Voltage (volts)	-1.5	-1.5
Collector Current (ma.)	-0.5	-0.5
Base Current* (ua.)	-6	-20
Current Amplification Factor*	40	12
Power Gain* (db)	38	30
Noise Factor* (1,000 cycles) (db)	22	22

\*Grounded Emitter connection



**F**or the first time in history, Germanium Junction Transistors are commercially available. Raytheon Junction Transistors, types CK721 and CK722 can now be obtained for your experimental and developmental use.

Here's another first for Raytheon! Leaders in the development and production of Electron Tubes and Germanium Products, Raytheon now leads the way in production of this important new electronic development.

For price and delivery information of Raytheon Germanium Junction Transistors, write, phone or wire your Raytheon Tube distributor.



**RAYTHEON MANUFACTURING CO.**  
Receiving Tube Division

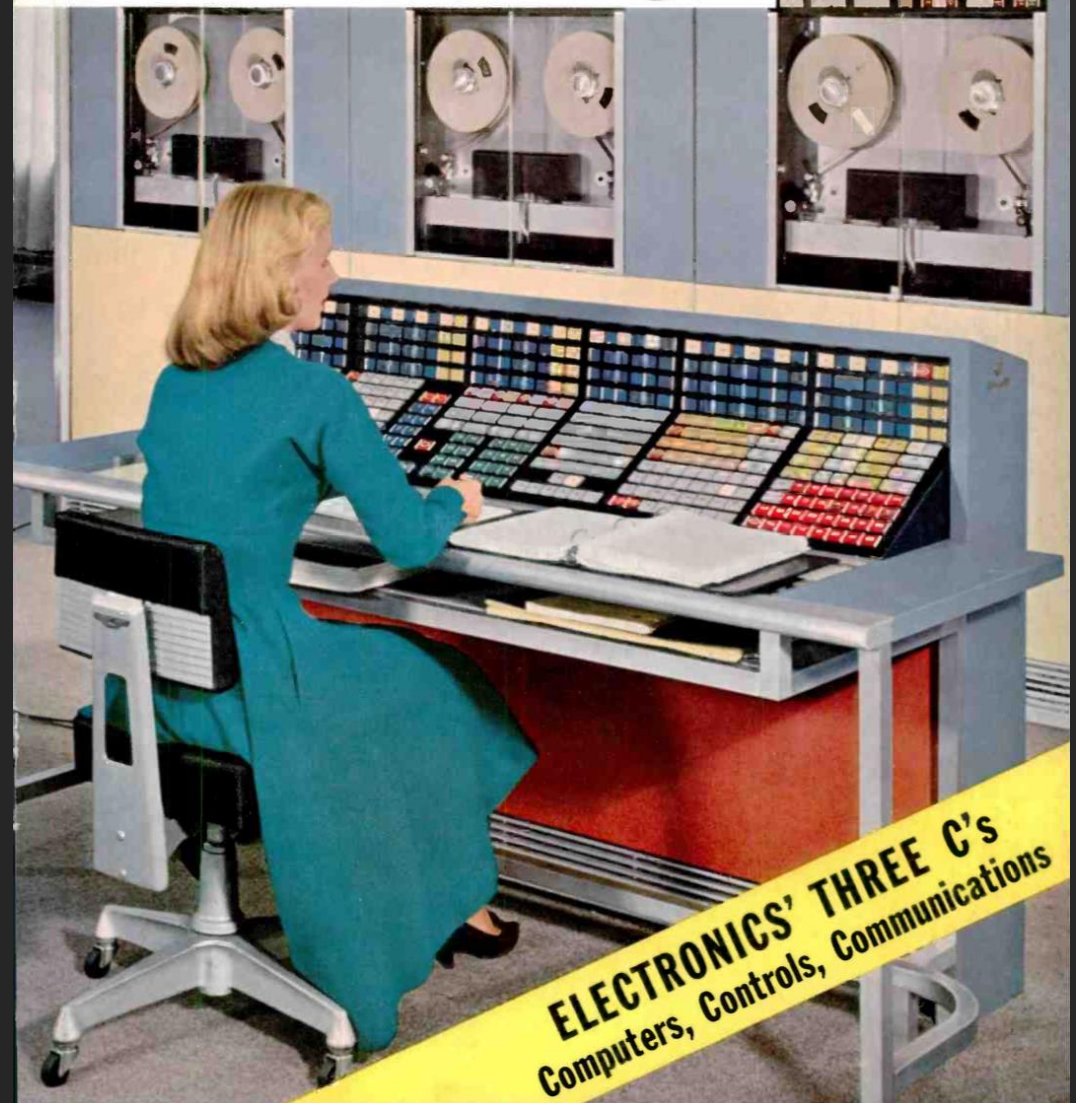
Excellence in Electronics Newton, Massachusetts • Chicago, Illinois • Atlanta, Georgia • Los Angeles, California

RAYTHEON MAKES ALL THESE RECEIVING AND PICTURE TUBES • RELIABLE SUBMINIATURE AND MINIATURE TUBES • GERMANIUM DIODES AND TRANSISTORS • NUCLEONIC TUBES • MICROWAVE TUBES

Raytheon (1953)

# Electronic Age

SPRING / 1960



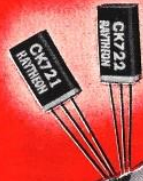
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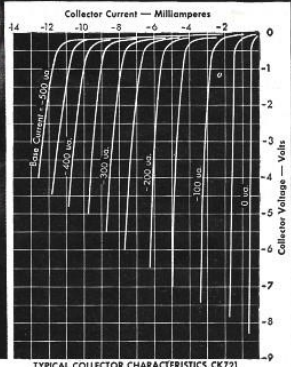
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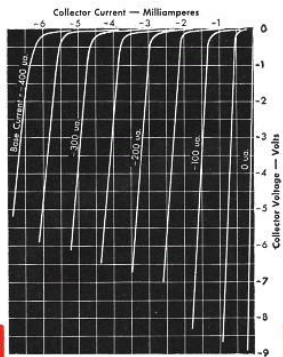
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*Excellence in Electronics*

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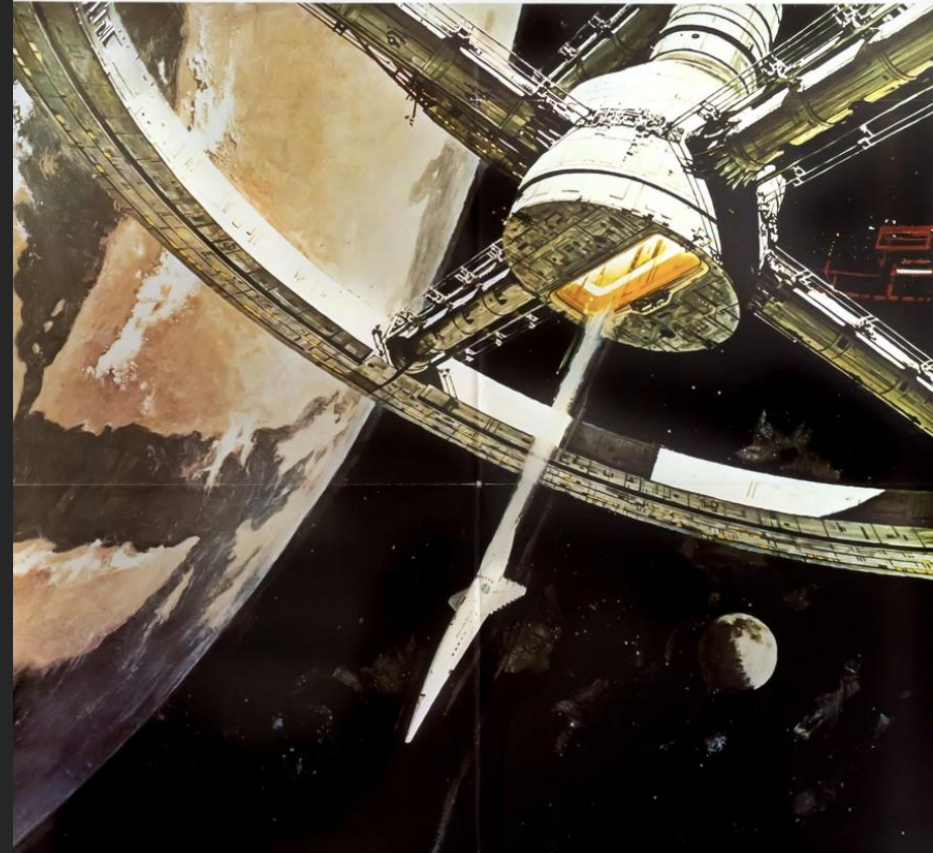
RAYTHEON MAKES ALL THESE

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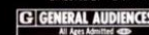
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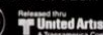


STANLEY KUBRICK'S  
**2001: a space odyssey**

STARRING KEIR DULLEA • GARY LOCKWOOD • STANLEY KUBRICK AND ARTHUR C. CLARKE  
SCREENPLAY BY STANLEY KUBRICK AND ARTHUR C. CLARKE  
PRODUCED AND DIRECTED BY STANLEY KUBRICK • IN SUPER PANAVISION® • METROCOLOR



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Stanley Kubrick Productions / MGM / art: Robert McCall (1968, 1980)



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**MPAA RATING**  
G GENERAL AUDIENCES  
All Ages Admitted

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MGM

United Artists  
A Transamerica Company

Stanley Kubrick Productions / MGM / art: Robert McCall (1968, 1980)



SCIENCE, VOL. 159

19 JANUARY 1968

Any sufficiently advanced technology is indistinguishable from magic.

ARTHUR C. CLARKE



MAGIC  
HIGHWAY,  
*U.S.A.*



December 1964

## HOW RCA TRANSISTORS Will Run Your "Electronic" Car of Tomorrow

Slide behind the wheel of this dreamboat. Push the electronic control button. Then sit back and let transistors take over.

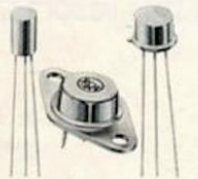
Automatically, transistors and semiconductor rectifiers will help...accelerate...brake...steer...detect obstacles...guard against "tailgating"...guide you safely along the electronic lanes of super highways...signal on-coming traffic as you approach intersections...even tell you when the road is icy.

As darkness falls, these devices will turn on your lights and courtesy headlight beams. When it rains, they will close your windows, start your windshield wipers and adjust their speed to conditions. They

will even blow your horn automatically when necessary! Miraculous? Hardly.

Already, transistors and semiconductor rectifiers can open and close your garage door. Transistor car radios are commonplace. Alternators, using transistors and semiconductor rectifiers are replacing conventional generators—to keep batteries charged, even at idling speeds. Transistor ignition systems are helping to improve engine performance.

The impact of transistors and semiconductor rectifiers in automotive technology is another dramatic illustration of how RCA solid-state advances are helping to meet the broad demands of industry, business, science, and national defense.

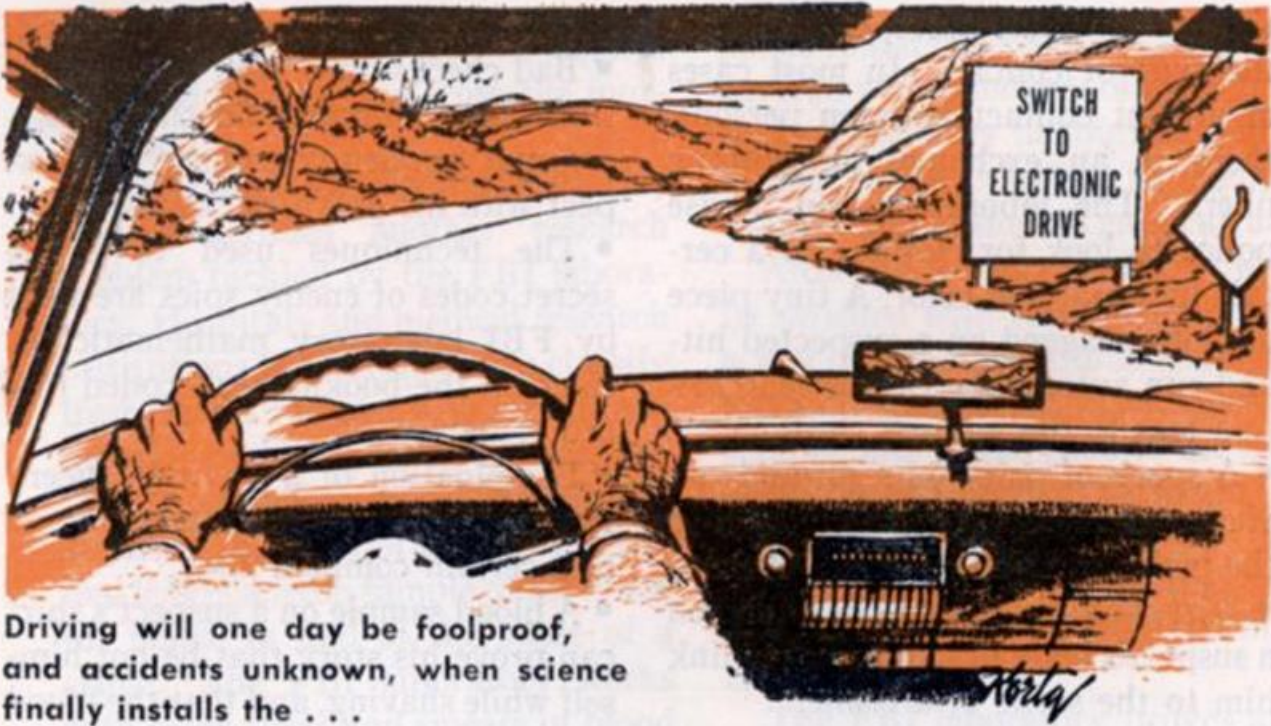


**RCA Transistors and Semiconductor Rectifiers**  
These wonder-working devices, shown actual size, are serving electronics everywhere — from computers to satellites.



**The Most Trusted Name in Electronics**

... and the world's most broadly based electronics company



Driving will one day be foolproof, and accidents unknown, when science finally installs the . . .

## Electronic Highway of the Future

*Science Digest*, April 1958



December 1964

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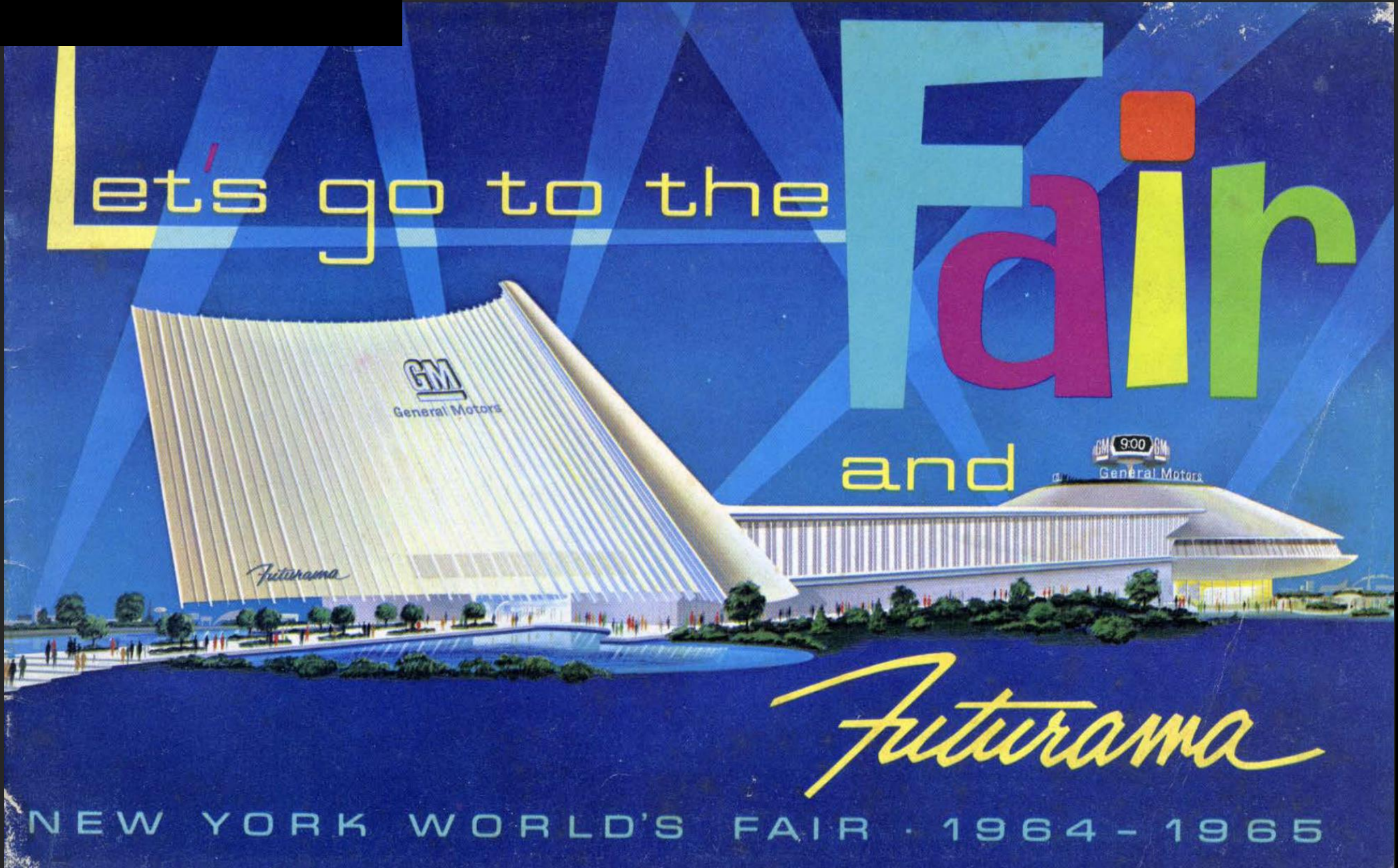


**The Most Trusted Name in Electronics**

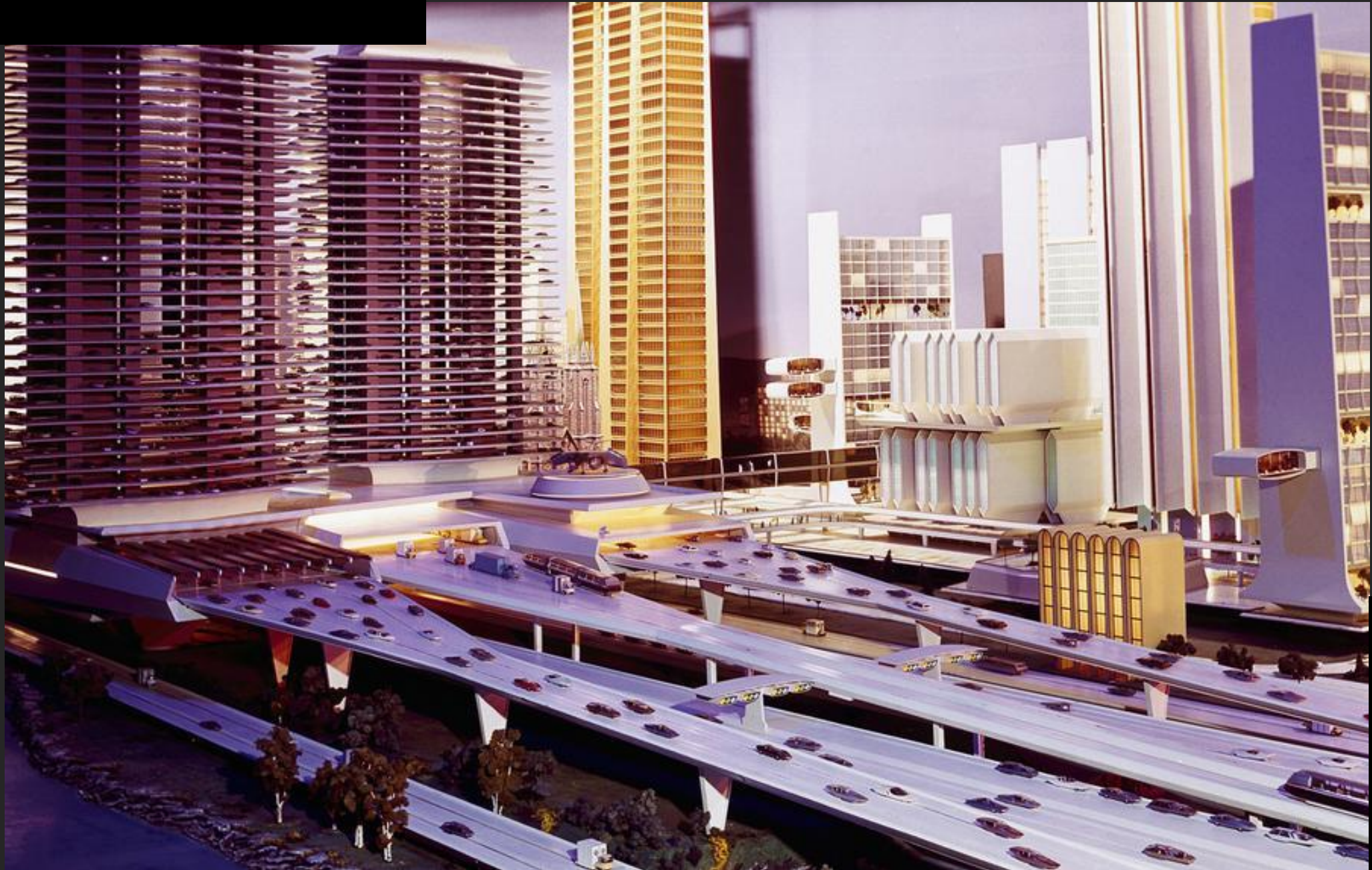
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# FUTURAMA 2



# FUTURAMA 2



General Motors, 1964

"All the News  
That's Fit to Print"

# The New York Times

VOL. CXIX... No. 40,997

© 1970 The New York Times Company

NEW YORK, THURSDAY, APRIL 23, 1970

LATE CITY EDITION

Weather: Cloudy, rain likely today and tonight. Partly sunny tomorrow. Temp. range: today 64-50; Wed. 67-46. Full U.S. report on Page 73.

10 CENTS

## PRICES CLIMB 0.4% BUT RATE OF RISE APPEARS TO SLOW

Gain in the Consumer Index for March Lags Behind the 4 Previous Months

INCREASE IS STEEP HERE

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The arms were urgently re-

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Alice Lipscomb, Philadelphia, March 22, 1968. photo: Jack Tinney, Philadelphia Evening Bulletin, 1968 (Temple University Libraries).

"All the News  
That's Fit to Print"

# The New York Times

LATE CITY EDITION

Weather: Cloudy, rain likely today and tonight. Partly sunny tomorrow. Temp. range: today 64-50; Wed. 67-46. Full U.S. report on Page 73.

VOL. CXIX... No. 40,997

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NEW YORK, THURSDAY, APRIL 23, 1970

10 CENTS

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High officials have been making the same appeal for days in private talks with journalists. Key Cambodian officials consider the United States their principal hope. Sources Report No Reply  
Highly placed sources reported that there had been no reply yet from President Nixon to an urgent appeal from Gen-

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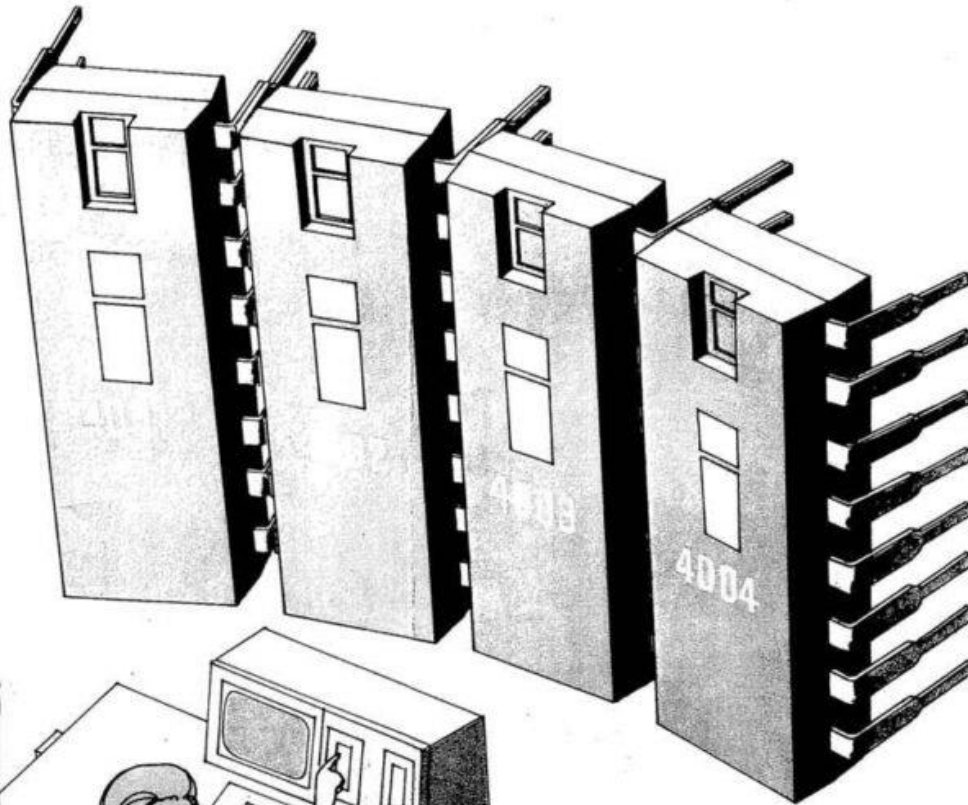
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Using no circuitry other than ICs from this family of four, you can create a system with 4096 8-bit bytes of ROM storage and 5120 bits of RAM storage. When you require rapid turn-around or need only a few systems, Intel's erasable and re-programmable ROM, Type 1701, may be substituted for the Type 4001 mask-programmed ROM.

MCS-4 systems interface easily with switches, keyboards, displays, teletypewriters, printers, readers, A-D converters and other popular peripherals.

The MCS-4 family is now in stock at Intel's Santa Clara headquarters and at our marketing headquarters in Europe and Japan. In the U.S., contact your local Intel representative for technical information and literature. In Europe, contact Intel at Avenue Louise 216, B 1050 Bruxelles, Belgium. Phone 492003. In Japan, contact Intel Japan, Inc., Parkside Flat Bldg. No. 4-2-2, Sendagaya, Shibuya-Ku, Tokyo 151. Phone 03-403-4747.

Intel Corporation now produces micro computers, memory devices and memory systems at 3065 Bowers Avenue, Santa Clara, Calif. 95051. Phone (408) 246-7501.

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# Introducing Macintosh. For the rest of us.

In the older days, before 1984,  
not very many people used computers.  
For a very good reason.



Not very many people knew how.  
And not very many people wanted  
to learn.

After all, in those days, it meant  
knowing to your stomach's profit through  
computer seminars, talking through your  
computer manuals, and trying to make  
sense of networks created by

computer vendors who had to be a computer  
to understand them.

Then, in a particularly bright day  
in Cupertino, California, some  
particularly bright engineers  
had a particularly bright idea.  
Your computer can be so smart,  
we didn't make you have  
to teach computers about  
people, instead of teaching people about  
computers!

So it was that these very engineers  
wrote long lists and late nights and  
a few legal battles, reaching by  
sweat and tears all about people. How they  
make mistakes and change their minds  
how they vote on the bottom and use  
old phone numbers. How they labor for  
four hours a week, and decide to take  
some time.

For the first time in recorded  
computer history, hardware engineers

actually talked to software engineers  
to evaluate users of yours, and both  
were united by a common goal: to build  
the most powerful, most portable, most  
flexible, most versatile computer ever  
made—easy to use!

And when the engineers were  
finally finished, they insisted on it to  
a personal computer so personal  
it can pretend to be human.

And so now to use, most people  
already know how.

They didn't call it the G2200, or  
the Zephrus 5000.

They called it Macintosh!

And now you can be so introduced  
to it too.



## Invention That Shaped the Gulf War: the Laser-Guided Bomb

With a simple kit,  
inaccurate devices  
became tank-killers.

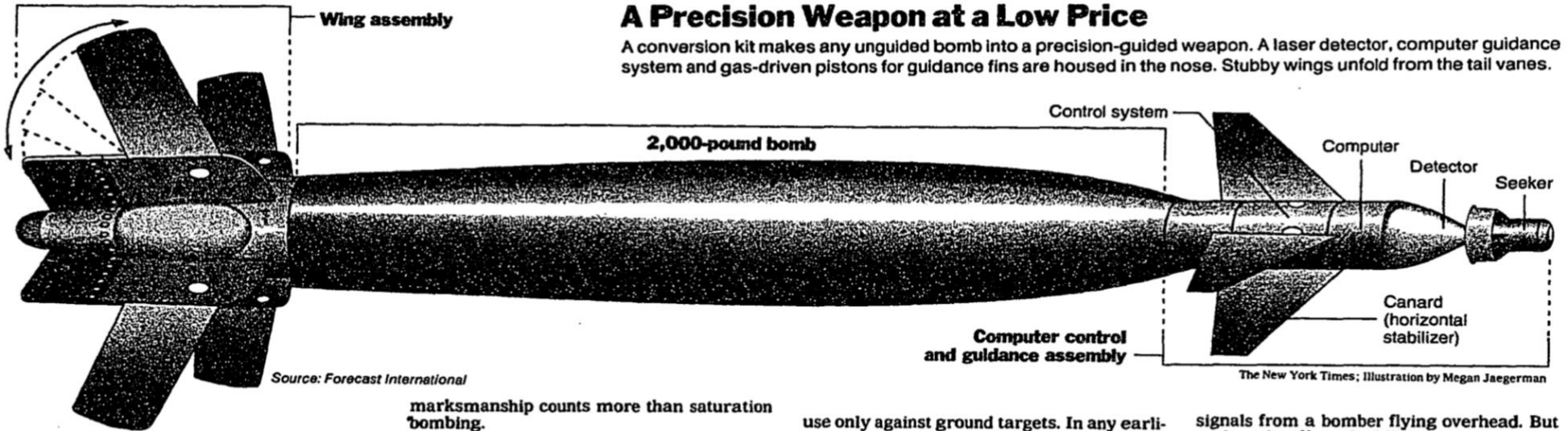
By MALCOLM W. BROWNE

**F**OR the first time in history, precision-guided bombs and missiles have played a decisive role in war, paving the way for the invasion of Kuwait and Iraq. With their help, the United States and its allies critically weakened the fourth-largest army in the world while suffering surprisingly light casualties during the month of the air war.

Having established absolute air supremacy from the outset of the war, the allies have been able to hammer Iraq's command centers, supply lines, bunkers, tanks and troops almost at will. Precision weapons like laser-guided bombs have greatly enhanced the effectiveness of the attacks.

Even small, armored targets like tanks and personnel carriers, previously almost impossible to destroy with bombs, have now fallen victim to the new bombs' accuracy. The same accuracy has substantially reduced the accidental damage that would otherwise have befallen civilian buildings.

An allied military spokesman reported last



week that of the many thousands of precision-guided bombs and missiles launched at Iraqi military targets, fewer than one-tenth of 1 percent had gone astray and fallen in civilian areas.

Mass attacks using precision-guided weapons against small, precisely defined targets seem to herald a new era in warfare, in which

marksmanship counts more than saturation bombing.

The new abilities of precision-guided bombs were sharply underscored by a recent incident. One week ago, an American military spokesman disclosed that an F-111 bomber returning from an assault on Iraqi tanks had destroyed an enemy helicopter in flight. Lacking guns or missiles, the bomber pilot had attacked with the only weapon at his disposal, a laser-guided bomb intended for

use only against ground targets. In any earlier war, a bomb attack against a swiftly moving target would have been virtually hopeless, but this time the bomb flew unerringly to its mark, blowing the helicopter to fragments.

Efforts to develop precision-guided bombs are at least as old as World War II, when Germany experimented with the Fritz-X, a gliding bomb directed to its target by radio

signals from a bomber flying overhead. But such early efforts had little practical effect on warfare. When the first precision-guided bombs appeared in Vietnam nearly two decades ago, many missed even the stationary targets at which they were aimed.

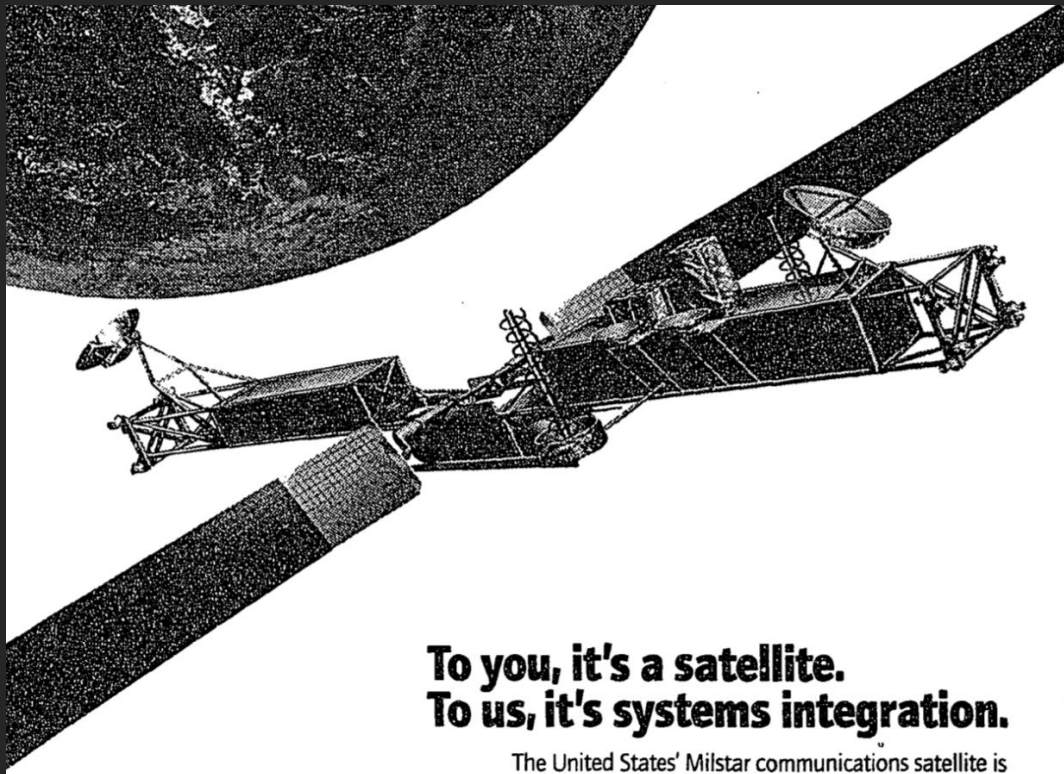
Even as recently as the American raid on Libya in 1986, many precision bombs and weapons appear to have missed their targets,

*Continued on Page C8*



C-Span, Jan. 30, 1991





## To you, it's a satellite. To us, it's systems integration.

The United States' Milstar communications satellite is Lockheed's newest systems integration success. It will soon join the Navy's Fleet Ballistic Missile System, the Hubble Space Telescope, the F-117 stealth fighter, antisubmarine warfare systems, and thousands of advanced technology achievements that prove Lockheed's premier systems integration skills.

### Lockheed leads.

Lockheed leads in applying this capability to solving problems for civilian agencies and municipal and state governments. Our proven expertise in integration and operation of automated traffic management, environmental reporting, "smart" highways, parking enforcement, and automated welfare and child support systems are the state of the art and make Lockheed the logical choice for all systems integration programs.

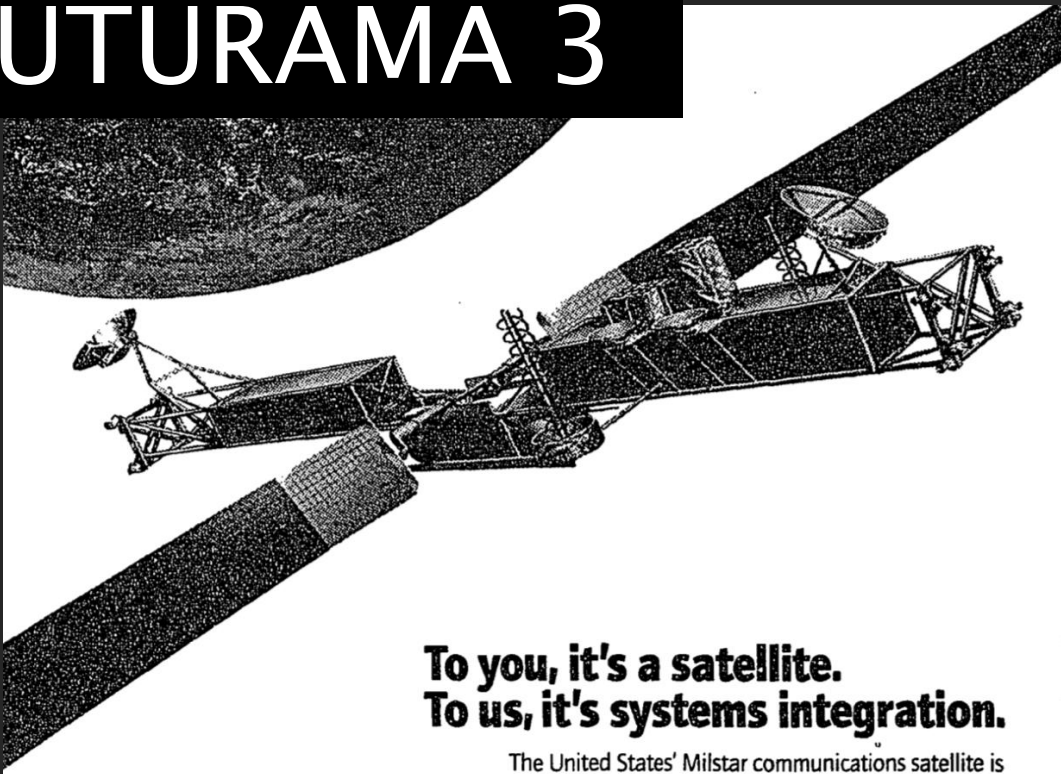
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Watch NOVA on PBS, Tuesdays at 8 p.m.



# FUTURAMA 3



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New York Times, July 21, 1993

## Rockwell battles gridlock with military technology.



### We're converting our defense electronics to create smart highways for tomorrow.

Today U.S. cities are enlisting Rockwell's expertise in sensors, signal processing, communications and software to develop new transportation systems that will eliminate highway congestion, reduce pollution and increase safety.

Rockwell is converting its defense technology to numerous commercial needs. From adapting GPS systems to revolutionize civilian and

commercial navigation. To applying rocket engine technology to increase the speed of our printing presses. And using Computational Fluid Dynamics to streamline sun-roof designs.

Rockwell constantly seeks new ways to best serve its customers. Finding new routes to leadership in the Electronics, Aerospace, Automotive and Graphics markets we serve.

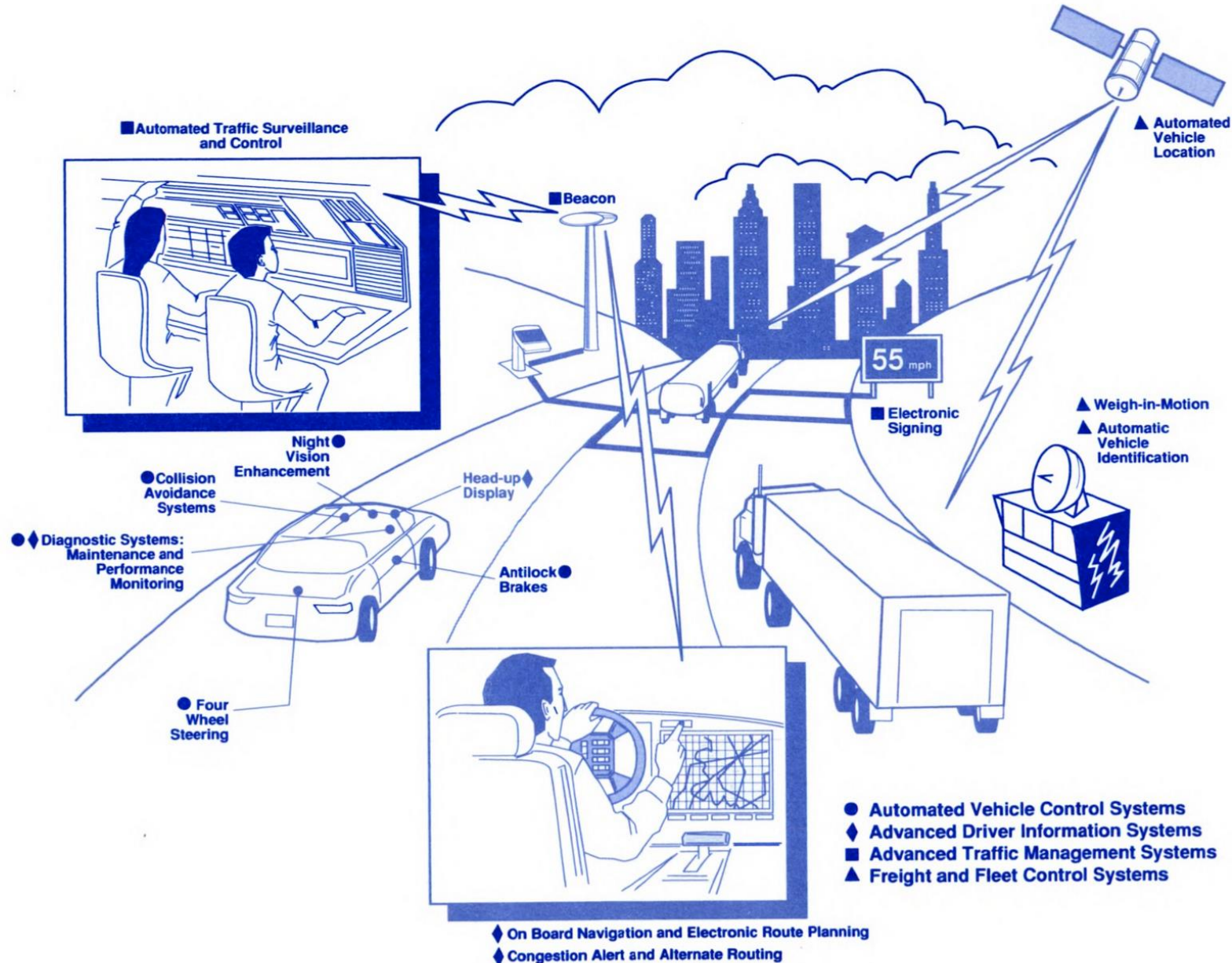


Rockwell International

ELECTRONICS / AEROSPACE / AUTOMOTIVE / GRAPHICS

Forbes, July 19, 1993

# FUTURAMA 3



USDOT, *National Transportation Strategic Planning Study* (March 1990)

**Figure 9-1. Basic Components of an Intelligent Vehicle-Highway System**

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UC Berkeley / California Path Program, 1997



Introducing iPhone.  
Apple reinvents the phone.

 iPhone



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ZF Domains > Automated Driving

# Automated Driving

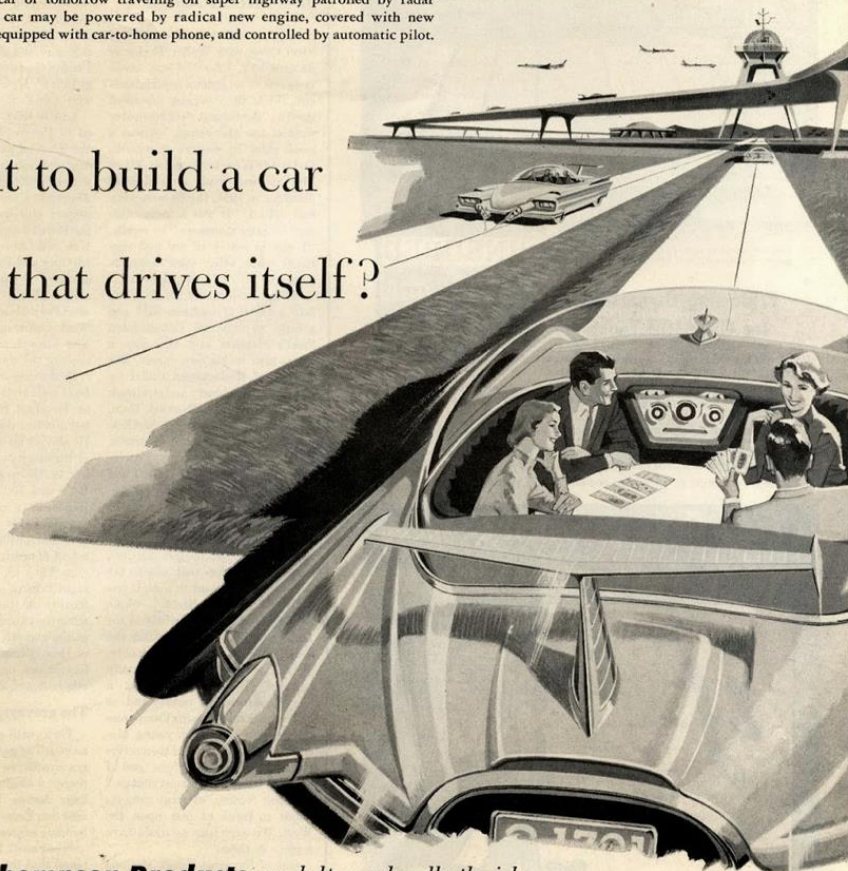


## EFFICIENT MOBILITY: DRIVING US TO DEVELOP INNOVATIVE TECHNOLOGIES

People are in motion, on the way to their destinations. Different means of transportation link the places where we live and study, our workplaces, recreational facilities and travel destinations. The need to conserve resources, reduce noise and emissions and increase safety and comfort are not only key requirements for contemporary mobility but opportunities for sustainable innovation. As one of the world's leading technology companies in drive and suspension technology, we are part of and are also driving this development. We're a reliable partner to our customers, employees and to society in general, with the goal of developing innovative and efficient products that improve quality of life and help shape the future. [www.zf.com](http://www.zf.com)

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**S**OME DAY—and it may come surprisingly soon—a car-maker will introduce a radically advanced new automobile, and cash in on the giant market of tomorrow. Thompson Products can help design and build important components for such a car today.

Right now Thompson can aid in creating self-steering devices, advanced new chassis and engines, uses for new wonder metals, and many other revolutionary features.

For years Thompson has been a leader in the development of steering systems . . . in

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No matter what kind of product you want to make, chances are Thompson can help you—thanks to its vast experience which includes design and production of hydraulic, pneumatic and electronic components, assemblies and systems . . . and a great variety of processes, from high-precision forging to impact extrusion and every kind of quality machining.

If you have a new product in mind, why not call for specific information on how Thompson can help you build it?

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as a partner in solving the design and production problems of an advancing technology

General Offices, Cleveland 17, Ohio

Fortune, Aug. 1958



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ZF Domains > Automated Driving

## Automated Driving



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# FUTURAMA 4: AUTONORAMA



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20 YEARS IN THE FUTURE

NEW FORM OF PERSONAL MOBILITY WILL  
BRING HARMONY TO OUR LIVES

A FUTURE THAT IS  
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FREE FROM CONGESTION  
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FREEDOM OF MOBILITY BRINGS PEOPLE  
CLOSER TOGETHER

2030 XING - GREAT TOGETHERNESS

有意义的事……

# FUTURAMA 4



# FUTURAMA 4: AUTONORAMA



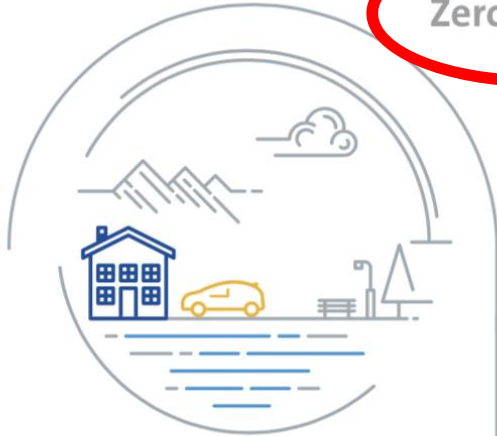
Drivers are connected to their social networks in the vehicles through the mobility Internet.

驾驶者在车上通过车联网与他们的社交网络互联。

*2030 Xing!* (GM-SAIC, 2010)



Zero Crashes.



2017 Sustainability Report

Zero Emissions.



Zero Congestion.



# TO OUR STAKEHOLDERS

General Motors Chairman and CEO Mary Barra.

For more than a century, automobiles have driven our society and economy, giving us unprecedented mobility and transforming the way we work and live.

Today, we are in the midst of another revolution as groundbreaking technologies and evolving customer lifestyles transform our vehicles and how we use them.

At General Motors, our vision of a future with zero crashes, zero emissions and zero congestion addresses the challenges associated with the freedom of mobility. This bold, ambitious vision has the potential each year to save 1.25 million lives by eliminating human error, the root of more than 90 percent of crashes; eliminate over 2 billion tons of carbon dioxide; and give commuters back the week of time they spend in traffic.

Autonomous, electric, shared and connected vehicles will fuel this transformation. Each is leading-edge on its own. Combined, they will provide customers with safer, better and more sustainable vehicles.

Our journey to this future is underway. We have the right team, the right technology, the right partners and the global manufacturing scale to bring these innovative solutions to more customers, more quickly. And our strategy to transform GM into the world's most valued automotive company includes several major initiatives to lead this revolution.

**Vehicles That Drive Themselves**  
Self-driving vehicles will reinvent our society, not only by reducing crashes and saving lives, but also by unlocking the power of mobility for those unable to drive.

General Motors is the only company with a fully integrated solution to produce self-driving vehicles at scale. With our 2017 acquisition of LiDAR developer Strobe, we now have every capability—from simulation and mapping software to safety validation and autonomous vehicle (AV)-specific vehicle design—under one roof. And we've moved quickly, developing three generations of self-driving vehicle technology in just 14 months.

After more than a year of building test vehicles, we are shifting to build production versions at our Orion Assembly plant in Michigan. The Cruise AV, which is part of our plans to commercialize in a dense urban area in 2019, will be the first production-ready vehicle built from the ground up to operate safely without a driver, steering wheel, pedals or manual controls. It represents a significant milestone on our path to deploying self-driving vehicles next year.

In preparation, we filed a Safety Report and Safety Petition with the U.S. Department of Transportation in January 2018 to enable us to safely deploy our Cruise AV zero-emission, self-driving vehicle.

Last month, we further strengthened our plans to commercialize AV technology at large scale through a landmark deal with the SoftBank Vision Fund, the world's largest tech and ridesharing investor. SoftBank is investing \$2.25 billion and General Motors is investing \$1.1 billion in GM Cruise, a new, majority-owned subsidiary. With SoftBank as a partner, we gain a tech leader that shares our vision, believes in our long-term business model and appreciates our integrated approach to AV development. It also strengthens our ability to attract high-tech talent, which is vital to our success.



Our vision is a future with zero crashes, zero emissions and zero congestion.

An aerial view of a complex highway interchange in a city, overlaid with futuristic data visualization. The scene is dimly lit, possibly at dusk or dawn. The highway has multiple lanes and overpasses. Overlaid on the scene are several glowing, semi-transparent shapes: a large purple oval on the left, a smaller green oval on the right, and a blue rectangular shape in the center. A network of white lines connects various points across the highway. In the center, there are two data points: a red triangle with the number '18,714' above it, and a green triangle with the number '19,719' above it. A yellow box highlights a car on the lower left. A green line graph is visible in the lower left quadrant. The background shows city buildings and a hazy sky.

**We see a future without congestion.**







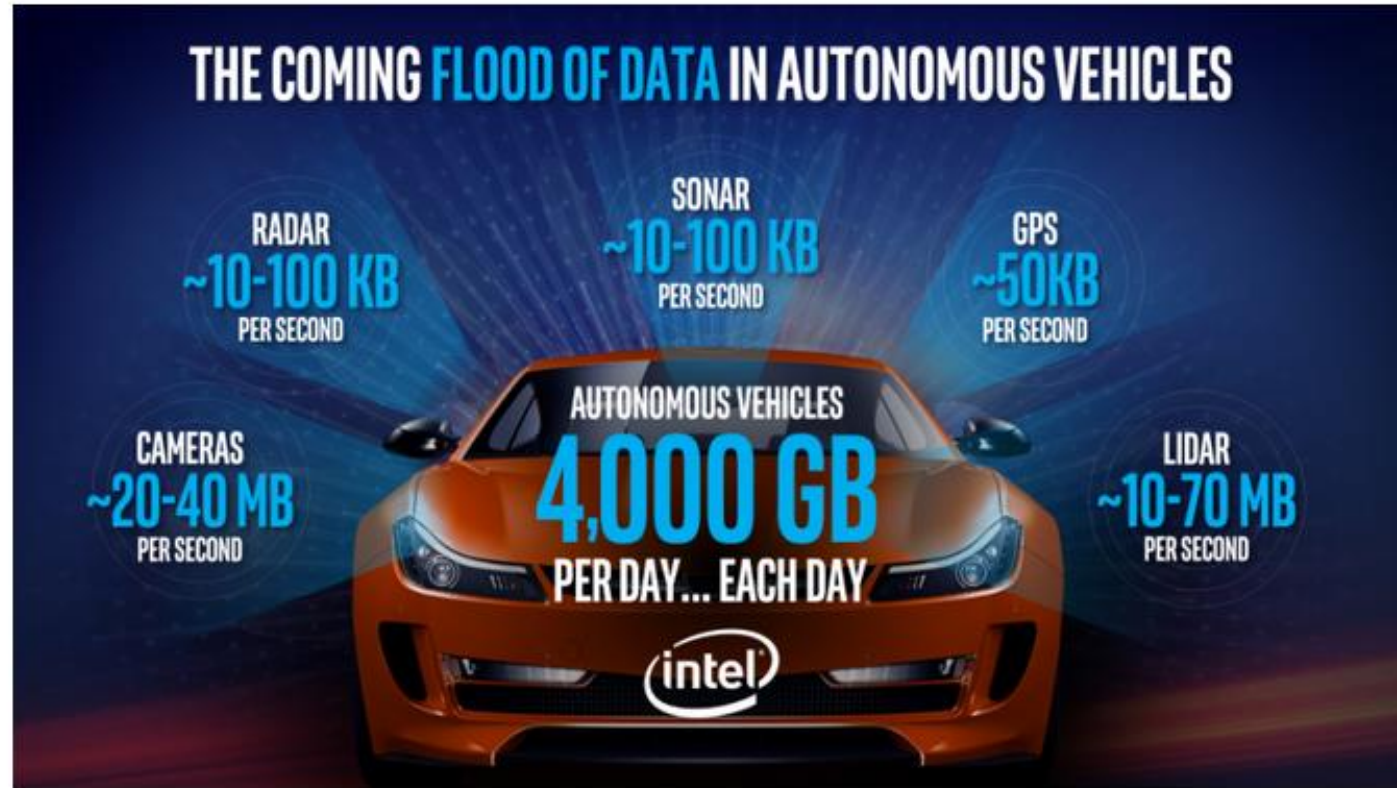
Editorial

November 15, 2016

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**DATA IS THE NEW OIL IN THE FUTURE OF AUTOMATED DRIVING**

*Brian Krzanich, CEO*

A group of young women in formal attire are seated in a limousine, celebrating. One woman in the center is smiling and holding a small cake. The interior of the car is dimly lit with purple and blue ambient lighting. Confetti is visible in the air. A white horizontal line is positioned above the main title text.

Exhibit Three

# THE FIRST NIGHT OUT THAT STAYED IN THE CAR.



# EXHIBIT ZERO



Visit the  
Exhibit

Watch the  
Talks



**General Motors / Du Pont, 1961:**

America's **love** affair with the automobile

**Federal Highway Administration , 1994:**

Statistics show that Americans **prefer** their automobiles to all other forms of transportation. Only in rare cases do alternative modes of transportation carry more than a small percentage of all trips.

**Denver Strategic Plan, 2008:**

our behavior illustrates a continued **preference** to drive.



Amsterdam, October 31, 1972 (ANP)



Philadelphia, 1953 (Temple University Libraries)



Amsterdam, October 31, 1972 (ANP)



Pacoima, California (San Fernando Valley), December 1958 (*Los Angeles Times*)

Philadelphia, September 28, 1972  
Chew Avenue and Durham Street  
Phila. Evening Bulletin / Temple Univ. Libraries







27<sup>th</sup> and Berkley Streets, Camden, N.J., May 17, 1976  
photo: George Tiedemann / Philadelphia Evening Bulletin / Temple University Libraries

# WINNING *the* WAR *on* TRAFFIC ACCIDENTS

By Paul G. Hoffman

President The Automotive Safety Foundation

WHILE vast strides have been made toward reducing the rate of highway accidents, this lowered rate must be even further reduced, while more people ride more miles each year. Here is a paradox challenging the automotive industry today.

safest, strongest, most useful motor cars in the world. From the very beginning the pioneer builders and designers of motor vehicles have had the importance of



27<sup>th</sup> and Berkley Streets, Camden, N.J., May 17, 1976

photo: George Tiedemann / Philadelphia Evening Bulletin / Temple University Libraries

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photo: George Tiedemann / Philadelphia Evening Bulletin / Temple University Libraries

last Friday.

## E. J. MEHREN, EX-ENGINEER, DIES IN CRASH

San Diego, Feb. 6 [Special]—Edward J. Mehren, 81, engineer, former editor of national engineering magazines, and former president of the Portland Cement association, was killed here today in a traffic accident.

Mehren retired from most of his business interests in 1937, and for nine years operated a citrus ranch near Phoenix, Ariz. He moved to La Jolla in 1946.

Mehren was born in Chicago and was graduated from the University of Illinois as a civil engineer in 1906. He was editor of Engineering Record and Engineering News-Record and a vice president of McGraw-Hill Publishing company prior to 1931 when he was named president of the Portland Cement association.

# WINNING *the* WAR *on* TRAFFIC ACCIDENTS

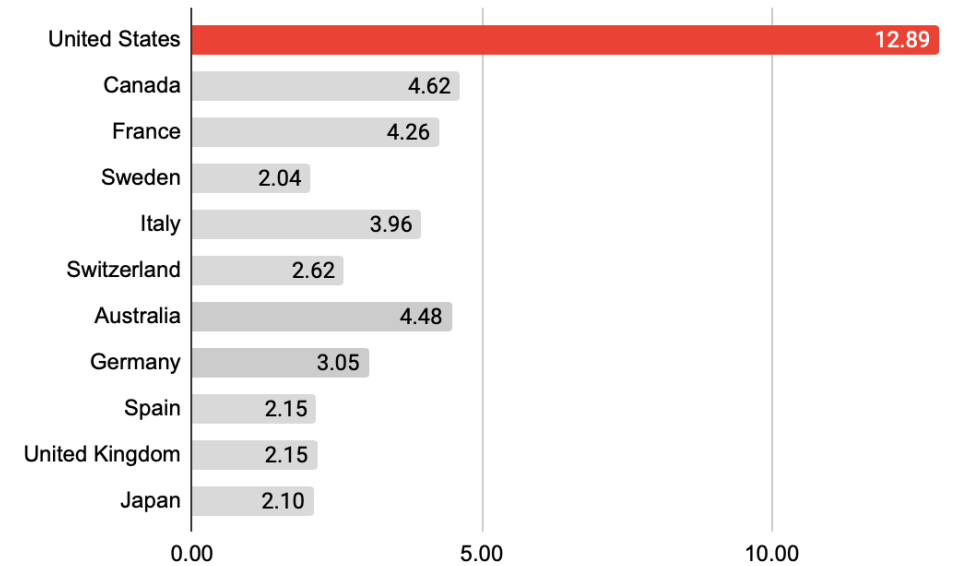
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Car Crash Deaths Per 100,000 People



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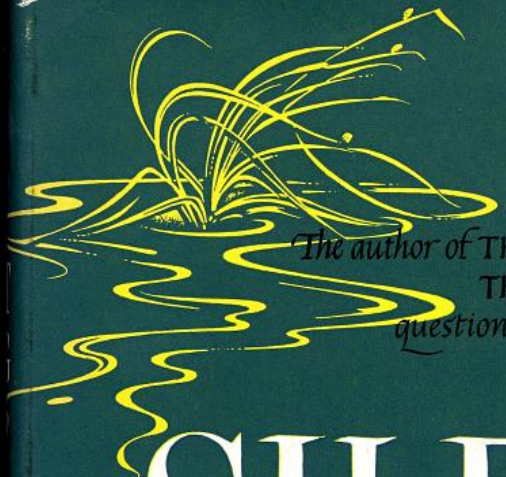
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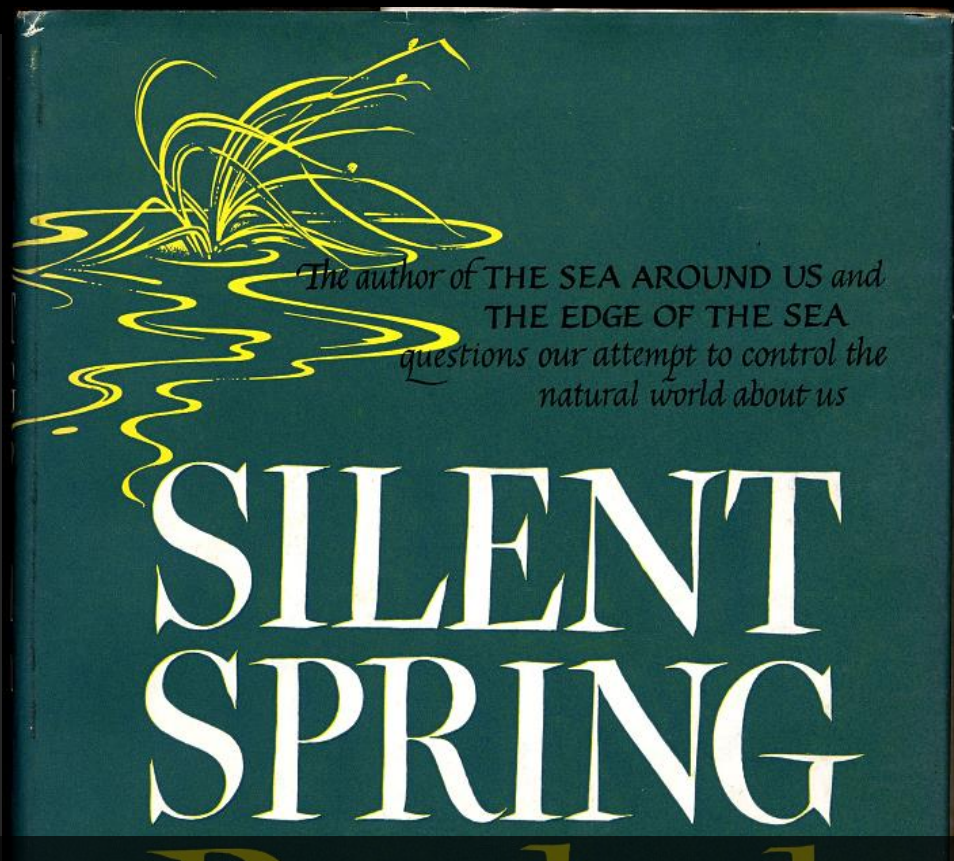


The author of *THE SEA AROUND US* and  
*THE EDGE OF THE SEA*  
*questions our attempt to control the*  
*natural world about us*

# SILENT SPRING

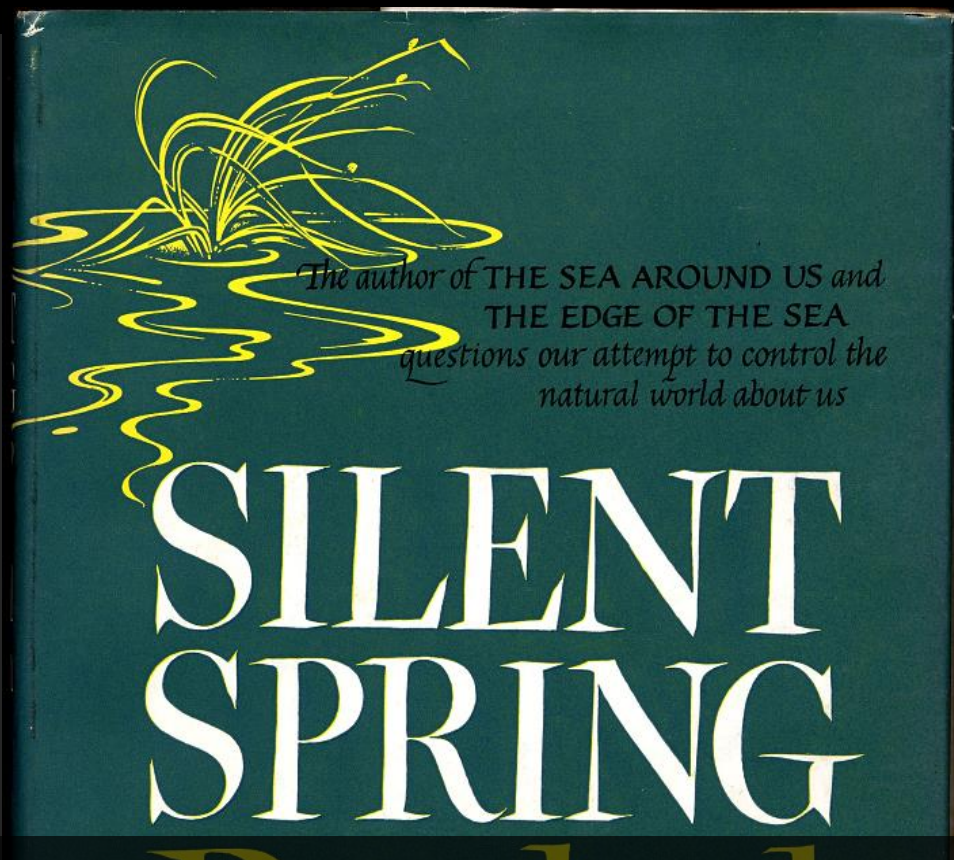
Rachel  
Carson





the chemical war is never won,

Carson

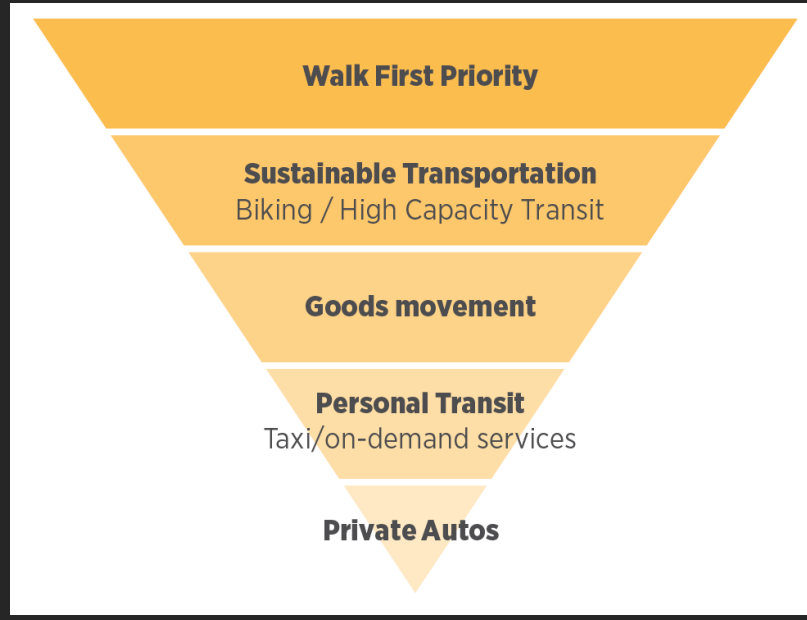
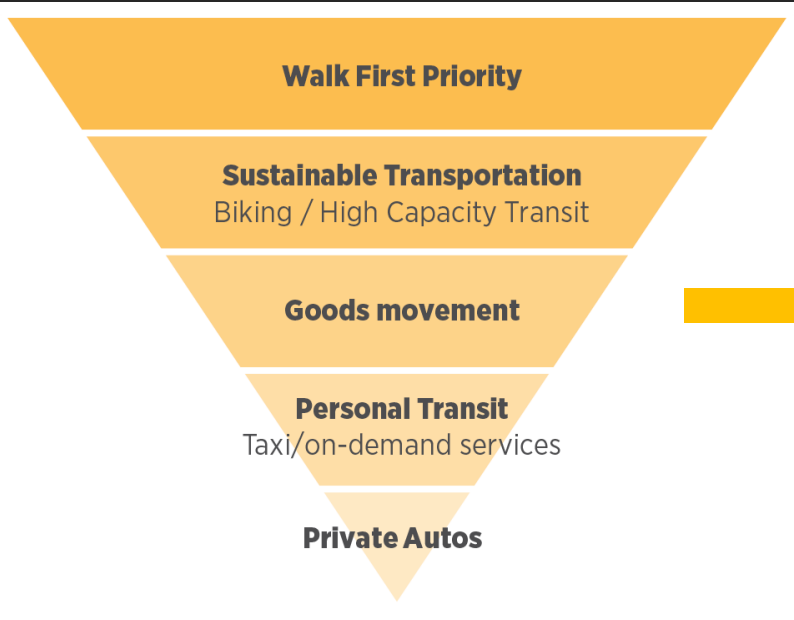


the chemical war is never won,

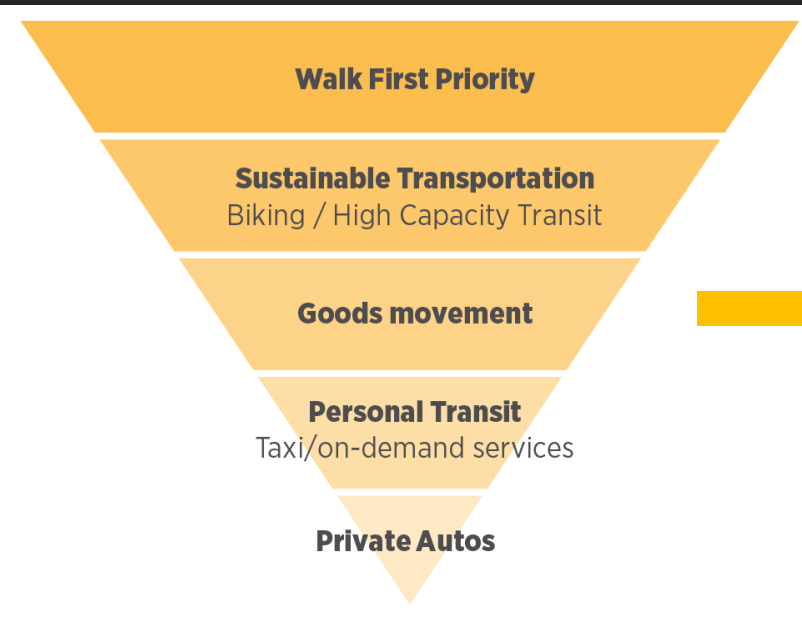
the traffic war is never won,



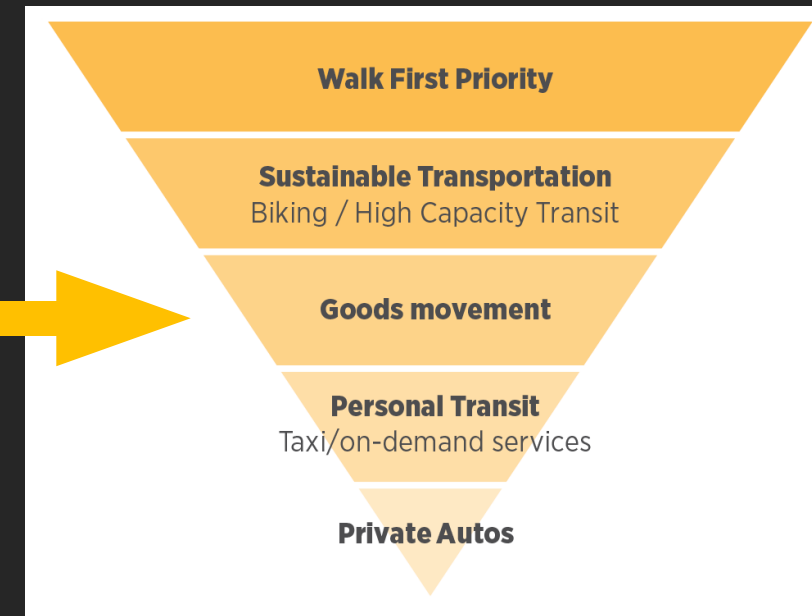
# The first radical revision



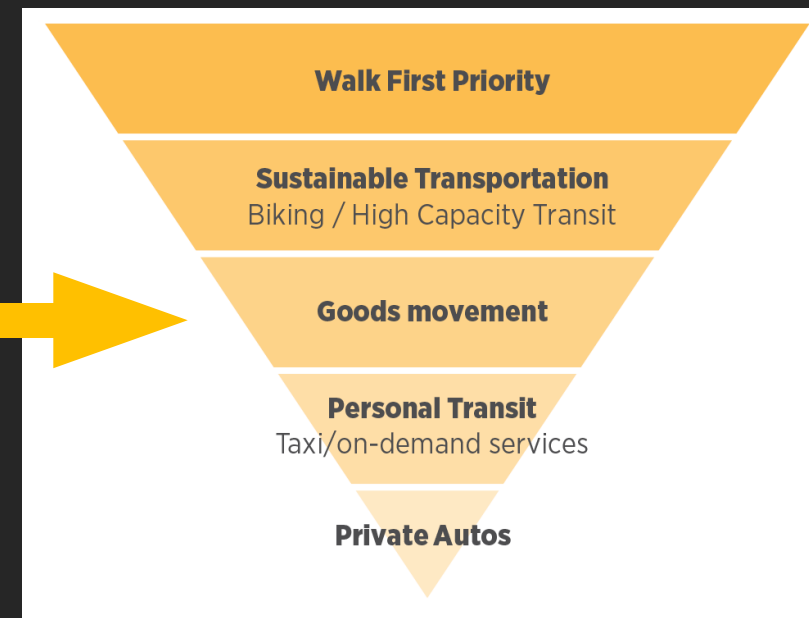
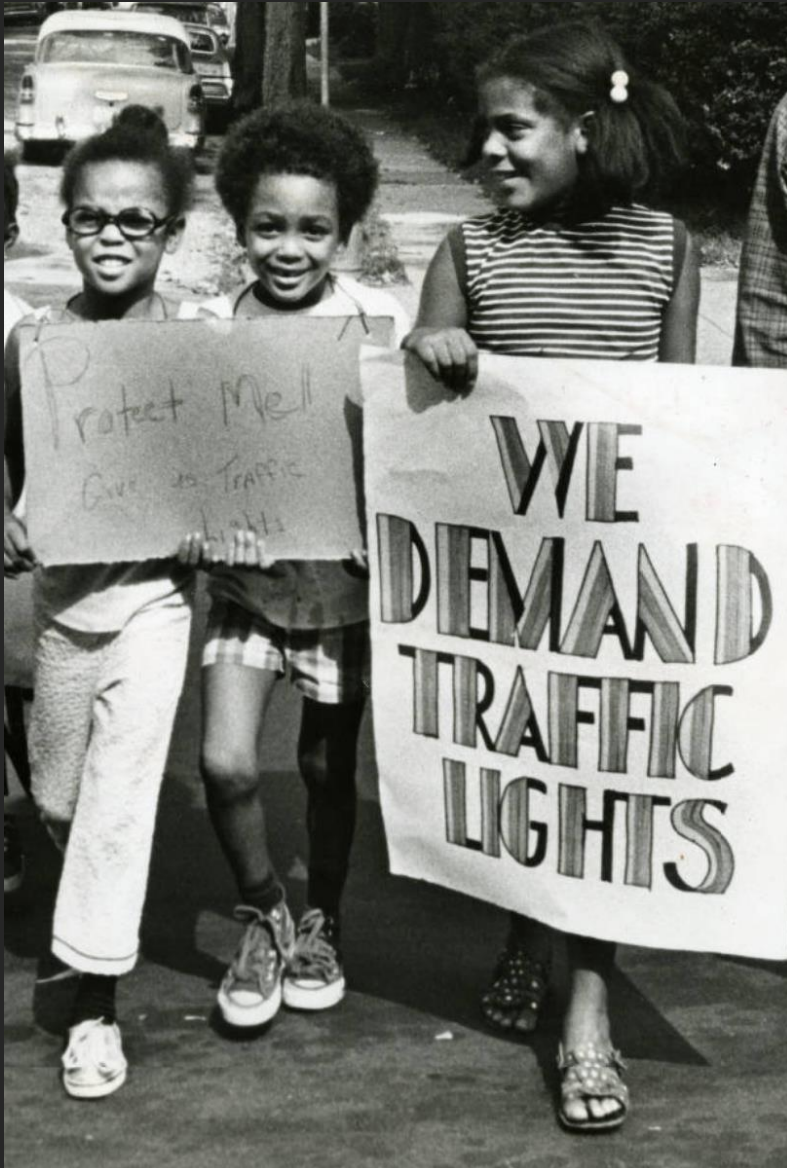
## The first radical revision



## The second radical revision



## The second radical revision



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**TOYOTA FARÁ A  
PRÓXIMA **REVOLUÇÃO**  
DA INDÚSTRIA DE  
CARROS ELÉTRICOS?**



**A sua revolução  
não é a nossa  
revolução.**

**PERFORMANCE**

Elevado Costa e Silva (Minhocão), São Paulo (photo: Christopher Pillitz)



Suas “soluções” não são  
nossas ferramentas.

Mas podemos fazer  
ferramentas com eles.



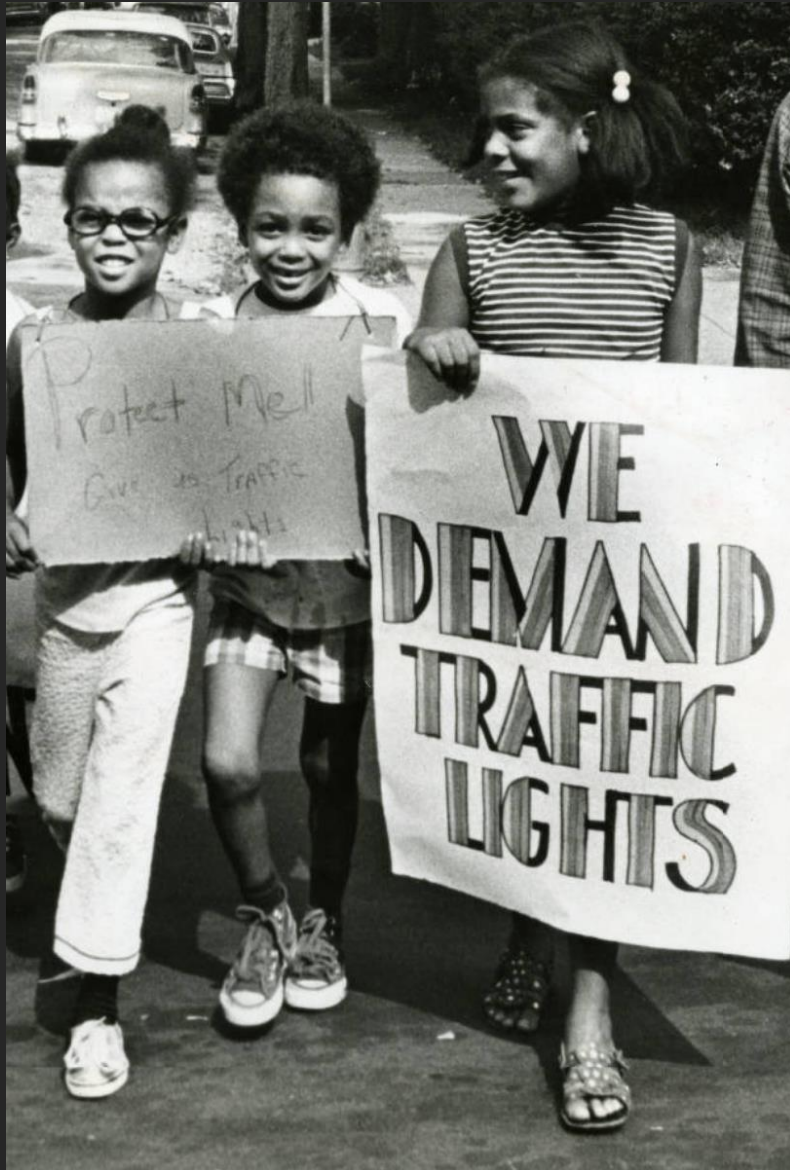
Acervo do Instituto Moreira Salles



Pedestres na Rua Direita (São Paulo, SP), 1938  
Hildegard Rosenthal / Acervo do Instituto Moreira Salles

Sua autonomia não é  
nossa autonomia.

A sua mobilidade não  
é a nossa mobilidade.



# Autonorama

## *A contrarrevolução perpétua*

Peter Norton  
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University of Virginia

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São Paulo  
October 24, 2023