Teddy bears & mind bombs

Exploring the historiography of science and environmental journalism

Association for Education in Journalism and Mass Communication
IALJS. Washington DC Aug. 8, 2023 [EA]

Bill Kovarik, PhD
EA – Extended Abstract

Main points

- **Media history lags** behind accepted practices and trends in professional history. Often Whiggish
- **Science writing** & environmental journalism currently very active – SEJ, NASW
- **Not an historical void** / Many people familiar with traditional nature writers (eg Neuzil, 2008)
- **Also long neglected** are mainstream newspaper writers
- **Ongoing resources** at history book web site www.revolutionsincommunication.com/eh

It's time to get beyond whig history of science & environmental journalism

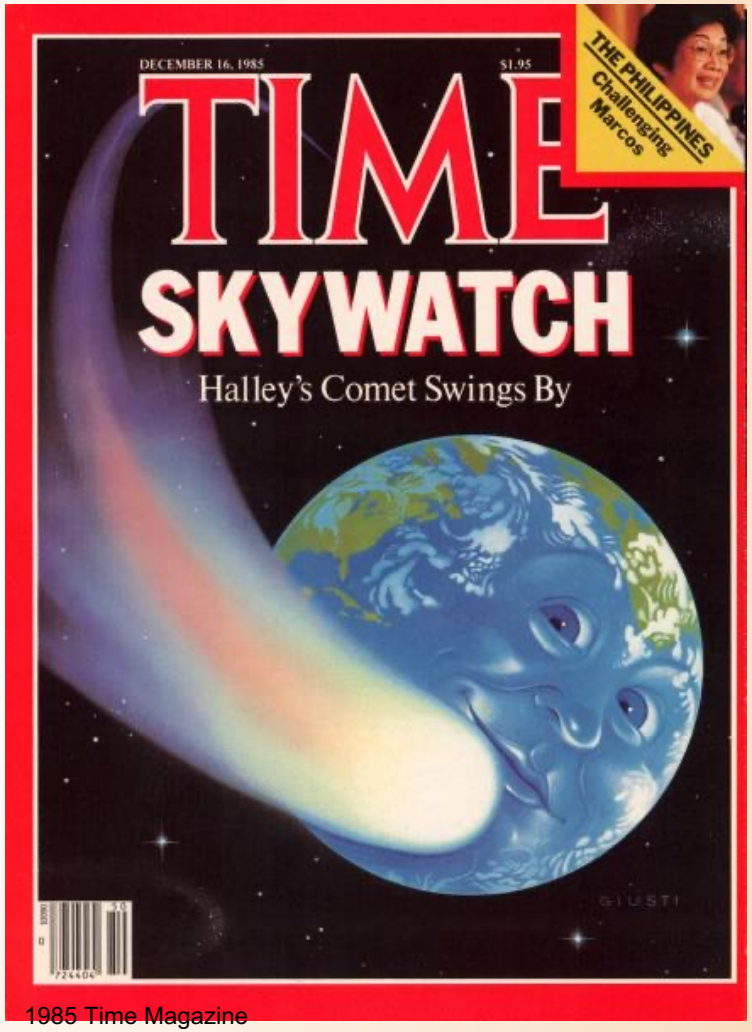
- Example of Whig history: "If science was even mentioned in a newspaper in the early 1900s, "it was in terms of magic or miracles, if not mere ridicule," -- historian David J. Rhees.
- "It was standard practice to assign the staff humorist to cover local scientific conventions." The typical comment was about the length of the scientists beards or on the titles of papers with the longest and least familiar words…"
- True of some publications but not all

“Suppose it’s Halley’s Comet...”

“Well first you have a half-page of decoration showing the comet, with historical pictures of previous appearances… (Then) get some good nightmare idea like the inhabitants of Mars watching it pass.

(And add) a two-column boxed ‘freak’ containing a scientific opinion which nobody will understand, just to give it class…”

Edwin Emery, The Press and America 1972



1985 Time Magazine

Science journalism

24 languages

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"Science writing" redirects here. Not to be confused with Scientific writing.

For broader coverage of this topic, see Science communication.

This article **may need to be rewritten** to comply with Wikipedia's quality standards. You can help. The talk page may contain suggestions. *(August 2011)*

Science journalism conveys reporting about science to the public.[2] The field typically involves interactions between scientists, journalists and the public.

Emma Reh (1896–1982) was a science journalist for the Science Service in the 1920s and 1930s. Here she can be seen reporting on an archaeological site in Oaxaca for *Science News*.[1]

Origins [edit]

Modern science journalism originated in weather and other natural history observations, as well as reports of new scientific findings, reported by almanacs and other news writing in the centuries following the advent of the printing press. One early example dates back to *Digdarshan* (means showing the direction), which was an educational monthly magazine that started publication in 1818 from Srirampore, Bengal, India. *Digdarshan* carried articles on different aspects of science, such as plants, steam boat, etc. It was available in Bengali, Hindi and English languages.[3] In the U.S., *Scientific American* was founded in 1845, in another early example. One of the occasions an article was attributed to a 'scientific correspondent' was "A Gale in the Bay of Biscay" by William Crookes which appeared in *The Times* on 18 January 1871, page 7.[4] Thomas Henry Huxley (1825–1895) and John Tyndall (1820–1893) were scientists who were greatly involved in journalism and Peter Chalmers Mitchell (1864–1945) was Scientific Correspondent for *The Times* from 1918 to 1935.[5] However it was with James Crowther's appointment as the 'scientific correspondent' of *The Manchester Guardian* by C. P. Scott in 1928 that science journalism really took shape. Crowther related that Scott had declared that there was "no such thing" as science journalism, at which point Crowther replied that he intended to invent it. Scott was convinced and then employed him.[5]

Traditional science & nature writers

- Pliny, Aristotle, Isaac Walton
- HD Thoreau, Ralph Waldo Emerson, George Perkins Marsh
- John Muir, Wm T Hornaday,
- Heinrich Ibsen, Sarah Orne Jewett
- Mary Austin, Marjory Stoneman Douglas
- Aldo Leopold, William T Vogt, Henry Osborne, CP Snow
- Rachel Carson, Annie Dillard
- Lewis Thomas, Stephen Jay Gould, Carl Sagan
- John McPhee, Jon Franklin, Bill McKibben

1900s Progressive era journalism

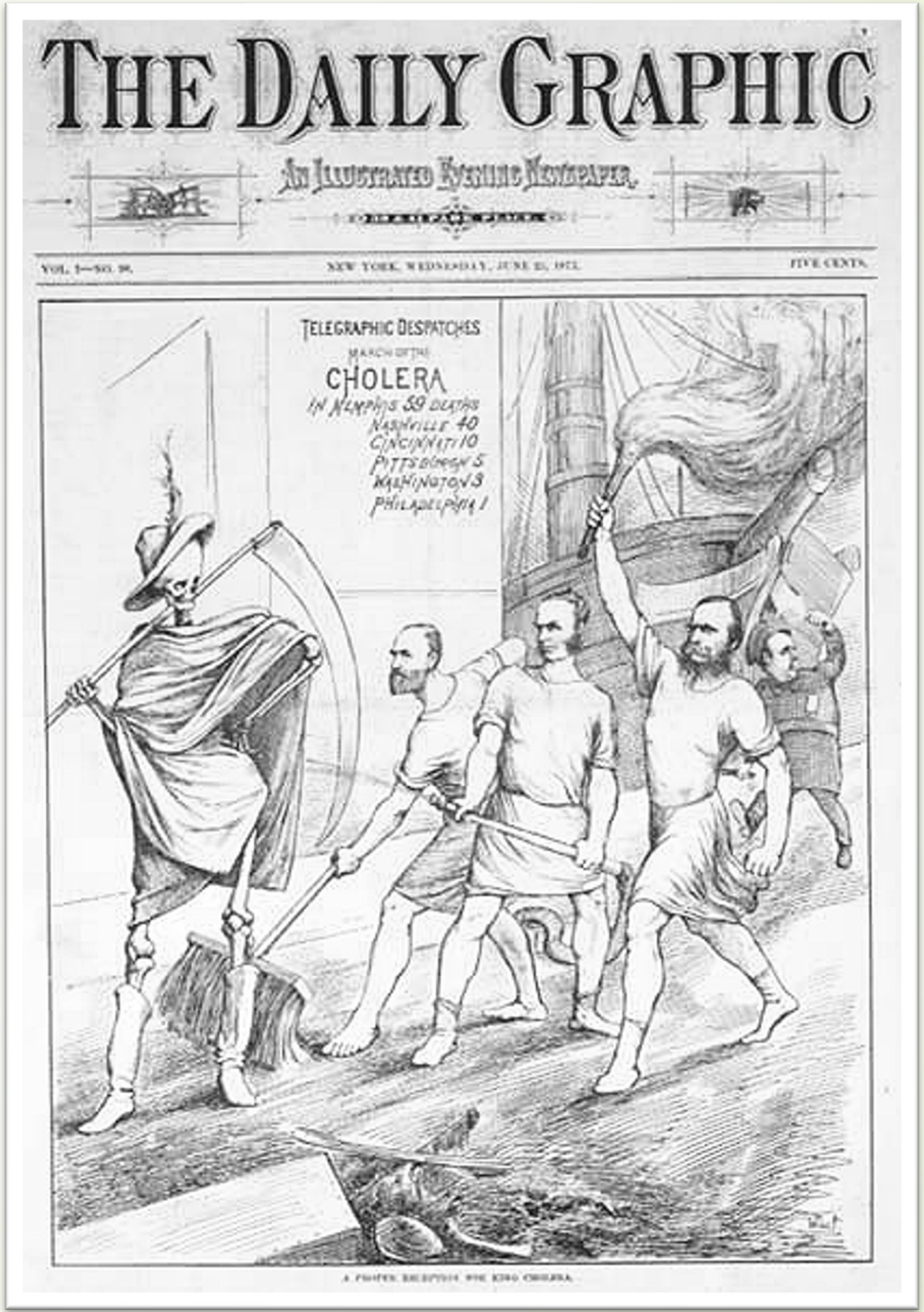
- New ethical perspective on nature
  - "Teddy bear" symbol from 1902 Louisiana hunting trip
  - Tropical bird feathers for hats: "millinery murder"
  - Bison extinction: "crime of the century"
- Smoke nuisance
- Water pollution

Reform spirit

New York City

"Overcrowded and disease-ridden, the city's unhealthy living conditions and squalor appalled prominent figures such as Horace Greeley …"

David Dowling



1970s mind bomb

A myth-busting action to create a dramatic new impression and replace an old cliché.

EG: Melville's image of whalers changing to heroic ecologists risking their lives to save whales.

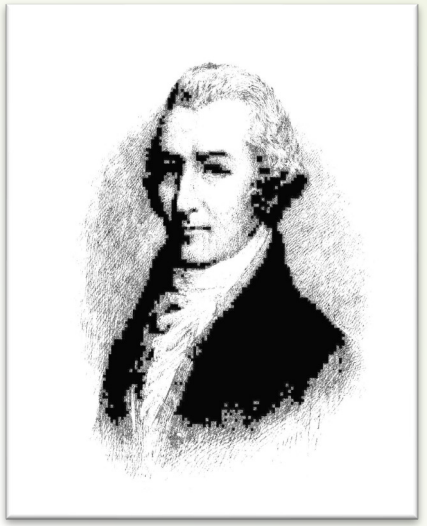
Led to dramatic changes in the political terrain …

Robert Hunter:

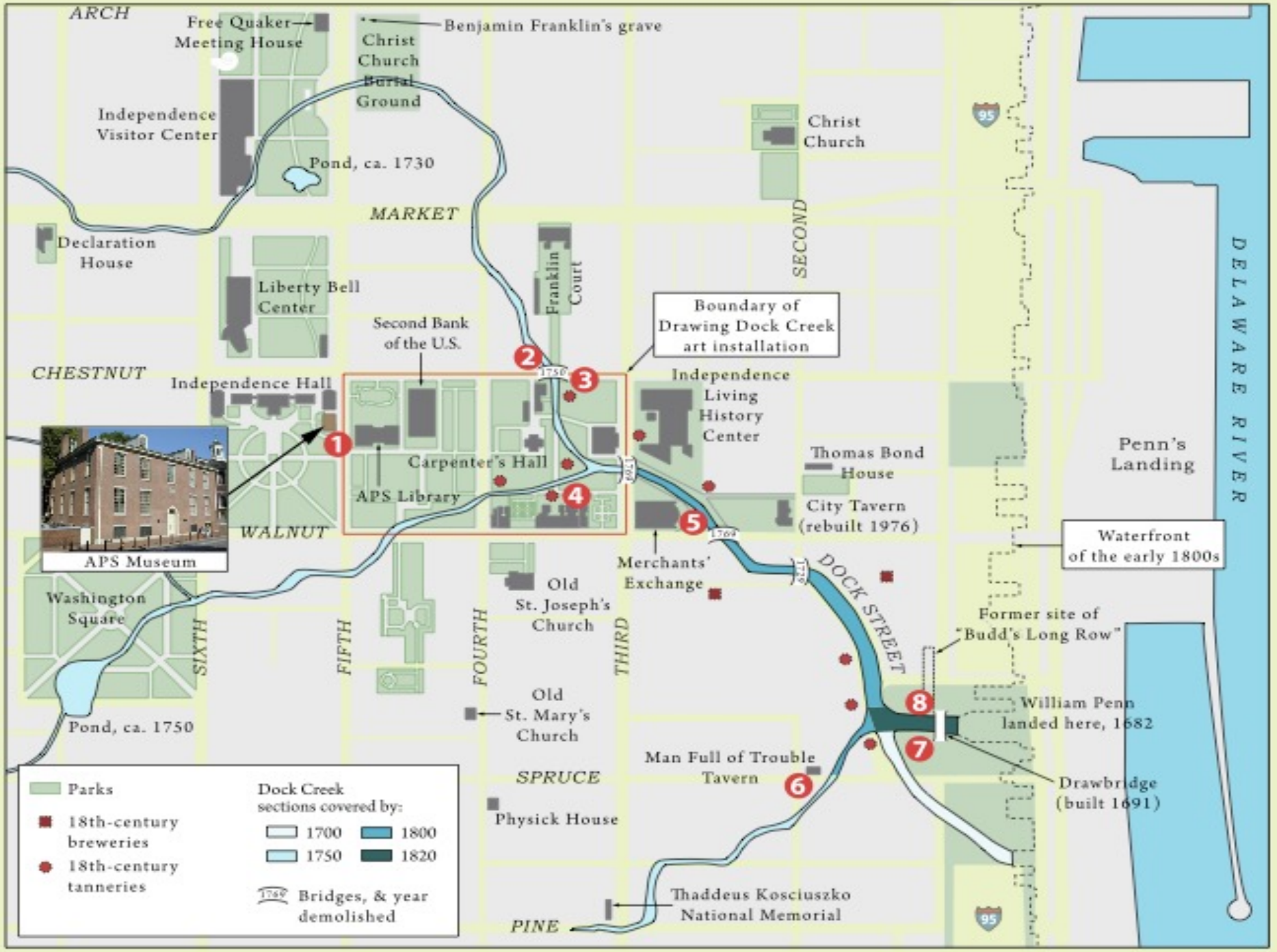
"We had to come up with images that would circulate the globe … Instead of storming the Bastille, we're storming the minds of millions of people…"

-- The Storming of the Mind, 1971; Weyler, 2020.

Public vs Private Rights



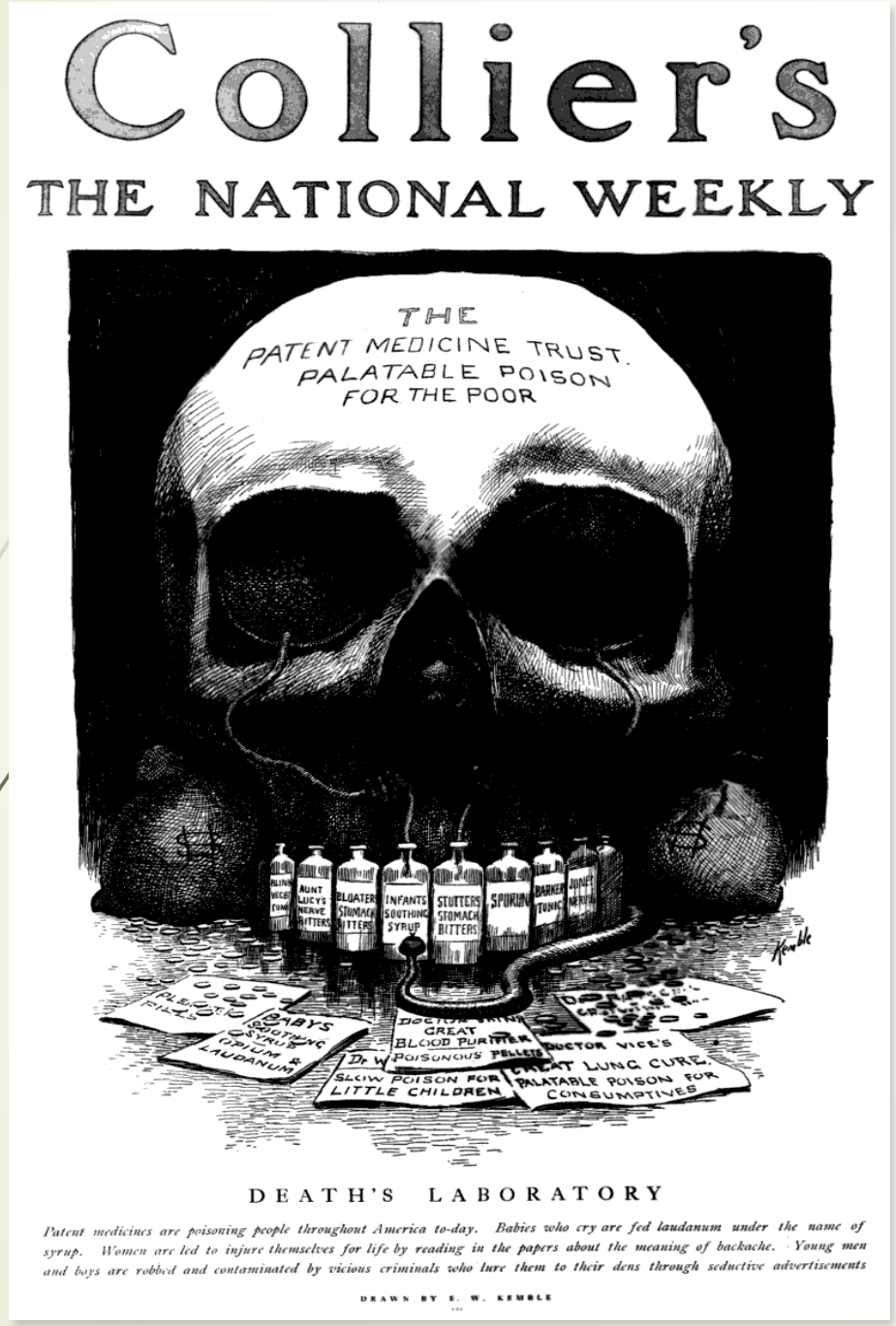
- **May 15, 1739 -- Benjamin Franklin,** editor of the Gazette, and his neighbors petition Pennsylvania Assembly to stop dumping in Dock Creek and remove the slaughterhouses and tanneries from Philadelphia's commercial district.
- **William Bradford**, editor of the Mercury, responds in alarm: *"A Daring Attempt (attack) on the Liberties of the Tradesmen of Philadelphia."*


ARCH
Free Quaker Meeting House
Benjamin Franklin's grave
Christ Church Burial Ground
Independence Visitor Center
Pond, ca. 1730
MARKET
Christ Church
SECOND
Declaration House
Liberty Bell Center
Franklin Court
Boundary of Drawing Dock Creek art installation
Second Bank of the U.S.
CHESTNUT
Independence Hall
Independence Living History Center
Carpenter's Hall
APS Library
Thomas Bond House
City Tavern (rebuilt 1976)
APS Museum
WALNUT
Merchants' Exchange
DOCK STREET
Waterfront of the early 1800s
Penn's Landing
DELAWARE RIVER
Washington Square
SIXTH
FIFTH
FOURTH
THIRD
Old St. Joseph's Church
Former site of "Budd's Long Row"
Old St. Mary's Church
William Penn landed here, 1682
Pond, ca. 1750
Man Full of Trouble Tavern
Drawbridge (built 1691)
SPRUCE
Physick House
Thaddeus Kosciuszko National Memorial
PINE
Parks
18th-century breweries
18th-century tanneries
Dock Creek sections covered by:
1700
1750
1800
1820
Bridges, & year demolished

Science writing as yellow journalism

William Randolph Hearst's *Journal – American* editors headlined lab tests showing that oysters, ice and milk sold throughout New York city were contaminated.

- Legitimate public health issues but hysterical framing was typical
- The hunt for Typhoid Mary took place from about 1911 to 1915.



Progressive fight for public health

Samuel Hopkins Adams 1871 - 1958

- Started in 1891 as a reporter for the New York Sun
- McClure's Magazine, wrote about public health
- Famous for Collier's Weekly series in 1905, "The Great American Fraud"
  - Led to the passage of the 1906 Pure Food and Drug Act and 1914 Federal Trade Act

New York Times editor 1904 - 1932

Editors: Carr Van Anda

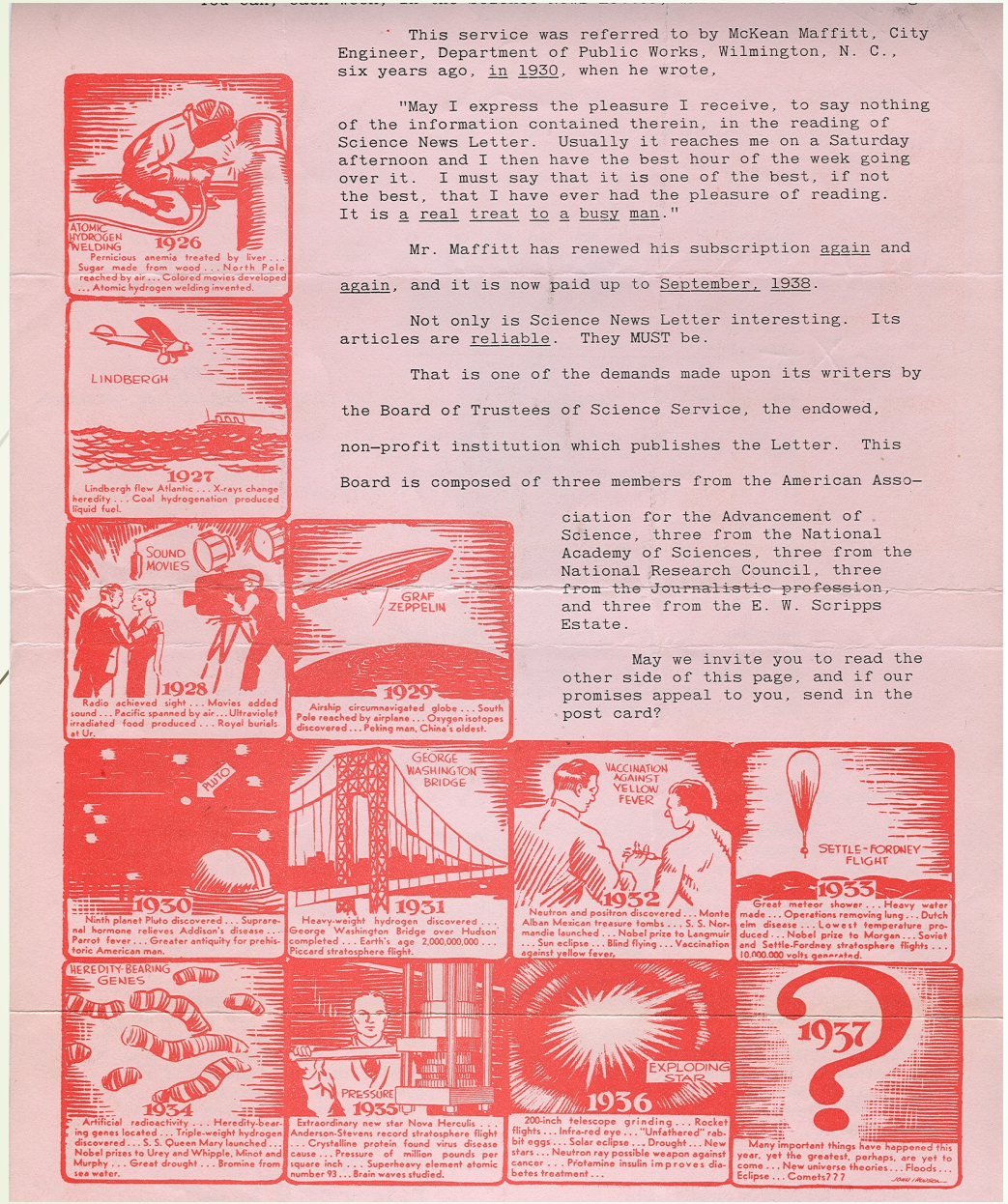
Worked for a new and more serious approach to science news

- Well versed in math (said to have once corrected a poor transcription of one of Albert Einstein's equations).
- Positivistic, pro-industry approach to science coverage
- Relied mostly on industry sources, not university professors or public health advocates, in environmental controversies

Editors: E.W. Scripps

Founder of Scripps newspaper chain

- Founded United Press wire service to counter AP monopoly
- Fascinated by science
- Founded Scripps Oceanographic Institute
- Founded Science Service 1922



This service was referred to by McKean Maffitt, City Engineer, Department of Public Works, Wilmington, N. C., six years ago, in 1930, when he wrote,

"May I express the pleasure I receive, to say nothing of the information contained therein, in the reading of Science News Letter. Usually it reaches me on a Saturday afternoon and I then have the best hour of the week going over it. I must say that it is one of the best, if not the best, that I have ever had the pleasure of reading. It is a real treat to a busy man."

Mr. Maffitt has renewed his subscription again and again, and it is now paid up to September, 1938.

Not only is Science News Letter interesting. Its articles are reliable. They MUST be.

That is one of the demands made upon its writers by the Board of Trustees of Science Service, the endowed, non-profit institution which publishes the Letter. This Board is composed of three members from the American Association for the Advancement of Science, three from the National Academy of Sciences, three from the National Research Council, three from the Journalistic profession, and three from the E. W. Scripps Estate.

May we invite you to read the other side of this page, and if our promises appeal to you, send in the post card?

ATOMIC HYDROGEN WELDING 1926
Pernicious anemia treated by liver... Sugar made from wood... North Pole reached by air... Colored movies developed ... Atomic hydrogen welding invented.

LINDBERGH 1927
Lindbergh flew Atlantic... X-rays change heredity... Coal hydrogenation produced liquid fuel.

SOUND MOVIES 1928
Radio achieved sight... Movies added sound... Pacific spanned by air... Ultraviolet irradiated food produced... Royal burials at Ur.

GRAF ZEPPELIN 1929
Airship circumnavigated globe... South Pole reached by airplane... Oxygen isotopes discovered... Peking man, China's oldest.

PLUTO 1930
Ninth planet Pluto discovered... Suprarenal hormone relieves Addison's disease... Parrot fever... Greater antiquity for prehistoric American man.

GEORGE WASHINGTON BRIDGE 1931
Heavy-weight hydrogen discovered... George Washington Bridge over Hudson completed... Earth's age 2,000,000,000... Piccard stratosphere flight.

VACCINATION AGAINST YELLOW FEVER 1932
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SETTLE-FORDNEY FLIGHT 1933
Great meteor shower... Heavy water made... Operations removing lung... Dutch elm disease... Lowest temperature produced... Nobel prize to Morgan... Soviet and Settle-Fordney stratosphere flights... 10,000,000 volts generated.

HEREDITY-BEARING GENES 1934
Artificial radioactivity... Heredity-bearing genes located... Triple-weight hydrogen discovered... S. S. Queen Mary launched... Nobel prizes to Urey and Whipple, Minot and Murphy... Great drought... Bromine from sea water.

PRESSURE 1935
Extraordinary new star Nova Herculis... Anderson-Stevens record stratosphere flight ... Crystalline protein found virus disease cause... Pressure of million pounds per square inch... Superheavy element atomic number 93... Brain waves studied.

EXPLODING STAR 1936
200-inch telescope grinding... Rocket flights... Infra-red eye... "Unfathered" rabbit eggs... Solar eclipse... Drought... New stars... Neutron ray possible weapon against cancer... Protamine insulin improves diabetes treatment...

1937
Many important things have happened this year, yet the greatest, perhaps, are yet to come... New universe theories... Floods... Eclipse... Comets???

Scripps Science Service founded 1922

- Detailed science news
- Tended to celebrate science
- Popularizing science
- Avoided controversy

Madame Curie and Her Gram of Radium
Slosson, Edwin E
*The Independent ... Devoted to the Consideration of Politics, Social and Economic Tendencies, His...*Jun 4, 1921; 105, 3
American Periodicals
pg. 584

Madame Curie and Her Gram of Radium

By Edwin E. Slosson

SHE seemed small and insignificant as she stood beside the stately President, before what the Washington papers —in their customary way—called "the most distinguished assemblage that had ever gathered in the East Room of the White House." A tired-looking, gray-haired, plainly dressed, sweet-faced and sharp-eyed woman, looking like a Kansas farmer's wife, one of the pioneer type who had carried the homestead thru drought and grasshopper years and brought up a fine family of children.

Only some such experience as this puts this expression of limitless patience and calm determination and tried competency on a woman's face.

President Harding spoke at length and eloquently, reviving an exploded theory of the external source of radium's energy in order to lead up to a compliment for its discoverer.

International

Madame Marie Curie

Madame Curie expressed her thanks in brief and perfunctory phrases, speaking good English in a low and timid voice. She was wearied with travel and hospitality. Her right hand was lamed by overmuch shaking. It seemed that each of the hundreds of Americans who had been privileged to grasp her hand had tried to express his admiration for science and France by the strength of his squeeze. She could not have carried away with her the gram of radium which President Harding had presented to her in the name of the American people who had bought it for her. A gram is not so much, only about fifteen grains. Many of us have taken fifteen grains of quinine at a dose and this amount of radium could be put into smaller cap-

ment of infinitesimal projectiles at almost infinite velocity will corrode the flesh against which it strikes—that is why radium is used to destroy cancerous tissue. An extremely minute amount of a radio-active salt will suffice to illuminate our watch dials and keyholes.

Radium passes thru seven stages in the brief period of its eruptive activity. The last of these, Radium F, is polonium, the first of the radiant elements discovered by Madame Curie and named by her in honor of her native country, then in eclipse but restored to the map by the Great War.

Lead is the corpse of radium. It is the dead matter left after the escape of these very fiery particles of radiant energy; cold, inert and unchangeable. Half of this gram of radium will have disappeared in 1690 years, and practically all of it in 10,000 years—no matter how safely kept or tightly imprisoned. Without haste and without rest it decomposes into common lead, helium gas and electrical energy. Or—to turn the statement backward—all the radium in the world must have come into existence since man first appeared on the earth. It is younger than the human race.

The parent substance is uranium, the ultimate element, the ninety-second and last of the series in the order of their atomic weights.

In 1896, Becquerel, a French chemist, found that a piece of uranium ore wrapt in paper and laid on a photographic plate in a dark room would make an impression on it the same as light. That is, here was a mineral giving off dark rays capable of penetrating paper or wood like the x-rays

Edwin E. Slosson


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1930
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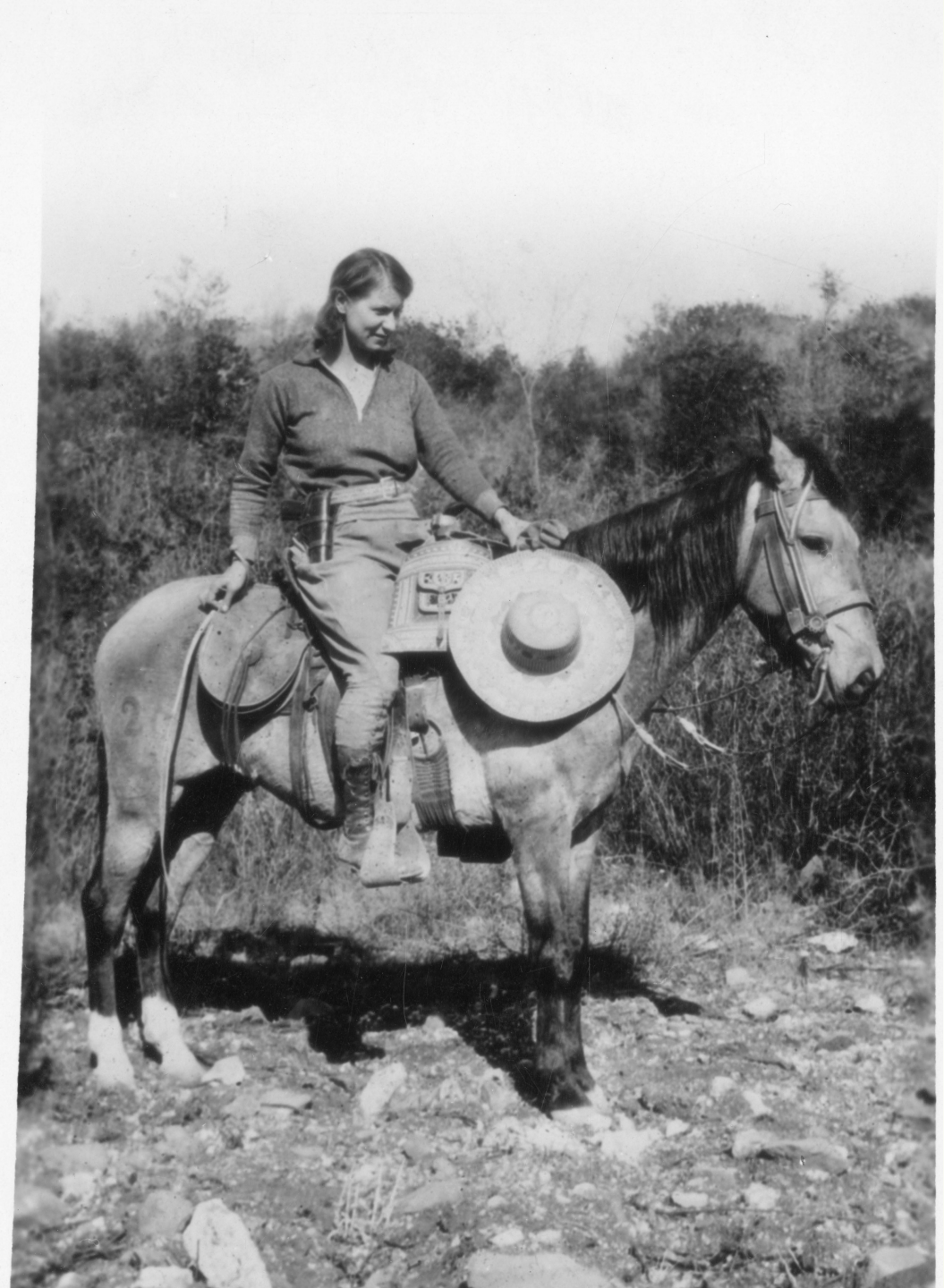
JOHN HUDSON

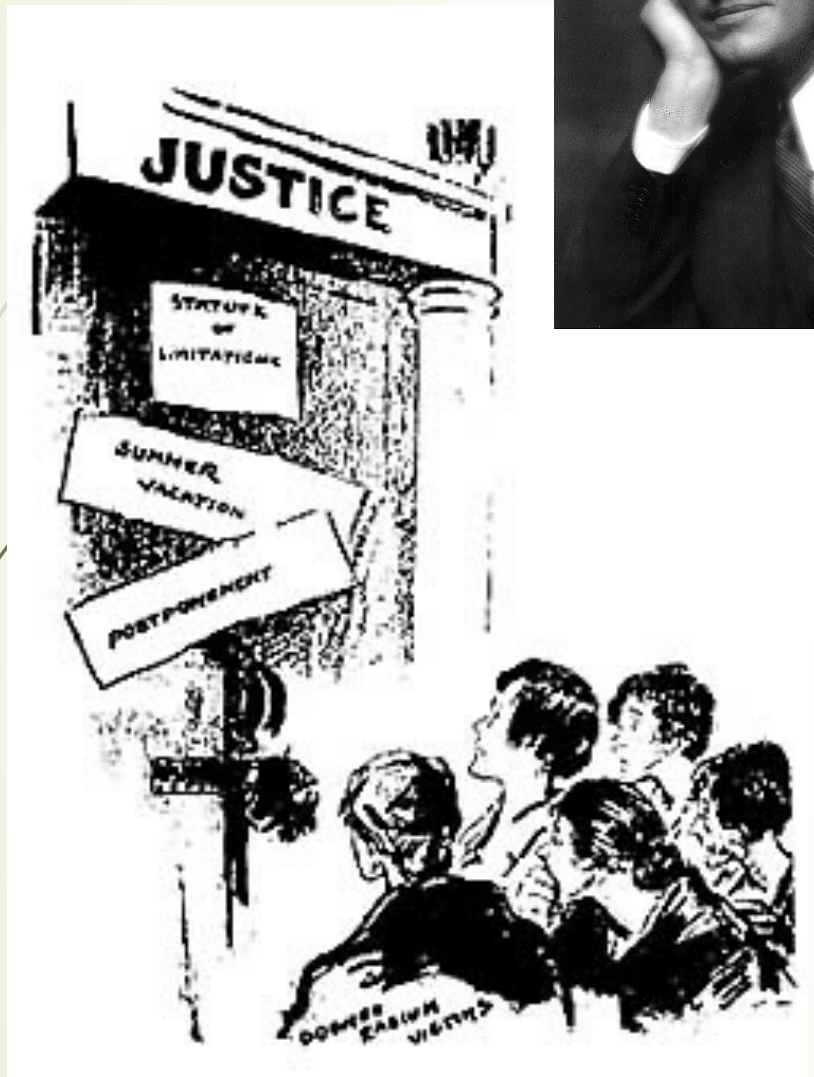


Emma Reh, Science Service

1920s – 30s

Riding to an archaeological site in Mexico

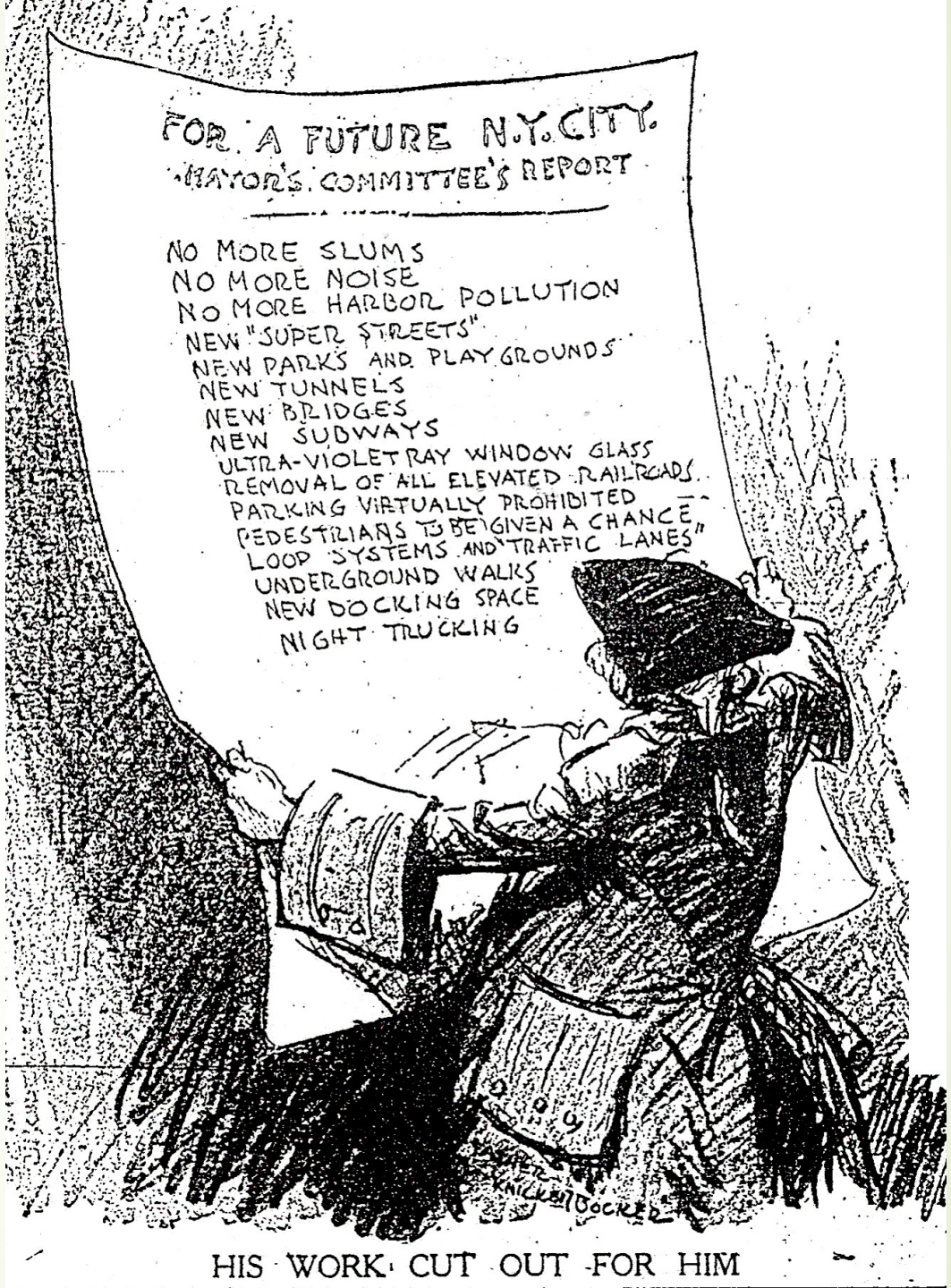
Editors: Walter Lippmann
NY World (Pulitzer)



- Relied on university and public health scientists more than industry
- Championed the cause of the "radium girls" in 1928
- Scientific controversy exemplified the difficulties of informed democracy;
- Science also represented a powerful institution that could stem the tide of totalitarianism

Lippmann & Pulitzer's World

- Environmental issues are clearly part of the news agenda in 1928



Gigantic Planets, the Captives of Strange Suns, Whose Nightmarish ...

BY PROF. GARRETT P. SERVISS, The Distinguished Astronomer.

The Washington Post (1877-1922); Jun 9, 1912; ProQuest Historical Newspapers: The Washington Post
pg. M5

Gigantic Planets, the Captives of Strange Suns, Whose Nightmarish Creatures Live in Air Thicker Than the Ocean Depths Where the Titanic Lies

BY PROF. GARRETT P. SERVISS,
The Distinguished Astronomer.

ONE of the most interesting recent discoveries of modern astronomy is that of the existence of huge invisible companions to many stars, and still more interesting is the conclusion that these extraordinary bodies may be gigantic planets revolving in the light of the stars with which they are connected. If they are planets, they so enormously exceed those that revolve around our sun, in magnitude, that they must be regarded as an entirely different species of worlds than [illegible]ould be like a mouse beside one of [illegible] or a trout beside a whale.

Even the great planet Jupiter, which is 1,300 times as large as the earth, would be utterly insignificant in comparison with one of these mysterious bodies which has been found revolving around the star Algol in the northern sky. That body is more than a million times as large as the earth. In fact, it is almost as large as the star around which it revolves—although that star is larger than our sun—and yet it is utterly invisible, except at certain periods when it passes between us and Algol and thus causes a partial eclipse of its bright companion. Even than it cannot be seen directly, and its form and dimensions are estimated from the amount of obscuration that it causes. Its diameter is calculated at about 840,000 miles.

We can get a realizing sense of what this means if we imagine that tremendous world to be a hollow sphere, with the earth placed at its center. Then there would not only be plenty of room for the moon to continue to revolve round the earth, as it now does, at a distance of 240,000 miles, but there would be a clear space of 180,000 miles, on all sides, between the orbit of the moon and the inside of the shell of the Brodingnagian planet.

Proportionate Sizes.

The surface of such a planet exceeds that of the earth ten thousand times. The Atlantic ocean stretched out upon it, to the same relative size that it is on the earth, would be more than 300,000 miles broad. If it had surface features exactly proportioned to those of the earth, its loftiest mountains would be from 400 to 600 miles high, and its oceans from 200 to 600 miles deep! A distance corresponding to that between New York and Chicago would be 80,000 miles. And, if everything were constructed on the same scale, men would be 600 feet tall, and the giant redwoods of California eight or nine miles high!

Of course, the force of gravity, or the weight of bodies, must also be enormously increased. If we suppose the mean density of the giant planet to be the same as that of the earth, a body that weighs one pound here weighs about a hundred pounds there, and an average man, having the same size that he has on the earth, would there weigh seven and a half tons. But if he were 600 feet tall—that is to say, proportioned to the size of the planet—he would weigh seven and a half million tons.

Questions of Atmosphere.

But there are many other interesting calculations, all based upon perfectly well known principles, that can be made about the condition of things on a world so gigantic as that which accompanies Algol. We may, for instance, inquire about the state of its atmosphere. The density and nature of the air surrounding any planet depends upon the force of gravity of that planet. If the planet is very small, the force with which it holds bodies, or gases upon its surface is proportionately small. Thus we know that a little world, like the moon, on which the weight of bodies is only about one-sixth as great as on the earth, is unable to hold permanently under its control any of the light gases which constitute the air that we breathe. The lighter a gas the quicker it escapes, because its molecules are in more rapid vibration than those of heavier gases. A gas is a substance in which the molecules are continually flying about in every direction, with a speed depending upon the nature of the gas, and unless the attractive force of a planet is sufficient to restrain the molecules of a gas when their direction of flight happens to be away from the center of the planet, then those molecules, and ultimately the whole of the gas, will escape into outer space.

To determine whether any planet is able to hold the gases that make an atmosphere we find out, from its size and density, what speed a gaseous molecule, or any other particle of matter, would have to have in order to fly directly away from it and never return. In the case of the earth this speed is known to be about 7 miles per second. If, then, any particle should start away, radially, from the surface of the earth's atmosphere, with a velocity exceeding 7 miles per second, it would escape into space and never come back. Now, the molecules of hydrogen have a maximum velocity of vibration exceeding this limit, and as a consequence we find no free hydrogen in the air. But the molecules of oxygen and nitrogen, and the other gases which are found in air, have velocities less than 7 miles per second, wherefore they remain attached to the earth, and form an invisible atmosphere around it.

On the other hand, a very great planet, like that of Algol, would retain not only the constituents of our air, but also the volatile hydrogen which escapes from the earth's control, and, for all we know, other gases—if there be any—whose molecular velocity is greater than that of hydrogen. Thus we see that the atmosphere of so huge a planet must be widely different in its composition from the air to which we are accustomed.

What the consequences of the existence in the atmosphere of a planet of free hydrogen might be it is difficult to guess. We know that hydrogen when mixed in certain proportions with oxygen will explode with extreme violence at the touch of a flame or an electric spark. Suppose a planet, like that of Algol, to be surrounded with an atmosphere containing hydrogen mixed with oxygen, and suppose that, owing to some cause, the mixture attains, at some point, the explosive ratio—and then let a flash of lightning pass through it! It is conceivable that the resulting explosion might have the most dreadful consequences. It is worth while considering whether this may not be the real cause of some of the sudden outbursts of what are called "new stars."

Then, too, upon such a planet the density of the atmosphere would be far greater than upon earth. Here the air presses with a force of fifteen pounds to the square inch. On the companion of Algol—making the same supposition as before regarding the planet's density—the pressure would amount to three-quarters of a ton per square inch.

Probable Density.

Now, if it could be supposed that the inhabitants of that planet were composed of substances of relatively small density, so that an animal as large as a man would weigh no more there than a man does here, they would almost be able to float in the air, and with comparatively slight aid could actually do so. Aerial navigation would be as easy and natural to them as swimming is to us.

This leads us to another consideration. We have thus far assumed that the mean density of the great planet in the Algol system is equal to that of the earth. The probability is, however, that its density may not be more than one-quarter of the earth's. This calculation is based both upon observation and upon analogy. The mean density of the sun, which is a body of nearly the same size as that with which we are dealing, is one-quarter of the earth's density. In that case the total gravitation of the planet would be only 250,000 times greater than the earth's, and the weight of bodies on its surface would be reduced to twenty-five times their weight here. But even then the pressure of its atmosphere, supposed to be relatively of the same extent as the earth's atmosphere, would be 375 pounds to the square inch—which is a much higher pressure than any careful engineer would dare to put into the best steam boiler. A cubic yard of that air, removed to the earth's surface and allowed suddenly to expand, would blow a building to pieces like an explosion of dynamite!

But we have not yet touched upon all the curious consequences resulting from the great size of the mysterious planet near Algol. Assuming that its mean density is one-quarter that of the earth, and that, consequently, bodies upon its surface weigh 25 times as much as the same bodies do here, we may reasonably conclude that its inhabitants, instead of being giants proportioned to the great size of their world, must rather be dwarfs, only a foot or two in height. This conclusion results from the consideration that, if they were as large as the inhabitants of the earth they would be unable to stand up under their immense weight. It would crush them down. On such a planet an average man would weigh 3,750 pounds. (This differs from our former estimate of 15,000 pounds, or 7½ tons, because we now assume that the density of the planet is but a quarter of that of the earth, instead of being equal to it).

But could a man of that weight possibly stand upright? Apparently the only way in which locomotion would be possible to the inhabitants of such a world would be

CONTINUED ON EIGHTH PAGE.

Serviss: 1913 climate change article

"Our Eastern Coast a Tropic Garden -- But England a Frozen Waste"
BY PROF. GARRETT P. SERVISS.
The Washington Post (1877-1922); Feb 9, 1913; ProQuest Historical Newspapers: The Washington Post
pg. MT4

"Our Eastern Coast a Tropic Garden---But England a Frozen Waste"

BY PROF. GARRETT P. SERVISS.

IT is the gulf stream which makes England. Once let it be turned aside so that it would no longer flow northeastward across the ocean, touching the northwestern shores of Europe, as it now does, with its warm, caressing hand, and there can be no doubt that not only the British Isles, but all western Europe, would experience a disastrous lowering of temperature.

At the same time this "accident" would completely change the climate of the Eastern seaboard of the United States. As England grew cold, America's coast would grow warmer; while London froze, New York would bask in a tropical climate; when the walrus and arctic birds fished in the now pleasant Thames, people would be gathering oranges off the trees in Central park, or picking cocoanuts from the palms along the Battery, hunting crocodiles off the Statue of Liberty, or fishing for tarpon off Boston! All the warmth of the gulf stream would be lavished on our shores.

For just as England is indebted to a current for the climate, so the middle Atlantic and New England States are now indebted to another for theirs. As the gulf stream flows upward, nearly parallel with the American coast, it meets the cold Labrador current coming down from Baffin's Bay, west of Greenland. The current hugs the coast and brings the fleets or icebergs that cross the tracks of the Atlantic liners near Newfoundland. It thrusts itself in between the land and the warm gulf stream, and helps to turn the latter eastward.

Any change, which, under present conditions, would have the effect of turning the Labrador current in such a way that it would no longer interpose to keep the gulf stream off the coasts of New Jersey, Long Island, and New England, would result in Massachusetts and New York being turned into semitropical gardens, while the great metropolis would become as hot as Seville or Naples.

The effect would be to raise the temperature along the whole Atlantic coast; Florida and the Carolinas would be hotter; New York and Long Island would swelter; even Nova Scotia and Newfoundland would feel the effects and be turned perhaps into wilderness, flowery paradises!

The effects would, of course, be confined to the Atlantic coast belt, for the circulation of the air in the northern hemisphere is such that the great free plains of the West lying behind the Appalachian range would continue to enjoy about the same temperature as at present.

The present climate of England is one of the wonders of the world. It is itself an accident. Considering its geographical position, England has no natural right to the possession of a genial climate. To understand this we have only to remember that the latitude of London corresponds to that of Labrador and the lower point of Hudson Bay, and that Vladivostok, Siberia, with its harbor ice-locked six months in every year, is nearer the equator than London is. Scotland extends as far north as arctic Sitka!

In central England the sun at the equinoxes does not rise more than 35 degrees above the horizon, while in the central United States it rises 55 degrees. At the summer solstice the corresponding elevations of the sun are, respectively, about 58 and 78 degrees. At the winter solstice the noon sun, in England, sinks to about 12 degrees. At the same time in the central United States its elevation is 32 degrees.

The climate of England is not, then, the spontaneous gift of the generous sun, but the result of a local interference by nature with the distribution of heat on the surface of the earth. This interference is mainly exercised through the gulf stream, which conveys a warm current of ocean water across the Atlantic to the doors of England. The heat carried by the vast quantity of water flowing in the gulf stream, and in currents parallel to it, suffices to offset the lack of heat supplied directly by the sun in a latitude so far north. It raises the temperature over thousands of square miles by bringing heat from the equatorial regions.

Waldemar Kaempffert

- Popular science, NY Times 1900s – 1930

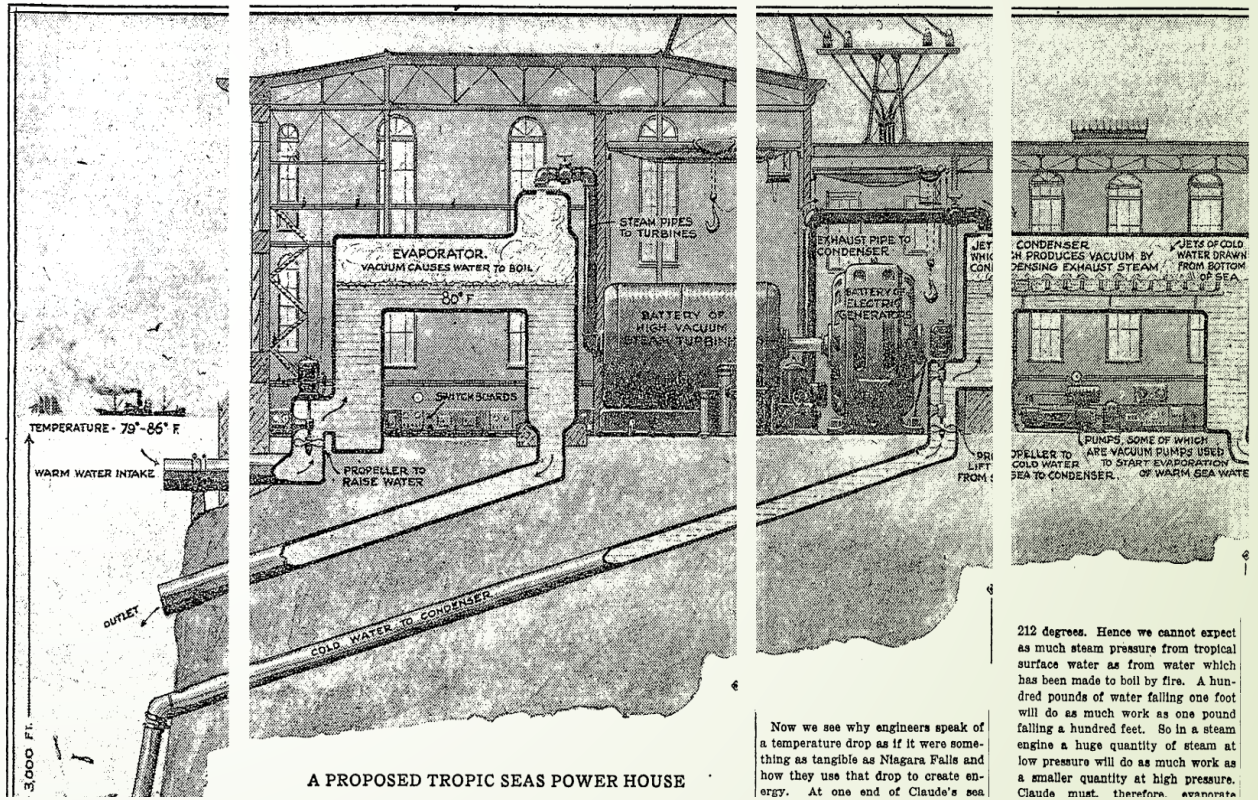
French Scientist Shows How Their Two Temperatures Can Be Harnessed To Make Steam—Dr. Claude Says Warm Ocean Could Run Industry

By WALDEMAR KAEMPFFERT.

GEORGES CLAUDE, one of the most distinguished physicists and chemists of our time, said recently "There is an inexhaustible store of power in tropical sea water, which, if utilized, will change the whole character of equatorial communities now lying industrially dormant. With this power from the warm seas trolley cars and the wheels of factories can be driven and houses and streets illuminated. The construction of the necessary plant is an engineering feat no more difficult than laying a transatlantic cable."

Dr. Claude's audience was the French Academy of Sciences. No doubt his reputation gave weight to his optimism; for Claude is the inventor of a method of liquefying air and of distilling from it the oxygen and hydrogen required for industrial purposes, as well as the discoverer of a process of making ammonia synthetically from nitrogen and hydrogen. In a subsequent communication to the French Academy of Sciences Dr. Claude generously gave credit to an American engineer, Benjamin J. Campbell, for having first suggested and outlined a method of practically exploiting warm tropical water for the generation of power.

Just why a physicist or engineer should seriously propose the utilization of warm tropical seas in the manner proposed by Claude and Campbell becomes clear when we bear in mind that heat can be transformed into mechanical energy. Make a hot body give up its heat to a cooler body, and in the process an engine can be driven, a shaft turned and a dynamo rotated. But there must always be this transfer of heat from one body to another, this drop in temp re. Even though heat is intangible. h a drop in tem-



A PROPOSED TROPIC SEAS POWER HOUSE

Now we see why engineers speak of a temperature drop as if it were something as tangible as Niagara Falls and how they use that drop to create energy. At one end of Claude's sea

212 degrees. Hence we cannot expect as much steam pressure from tropical surface water as from water which has been made to boil by fire. A hundred pounds of water falling one foot will do as much work as one pound falling a hundred feet. So in a steam engine a huge quantity of steam at low pressure will do as much work as a smaller quantity at high pressure. Claude must, therefore, evaporate

SCIENCE NOW PROMISES US RADIO SIGHT ACROSS SEAS

By WALDEMAR KAEMPFFERT.

New York Times 1857-Current; Dec 26, 1926; ProQuest Historical Newspapers The New York Times (1851 - 2001)
pg. XX4

Television of the Future, Bringing Europe to America.

SCIENCE NOW PROMISES US RADIO SIGHT ACROSS SEAS

Dr. Alexanderson's Television Device Is Expected to Bring Far Distant Scenes To the Home on Ether Waves—Moving Pictures and Images Painted by Beams of Light on Screens

By WALDEMAR KAEMPFFERT.

MILLIONS of pairs of eyes in as many homes intently following on screens the ceremonious coronation of an Indian Rajah, or the hooks and jabs of two heavyweights fighting for the championship of the world, or a company of actors in New York or London playing a comedy by Shakespeare—this is radio television as it is conceived by a score of American and European inventors. And ears hear as eyes see; for television can be combined with radio reception as we know it today. As the Rajah sways majestically through the streets on an elephant's back, cheers of the multitude burst from loudspeakers. The blow that some Tunney of the future plants on his opponent's chin is accompanied by a roar of savage delight from fifty thousand throats at the ringside. The actors in Shakespeare's play suit the action to the word, the word to the action.

actual television that an architect's sketch bears to the finished structure that it represents. What is more, he has experimentally proved that his method may easily be reduced to something as practical as the radio broadcasting and receiving of concerts.

Like most inventors who have worked in this field before him, Dr. Alexanderson began with the transmission of ordinary photographs by wire or radio. It now takes about twenty minutes to send a picture by radio across the Atlantic Ocean in regular commercial practice. Suppose that the time can be reduced to one-sixteenth of a second. Moving picture speed would be attained, and it would be possible to broadcast to a whole continent a film play in which Charlie Chaplin is the hero. In fact, the film could be dispensed with entirely. Charlie Chaplin might as well cavort before a modified, filmless moving picture camera; for successive images of him on a ground glass could be transmitted at the rate of sixteen

Electric waves are constantly radiated by the broadcasting station. "Carrier waves," they are called. As the violinist plays before the microphone they are modulated, which means that they are molded and shaped in such a way that when they are reconverted into sound we hear a violin and not a clarinet. Each instrument, each voice, impresses its characteristic pattern on the carrier waves. Without fine modulation it would be impossible to reproduce speech and song perfectly.

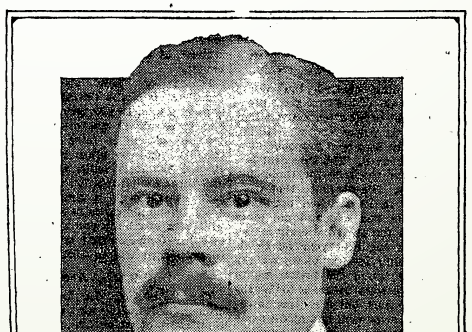
Far more difficult is the problem of enabling 10,000,000 people seated in their living rooms to watch a newly elected President of the United States take the oath of office in distant Washington. Light must be converted into electric waves and the electric waves must be reconverted into light. Instead of the familiar microphone we have a photo-electric cell, a device which forms part of the wave-transmitting circuit and which varies in electric conductivity with the intensity of the light that happens to fall upon it at any given moment. In the home receiver is a source of light sensitive to the electrical impulses transmitted by radio. These impulses produce corresponding fluctuations in a beam by which the image of the President, taking the oath of office, is luminously brushed on a screen.

Visions Transmitted in Bits.

A photo-electric cell is not an eye, like a camera lens; it has no spatial discrimination. A picture, whether a photograph or an image formed on ground glass by a lens, is an orderly collection of lights and shades. The cell cannot place each bit of light and each bit of shade where it properly belongs to produce a recognizable picture.

them to a beam of light, and the beam then passes over a sheet of photographic paper line by line. If there is a transparent part in a line of the transmitting negative the light glows at the receiver with full intensity; if there is a dark part it is momentarily extinguished; if there is a half-tone it glows with only part of the maximum intensity. Fortunately the modern cell is extraordinarily sensitive to the minutest gradations in light and shade, so that the photographs received by wire or by radio (over short distances) are scarcely distinguishable from the originals, even though they have been built up line by line.

"If we expect to paint a light-picture of fair quality and achieve television," says Dr. Alexanderson, "the least that we can be satisfied with is 10,000 separate strokes of the



their argument by pointing out that even if mirrors could be rocked or rotated hundreds of thousands of times a second there would not be light enough to illuminate a large screen effectively. What we want to see, particularly in the television theatre of the future, are life-size figures. Our screen must be considerably larger than a pocket handkerchief. The larger the surface to be covered with a given amount of paint the thinner must be the coat; the larger the screen to be brushed by a beam of light the feebler will be the illumination.

Now Dr. Alexanderson has solved this problem of speed and illumination at one stroke with the ingenuity and simplicity that always marks the great inventor. "If one beam of light cannot brush a light-picture fast enough," he argued to himself, "I will

with such rapidity that the eye has no time to follow the process and therefore obligingly combines them into a single good image.

The experimental projector that Dr. Alexanderson has constructed was designed solely to test the soundness of this principle and not to achieve television at a bound. With a single beam of light he succeeded in transmitting moving pictures at the rate of seven seconds each, a record in telephotography. With seven beams this rate can be reduced to one second. If he can speed up the process sixteen times—and that he can do so radio engineers will hardly question—television becomes an accomplished fact.

Two Types of Apparatus.

Radio music is transmitted on a single carrier wave. For television Dr. Alexanderson uses seven carrier waves and seven photosensitive cells, one wave and one cell for each beam of light. The seven invisible waves that convey bits of an image into space are scrambled and sent out through a single transmitter in accordance with a method perfected by John Hays Hammond Jr. At the receiving stations the seven waves are unscrambled, and seven photosensitive cells pick up the waves assigned to them. Thereupon seven beams of light, under the influence of the seven cells, proceed to brush the original image line by line on the screen.

Whether Dr. Alexanderson's system is used for broadcasting moving pictures or direct vision, we must be content with black-and-white half-tone screen images. It has been difficult enough to give us photographs, both still and moving, in natural colors—so difficult that the black-and-white snapshot is not yet obsolete. It would

ically in Australia or to see his Australian in New York.

For the benefit of these amateur telegraphers, Dr. Alexanderson has devised a system whereby a picture or an image is subdivided into five shades, which are automatically analyzed and reassembled. The photograph or image received will resemble a steel engraving rather than a snapshot or a reflection of real life; for the separate elements will be sent out according to the interrupted signal system on which telegraphy depends and will not be modulated to insure absolute fidelity. Static, the bugbear of all radio transmission, will not prevent the amateur from sending either photographs or his own image across the ocean in five shades of half-tones; for the signals will be strong enough to overcome the prevailing static. A critical value of signal strength will be established. Unless this is exceeded nothing is received.

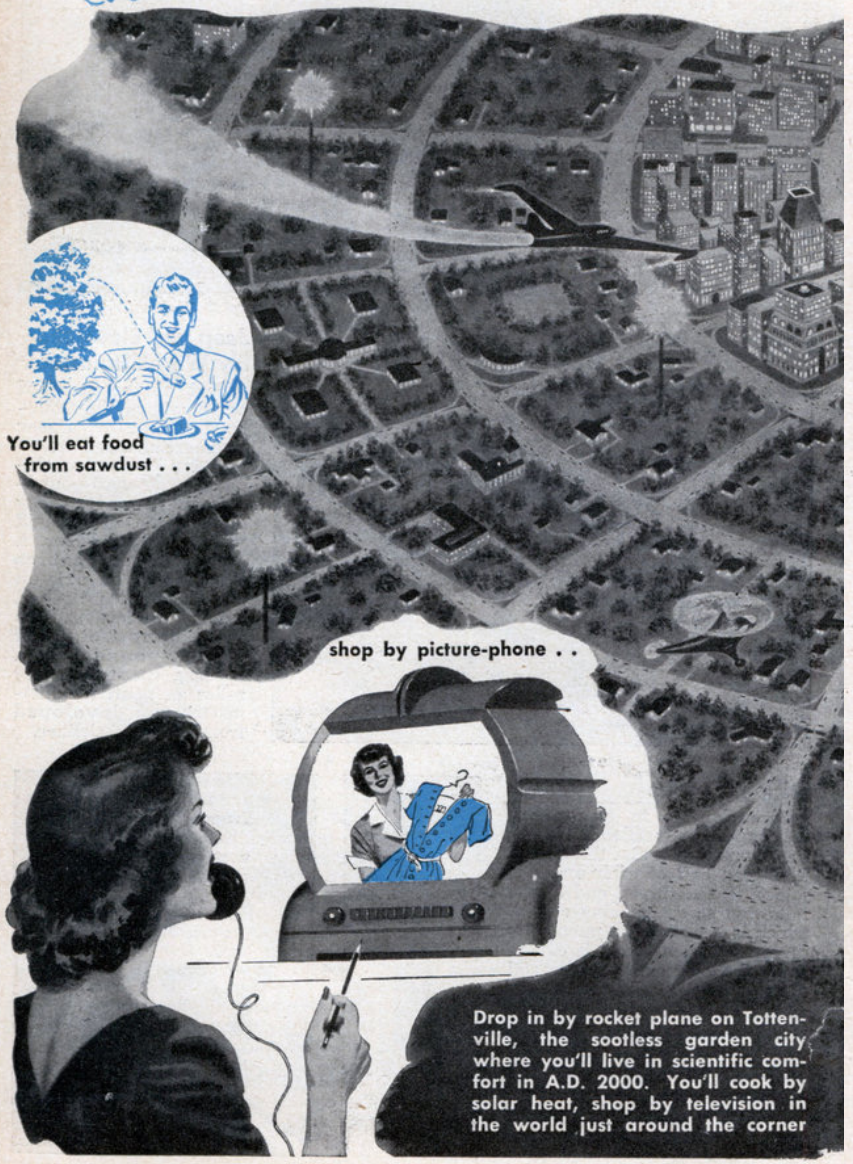
"No one can predict accurately just what the future of radio television will

with music that was once heard only in great cities. Ultimately it will be possible to receive in the village moving-picture theatre a performance of Hamlet by John Barrymore or of the latest musical comedy that has captured Broadway's fancy. The curtain will go up and down just as it does on the stage in New York; the stage will be disclosed with all its scenery, but in black and white; actors will be seen and heard in Wyoming as distinctly as in the theatre itself.

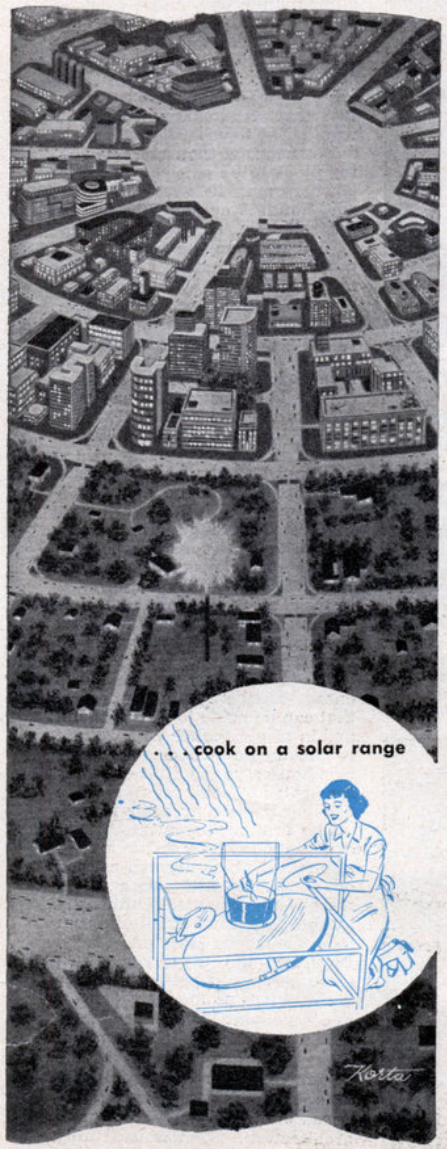
"That the more important events will be picked up by wire, sent to the broadcasting station and then radiated to television receivers within a radius of two hundred miles or more is a foregone conclusion. Political conventions, State functions, the welcoming of a queen to these shores, championship tennis matches and baseball and football games—all these will undoubtedly be flashed into millions of homes.

Seeing When Telephoning.

MIRACLES YOU'LL SEE



IN THE NEXT FIFTY YEARS



By Waldemar Kaempffert
Science Editor, The New York Times

WHAT WILL the world be like in A.D. 2000? You can read the answer in your home, in the streets, in the trains and cars that carry you to your work, in the bargain basement of every department store. You don't realize what is happening because it is a piecemeal process. The jet-propelled plane is one piece, the latest insect killer is another. Thousands of such pieces are automatically dropping into their places to form the pattern of tomorrow's world.

The only obstacles to accurate prophecy are the vested interests, which may retard progress for economic reasons, tradition, conservatism, labor-union policies and legislation. If we confine ourselves to processes and inventions that are now being hatched in the laboratory, we shall not wander too far from reality.

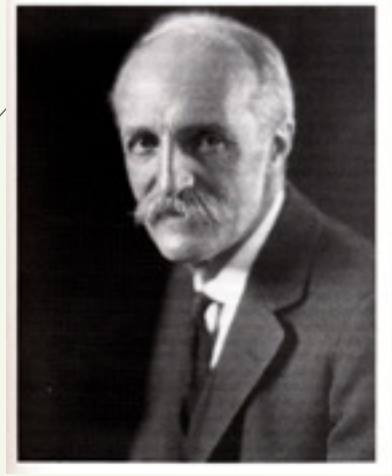
The best way of visualizing the new world of A.D. 2000 is to introduce you to the Dobsons, who live in Tottenville, a hypothetical metropolitan suburb of 100,000. There are parks and playgrounds and green open spaces not only around detached houses but also around apartment houses. The heart of the town is the airport. Surrounding it are business houses, factories and hotels. In concentric circles beyond these lie the residential districts.

Tottenville is as clean as a whistle and quiet. It is a crime to burn raw coal and pollute air with smoke and soot. In the homes electricity is used to warm walls and to cook. Factories all burn gas, which is generated in sealed mines. The tars are removed and sold to the chemical industry for their values, and the gas thus laundered is piped to a thousand communities.

The highways that radiate from Tottenville are much like those of today, except that they are broader with hardly any curves. In some of the older cities, difficult to change because of the immense investment in real estate and buildings, the highways are double-decked. The upper deck is for fast nonstop traffic; the lower deck is much like our avenues, with brightly illuminated shops. Beneath the lower deck is the level reserved entirely for business vehicles.

Tottenville is illuminated by electric "suns" suspended from arms on steel towers 200 feet high. There are also lamps which are just as bright and varicolored as those that now dazzle us on every Main

Nat'l Coast Anti-Pollution League 1921

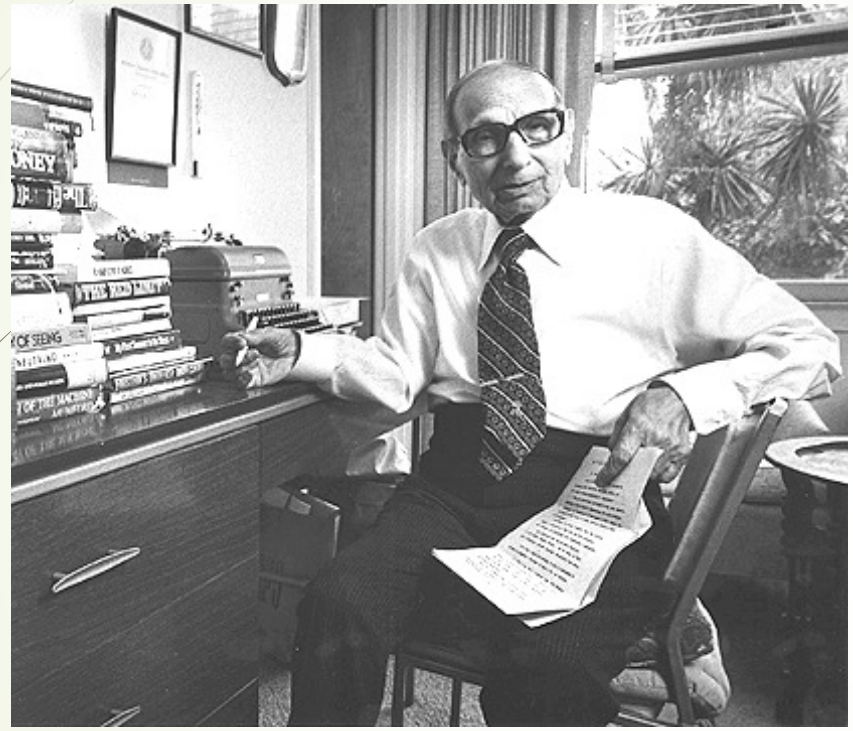


Mayors and hotel owners from East Coast beach towns organized to fight oil pollution, which was ruining their beaches. By the end of the decade, sewage and garbage was closing beaches from Coney Island to Atlantic City. Extensive press coverage due to celebrity leaders, eg Gifford Pinchot

Chicago Tribune

- Environmental controversy 1927
- Chicago Tribune didn't like Big Bill
  - Mayor William Hale Thompson
    - Friend of Al Capone

First Pulitzers for science journalism



"We must make science accessible to the people. Otherwise it is dangerous." -- Gobind Lal

- **Gobind Lal** (INS / Hearst)
- **William L. Laurence** (NY Times)
- **David Dietz** (Scripps-Howard)
- **Howard W Blakeslee** (Associated Press)
- **John J. O'Neill** (NY Herald Tribune)

First Pulitzer for environmental journalism 'Smoke menace' St Louis Post Dispatch 1940

"A great city has washed its face." -- Sam Shelton, St. Louis PD, 1939

U.S. ATOM BOMB SITE BELIES TOKYO TALES: TESTS ON NEW MEXICO RANGE ...
By WILLIAM L. LAURENCE Special to THE NEW YORK TIMES.
New York Times (1923-); Sep 12, 1945; ProQuest Historical Newspapers: The New York Times
pg. 1

U. S. ATOM BOMB SITE BELIES TOKYO TALES

Tests on New Mexico Range Confirm That Blast, and Not Radiation, Took Toll

By WILLIAM L. LAURENCE
Special to THE NEW YORK TIMES.

ATOMIC BOMB RANGE, New Mexico, Sept. 9 (Delayed)—This historic ground in New Mexico, scene of the first atomic explosion on earth and cradle of a new era in civilization, gave the most effective answer today to Japanese propaganda that radiations were responsible for deaths even after the day of the explosion, Aug. 6, and that persons entering Hiroshima had contracted mysterious maladies due to persistent radioactivity.

To give the lie to these claims,

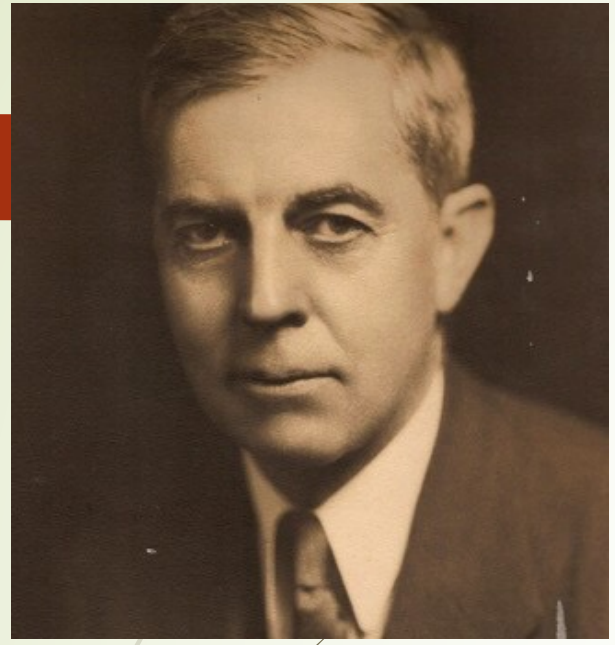
William L. Laurence (left) and J. Robert Oppenheimer (middle), talking at the Trinity Site, 1945.

Continuing Studies of Atomic Radiation Show Its Effect on Living Creatures: New Building Erected
By WALDEMAR KAEMPFFERT
New York Times (1923-); Mar 17, 1946; ProQuest Historical Newspapers: The New York Times
pg. E9

Continuing Studies of Atomic Radiation Show Its Effect on Living Creatures

By WALDEMAR KAEMPFFERT

By this time every newspaper reader knows that the bombs dropped on Hiroshima and Nagasaki produced radioactive after-effects on some of the surviving residents. Skin was scorched by heat and tanned by ultraviolet rays, and the white cells of blood were destroyed in some cases, with death as the result. At the time all this was news. It was no news at all to the staff of the Biochemical Research Foundation. Under the direction of Dr. Ellice McDonald, the foundation had been commissioned by the Government to determine the effect of the powerful rays emitted when material for bombs is made from uranium.



10 Ships Sunk, 6 Damaged; Atom Rays' Dispersal Waited
By Howard Blakeslee
The Washington Post (1877-1954); Jul 26, 1946; ProQuest Historical Newspapers The Washington Post
pg. 1

All Victims Near Blast

10 Ships Sunk, 6 Damaged; Atom Rays' Dispersal Waited

By Howard Blakeslee

Aboard USS Appalachian, Bikini (Friday), July 26 (AP).—To what extent the giant hand of the atomic bomb laid its deadly grip on 75 target ships anchored in the radioactive waters of this lagoon was still being determined today.

This much was known—10 ships including the battleship Arkansas and aircraft carrier Saratoga were resting on the bottom, sunk by yesterday's first underwater atomic explosion.

Six more, including the battleships New York and Nagato, the light carrier Independence, and heavy cruiser Pensacola were damaged.

Observer ships carrying scientists and Navy men eager to assess the full damage to the guinea pig fleet reentered the lagoon Thursday, some less than nine hours after the underwater blast was touched off.

Crews were alerted, however, to move out to high seas again should

The 33-year-old battleship Arkansas, 26,100 tons, which closed a distinguished fighting career.

The 19-year-old aircraft carrier Saratoga, 33,000 tons standard displacement, lragest of the world's carriers until the huge new Midway class came off the ways in the closing days of World War II.

LSM 60 (landing ship, medium), the suicide ship which carried atom bomb No. 5 to its final destination.

Yard oiler, of concrete construction.

An LST (landing ship, tank).

Resting on the bottom of Bikini Lagoon were these submarines which had been submerged prior to the blast:

The heavy-hulled Pilotfish, closest of all target vessels to the point of detonation; the heavy-hulled Apogon; the light-hulled Skipjack and Searaven, and one other—either the light-hulled Tuna or heavy-hulled Dentuda.

THE GOAL OF SCIENCE

By ARTHUR H. COMPTON
Nobel Prize Winner and Professor of Physics

IT has always been hard to believe that the future has more in store for us than we have known in the past. The past is known, the future is dim. Yet the ever-changing panorama of history shows man's techniques and knowledge always advancing, and at an ever-increasing rate. We think of the stone age, the bronze age, the iron age, and the machine age, and thus in quick outline catch a view of man's technical growth.

Each advance makes possible another. Skillfully made lenses make possible a telescope, and Jupiter is found to be a miniature solar system. When high-vacuum pumps are developed X-rays are discovered, leading to new knowledge of the structure of matter. "If I saw farther, 'twas because I stood on giant shoulders," is the statement ascribed to Isaac Newton, who clearly recognized the way in which one advance makes possible another.

The result has been an increase in the rate of growth of knowledge and of the control of nature, which is one of the most striking phenomena of man's history. The knowledge of nature, which from the beginning had been man's gradually but accidentally increasing heritage, has now become the conscious objective of alert minds. Three centuries ago the hobby of a few amateurs, this enterprise of science has gradually become the most significant intellectual quest of man. As a result, changes for the better in our mode of living are the order of the day.

advancing knowledge, let us compress the time scale, say, by a millionfold. We may then think of the first men as learning a year or two ago to use certain odd-shaped sticks and stones as tools and weapons. Sounds took on meaning, and speech appeared.

Last month some one developed the art of adroitly shaping stones to meet his needs. By last week man had become an artist, and by day before yesterday he had learned to use simplified pictures as symbolic writing. Yesterday the alphabet was introduced. Bronze was the metal that was most used. Yesterday afternoon the Greeks were developing their brilliant art and science.

Speaking as at noon today, last midnight Rome fell, hiding for several hours the values of civilized life. Galileo observed his falling bodies at 8:15 this morning. By 10 o'clock the first practical steam engine was being built. At 11 the laws of electromagnetism were developed, which by 11:30 had given us the telegraph, electric power, the telephone and incandescent electric light.

At 20 minutes to 12 X-rays were discovered, followed quickly by radium and wireless telegraphy. Only fifteen minutes ago the automobile came into general use. Air mail has been carried for hardly five minutes. Not until the last minute have world-wide programs broadcast by short-wave radio become popular. Now, at noon, we find mankind in a wholly new sense unified by science.

A GRAPHIC picture of this rise of techniques to the crescendo in which we are living will be presented at the New York World's Fair. Here the prominent place of science as the foundation of our organized life will be made clear. One will see how the growth of technology has changed our social life and customs, and has supplied the tools with which we can shape our world to fit our needs. By historical contrasts will be shown the new opportunities for the individual in the enrichment of life.

Thus a century and a half ago one sees every member of the family hard at work, with little leisure, closely dependent on nature, but largely independent of his neighbors. Today's family lives in relative comfort and leisure, protected from the rigors of nature, but very dependent on organized society and the products of science. The spirit of a will to work for the common good becomes the evident key to a stable society in such a highly specialized world.

New knowledge now being gained by arduous research in universities and industrial laboratories promises a continuation of the general advance. In my own field of physics it would seem fair to say that Rutherford's discovery of the possibility of atomic disintegration, popularly known as "atom splitting," and Hess's discovery of cosmic rays are events whose scientific importance is comparable with Faraday's discovery of the law of electromagnetic induction and Roentgen's discovery of X-rays.

Faraday's discovery was the basis of the modern electrical industry. Roentgen's ushered in the era of radium, ionic chemistry, electrons and radio. What will follow from those of Rutherford and Hess it is yet too early to say.

WITHIN the last half century the atoms postulated by Democritus in Ancient Greece have been found. This was the basis for the development of modern chemistry. Then the atom was found to have a structure, electrons coursing around nuclei like planets about a sun. The nucleus in turn has parts, protons and neutrons. Light was found to have a corpuscular as well as a wave character. Now the studies of cosmic rays have revealed a bewilder-

"Of one thing we can be sure: new knowledge will come and our lives will require further adjustments. The storehouse of Nature's secrets has only been touched."

Air Pollution 1940s – 50s

- DONORA 1948 -- Oct. 30 -- 31 -- Donora, Pennsylvania smog incident. Twenty people died, 600 hospitalized and thousands suffering in this nationally publicized environmental disaster.

London Fog

1952 -- Dec. 4-8 -- Four thousand people die in the worst of the London "killer fogs." Vehicles use lamps in broad daylight, but smog is so thick that busses run only with a guide walking ahead. By Dec. 8 all transportation except the subway had come to a halt.

1953 -- New York smog kills between 170 and 260 in November.

Los Angeles 'Smog war' 1954

- Heavy smog conditions shut down industry and schools in Los Angeles for most of October.

Conservation: The "blister brigade"

- Supreme Court Justice William O. Douglas leads the "blister brigade" of Washington Post staffers and families down the old Chesapeake and Ohio canal from Cumberland, Md. to Washington D.C. in one of his spring hikes. In March, 1954, Douglas challenged their support of a highway to replace the C&O Canal. The area became a 12,000 acre national park in 1971 thanks largely to these efforts. (National Park Service Photo)

Frank Capra 1958 on climate

UNCHAINED GODDESS was part of a 1958 science education film series produced by Frank Capra for Bell & Howell.

"Even now, man may be unwittingly changing the world's climate through the waste products of his civilization … Carbon dioxide, helps air absorb heat from the sun … It's been calculated that a few degrees rise in the earth's temperature would melt the polar ice caps… and if this happens, an inland sea would fill a good portion of the Mississippi Valley."

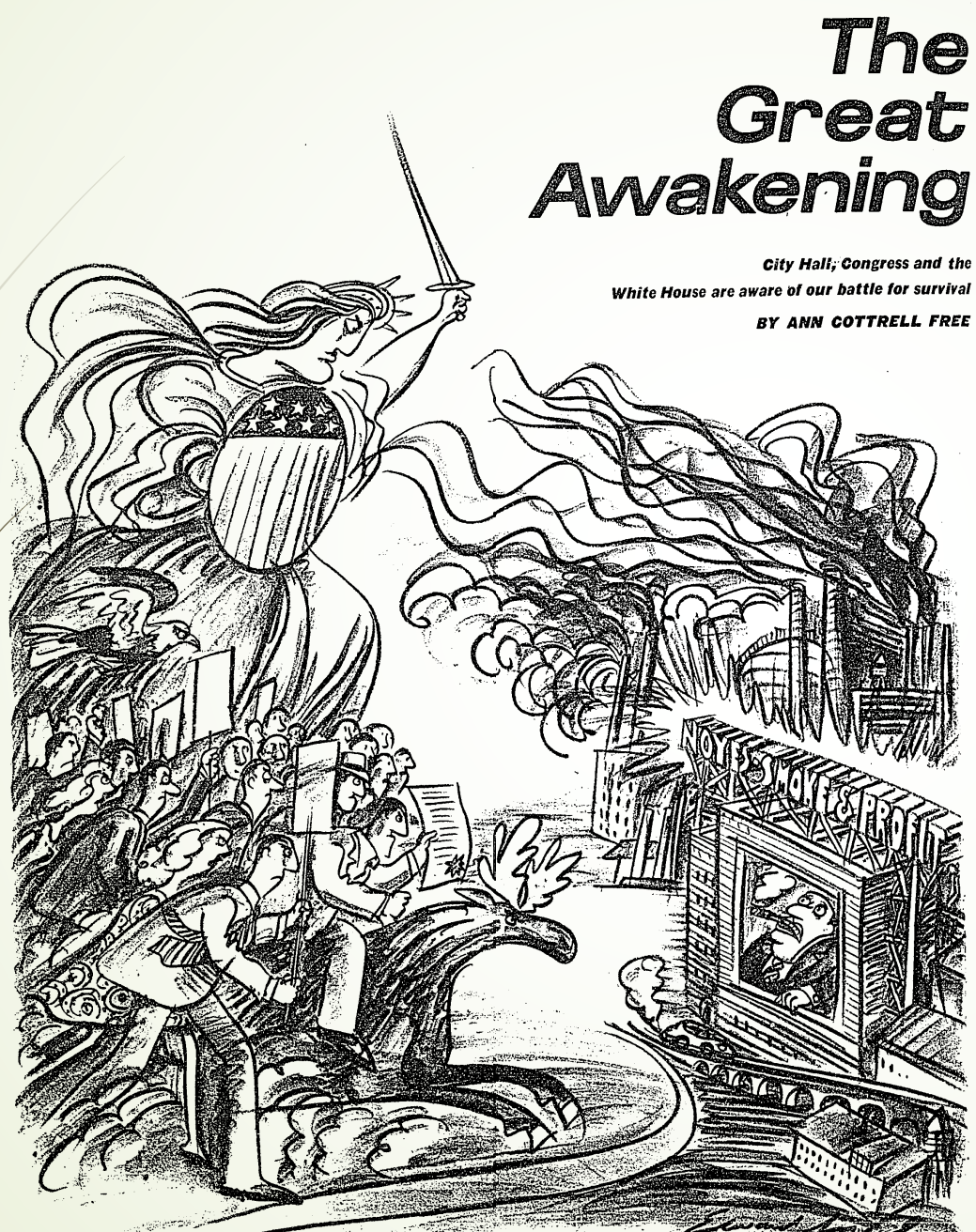
Rachel Carson

- May 27, 1907 – April 14, 1964
- Biologist and writer, author of award winning books
- Silent Spring published in the New Yorker in the noisy summer of 1963
- Said DDT and other pesticides are killing birds in large numbers
- Widely reported in press along with chemical industry counter-attacks.

Rachel Carson

- "This was something I had not expected to do, but facts that came to my attention … disturbed me so deeply that I made the decision to postpone al other commitments and devote myself to what I consider a tremendously important problem."

The Great Awakening: City Hall, Congress and the White House are aware of our battle for survival
ANN COTTRELL FREE
The Sun (1837-1994); Apr 13, 1969; ProQuest Historical Newspapers: The Baltimore Sun
pg. WK6



Ann Cottrell Free

Baltimore Sun

revolutionsincommunication.com/eh

Thank you