

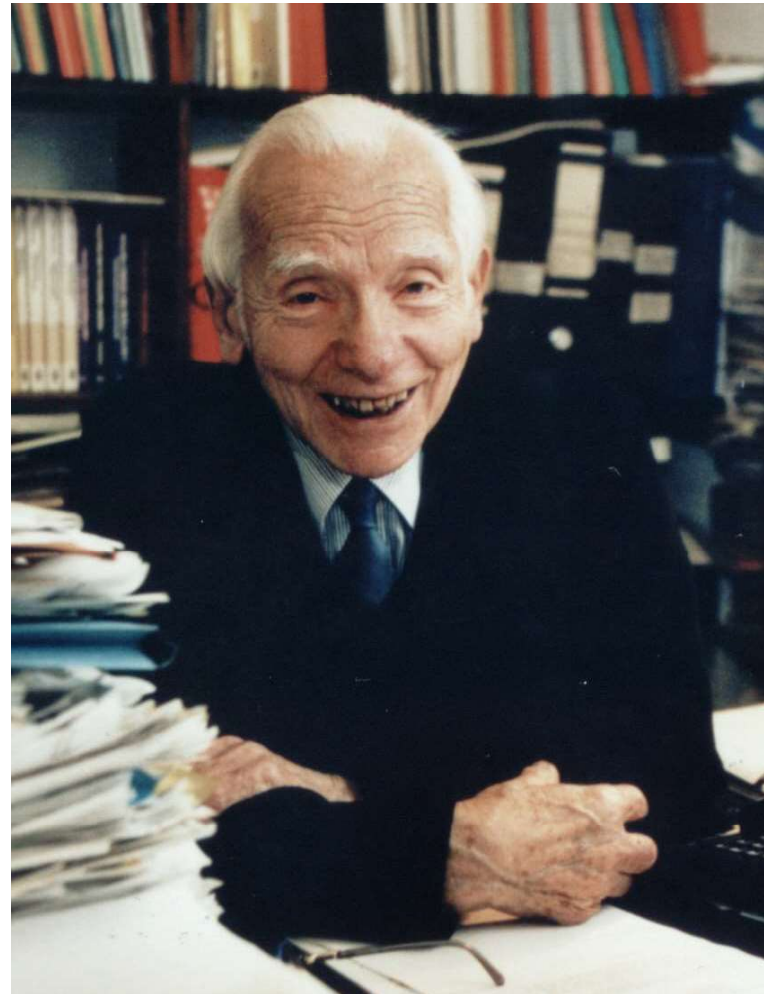
Józef Rotblat:

Keeper of the Scientist's Conscience

**Nobel Peace Prize
1995**

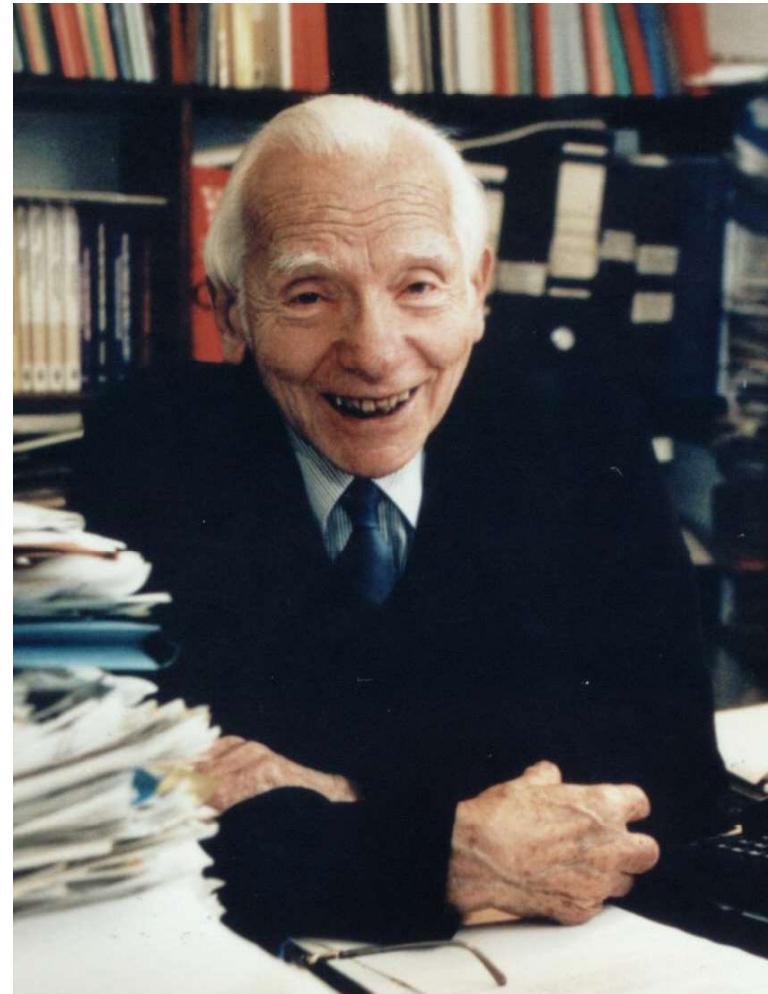
John Finney

**University College London
and
The British Pugwash Group**



The priorities of an ethical scientist:

“My short-term goal is the abolition of nuclear weapons, and my long-term goal is the abolition of war”



How did he get to this position?

- And what did he accomplish?



A quick overview (1)

- Born Warsaw 1908
- Hardship as a boy
- Graduated in Physics (Free Univ. of Warsaw 1932)
 - Part time evening study
- Early nuclear physics research in Warsaw
 - Realised implications of nuclear fission
- Worked with Chadwick (neutron discoverer) in Liverpool from 1938

A quick overview (2)

- Did fundamental work on nuclear fission
- Joined Manhattan project
- Left Manhattan project for moral reasons
- Post WW1, changed his research to medical uses of nuclear physics
- Signed the Russell-Einstein Manifesto 1955
- Co-founded Pugwash 1957

A quick overview (3)

- **Spent the rest of his 96 years working to:**
 - **rid the world of nuclear weapons**
 - **rid the world of war**



Figure 2. Rotblat with President Gorbachev. (Photograph taken by Prudence Cuming Associates;

Major scientific accomplishments (1)

- Discovery of several radionuclides
- Discovery of evidence for the inelastic scattering of neutrons
 - added an important building block to the growing young edifice of nuclear physics
- Discovered induced radioactivity in nickel and cobalt (c.f. Enrico Fermi)
- Advances in detector technology
 - The first (medical) X-ray scanner!

Major scientific accomplishments (2)

- Demonstrated that Uranium fission released more neutrons:
 - Realised the possibility of a chain reaction..
 - ...and hence the possibility of a weapon of unprecedented power
- Advanced cyclotron development
- First medical use of radioiodine in diagnosis
- Studies of energy levels and other properties of nuclei with high-energy beams of light particles

His stature as a scientist

- A leader in the development of nuclear physics in the UK
- Recognising the potential of atomic energy, led the development of:
 - more powerful particle accelerators
 - photographic emulsions for detecting elementary particles
- At the forefront of the medical uses of radiation

**Elected Fellow of the Royal
Society in 1995**

**But he had more important
things to do...**

Working for the abolition of nuclear weapons

- **General Groves**
- **British Atomic Scientists' Association (1940s)**
- **The Lucky Dragon (1954)**
- **Russell-Einstein Manifesto (1955)**
- **The Pugwash Conferences (1957 -)**
 - a whole lifetime working to abolish nuclear weapons

General Leslie Groves

- **oversaw the construction of the Pentagon**



General Leslie Groves

- oversaw the construction of the Pentagon
- the primary military leader in charge of the Manhattan Project to develop the atomic bomb during World War II.
- The real reason for the bomb...



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The Atomic Scientists Association

- Formed early in 1946
- Many members had taken part during the war in atomic energy/weapons projects
- Aims:
 - To bring before the public the true facts about atomic energy and its implications
 - To investigate and make proposals for the international control of atomic energy
 - To help shape the policy of the UK in all matters relating to atomic energy

Jo in 1946:

- ‘set about arousing the scientific community to the devastating effect of nuclear weapons and the danger of their proliferation’
- ‘felt the general public was ignorant of the ...uses of atomic energy’
 - And ‘felt it was his duty to do his best to educate the general public’

Bryce Halliday: “Professor Rotblat and the Atomic Train”,

1947: The Atom Train



The Atom Train, 1947

A travelling exhibition on Nuclear Energy organised by Joseph Rotblat
(from the guide to the travelling exhibition)

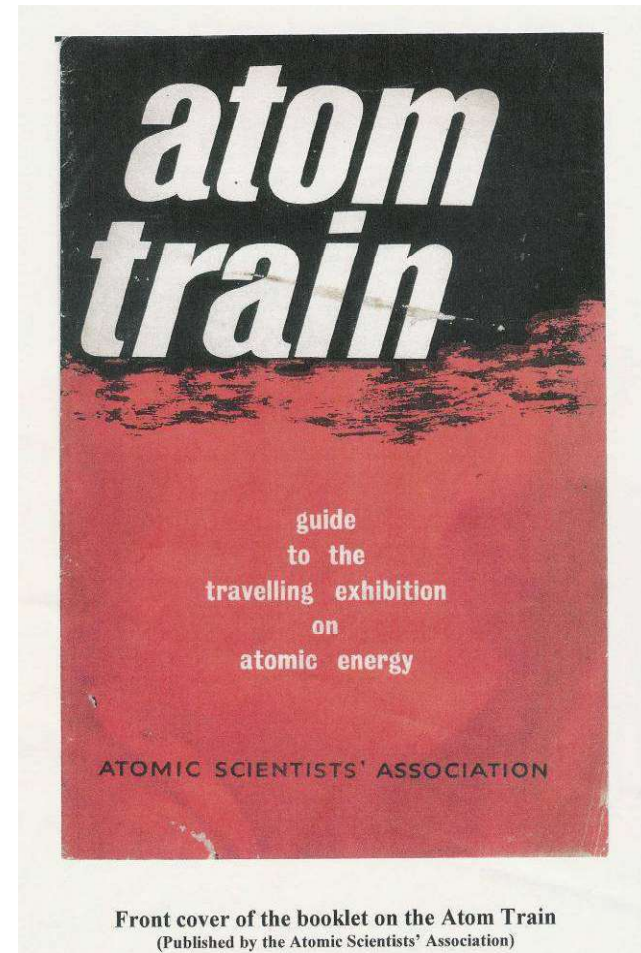


The Atom Train:

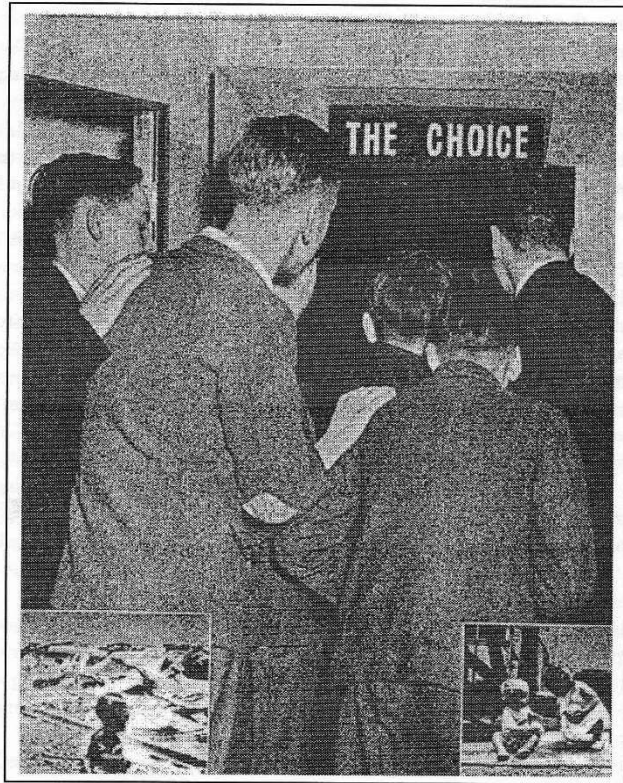
**Jo obtained funding from the
UK Government!**

Contained information and demonstrations relating to

- Fundamental facts
 - Atomic structure, radioactivity, accelerators, ...
- Practical applications
 - use in medicine; isotope separation, fission, chain reactions, nuclear power, nuclear weapons, ...



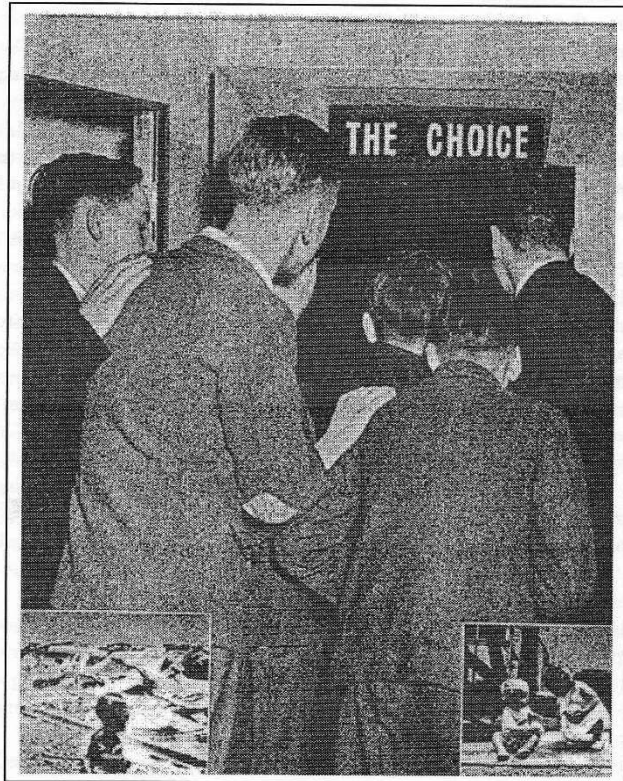
The Atom Train



Boys viewing 'The Choice' window
(Press Cutting)

- Planned to tour 26 railway stations
- 3-6 days in each location
- Targeted schools & colleges, adult groups
- Associated talks in the town concerned
- Local assistance from scientists & students to explain to the public

The Atom Train



Boys viewing 'The Choice' window
(Press Cutting)

CONCLUSION

The exhibition you have seen has shown you the vast possibilities of atomic energy for good and evil.

DESTRUCTION

The atom bomb provides tremendous power for destruction. There is no defence against it. There is no secret about it, except some technical details which are discovered easily enough. Any industrial nation can discover these secrets and start producing atom bombs if it wishes. All industrial nations will want to set up plants for atomic power. These same plants produce materials from which to make atom bombs, if it is desired to misuse them for destruction.

CONSTRUCTION

If atomic energy is not so misused, it holds promises of great advances in medicine, in industry, in the supply of power, and as a result in our standard of living. *Which is it to be?*

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**In 1954 the Americans tested the
first hydrogen bomb at Bikini
Atoll.**



The “Lucky Dragon”

- A Japanese fishing boat was showered with radioactive dust

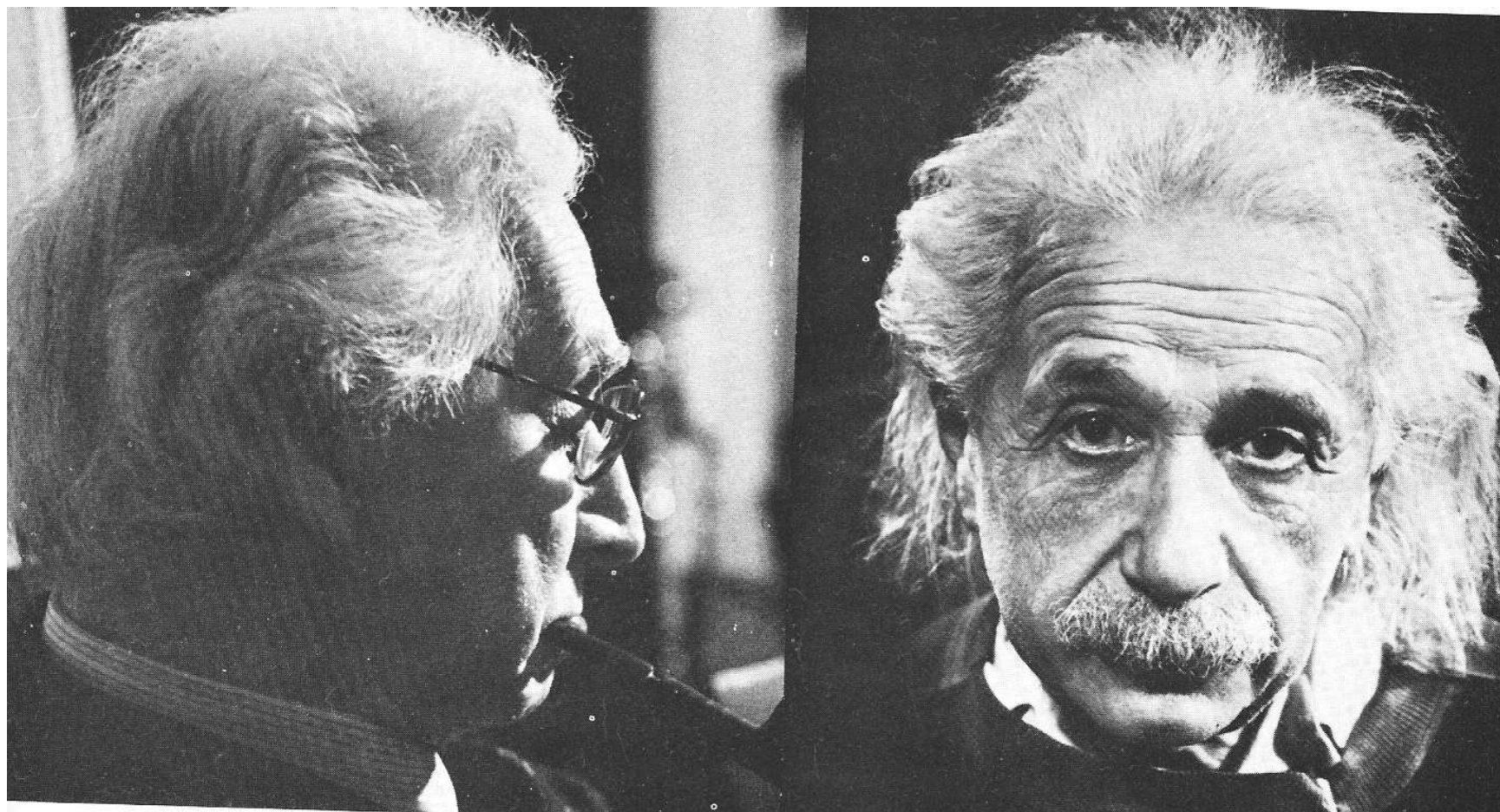


The “Lucky Dragon”

- A Japanese fishing boat was showered with radioactive dust
- Rotblat published his calculations demonstrating the bomb's nature and radioactive fallout
- His disclosures:
 - brought him into government disfavour, but...
 - ...raised disquiet about nuclear weapons

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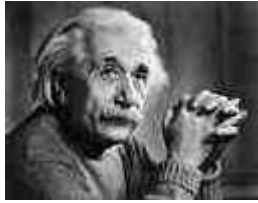




Russell-Einstein Manifesto.

The manifesto was released during a press conference at Caxton Hall, London on July 9, 1955.





Russell-Einstein Manifesto.

Rotblat, who chaired the meeting, describes it as follows:



"... It was thought that only a few of the Press would turn up and a small room was booked in Caxton Hall for the Press Conference. But it soon became clear that interest was increasing and the next larger room was booked. In the end the largest room was taken and on the day of the Conference this was packed to capacity with representatives of the press, radio and television from all over the world. After reading the Manifesto, Russell answered a barrage of questions from members of the press, some of whom were initially openly hostile to the ideas contained in the Manifesto. Gradually, however, they became convinced by the forcefulness of his arguments, as was evident in the excellent reporting in the Press, which in many cases gave front page coverage."

Russell-Einstein Manifesto.
Press conference, July 9, 1955



Russell had begun the conference by stating:

"I am bringing the warning pronounced by the signatories to the notice of all the powerful Governments of the world in the earnest hope that they may agree to allow their citizens to survive."

And crafted the quote that has echoed in concerned quarters ever since:

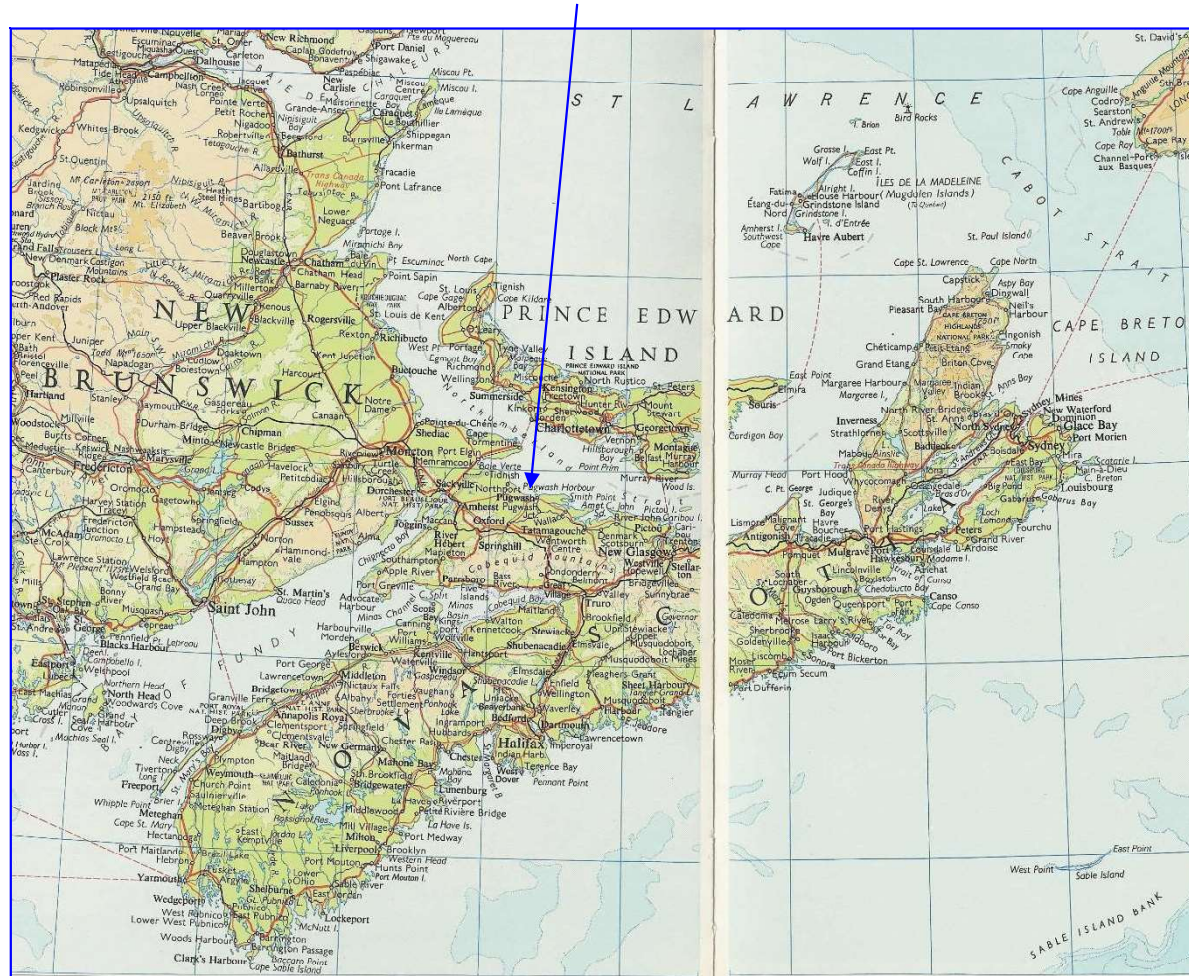


"There lies before us, if we choose, continual progress in happiness, knowledge, and wisdom. Shall we, instead, choose death, because we cannot forget our quarrels? We appeal as human beings to human beings: Remember your humanity, and forget the rest. If you can do so, the way lies open to a new Paradise; if you cannot, there lies before you the risk of universal death. "

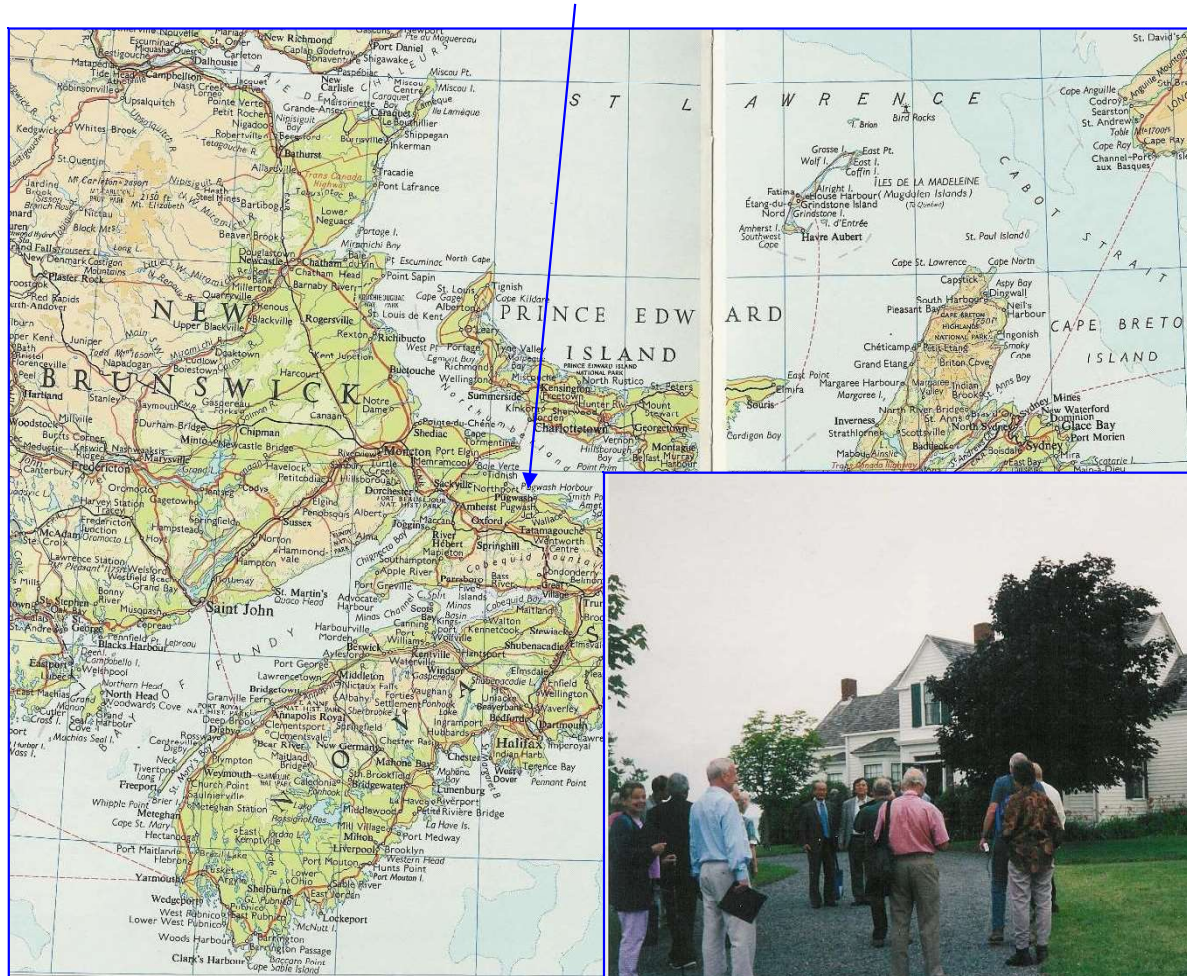
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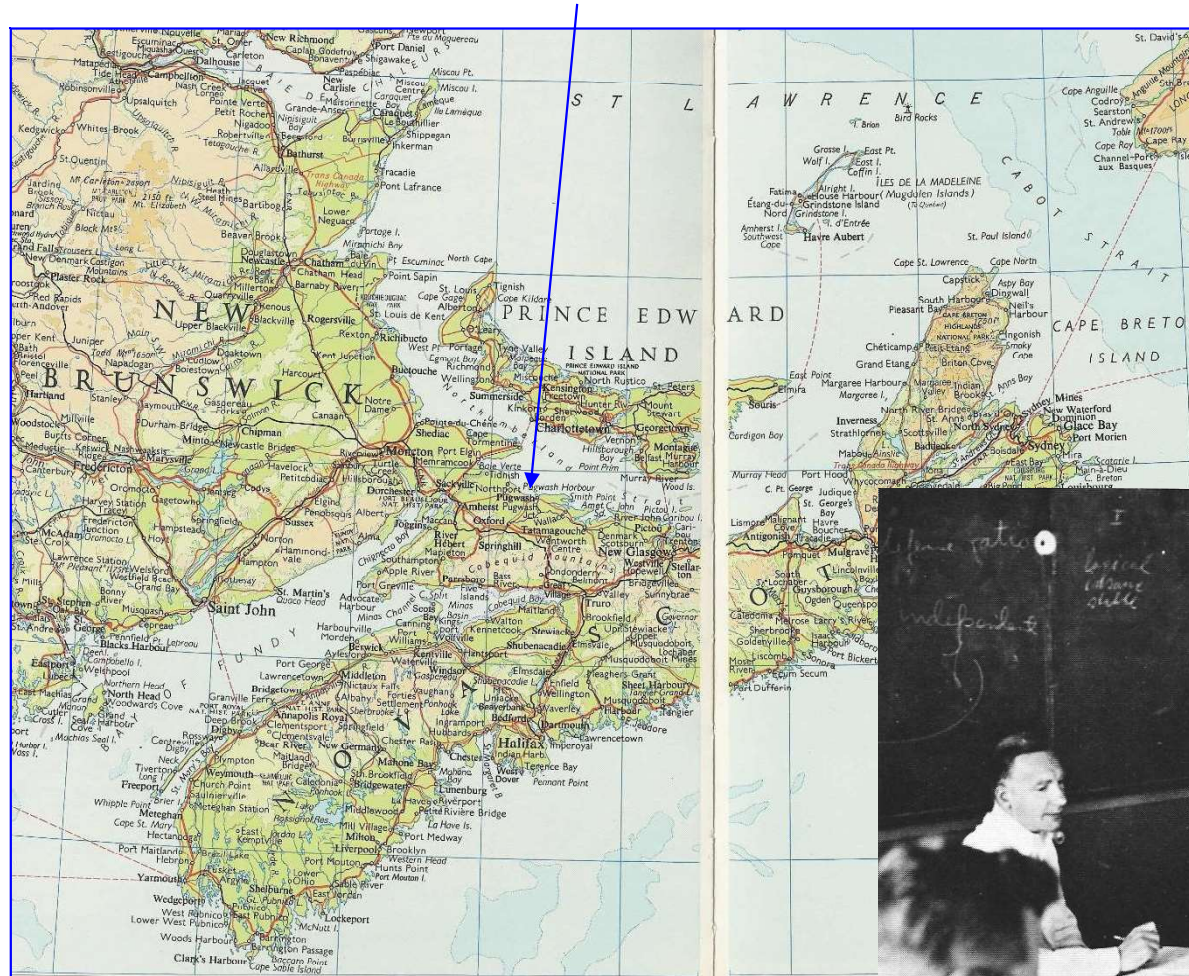
Pugwash, Nova Scotia



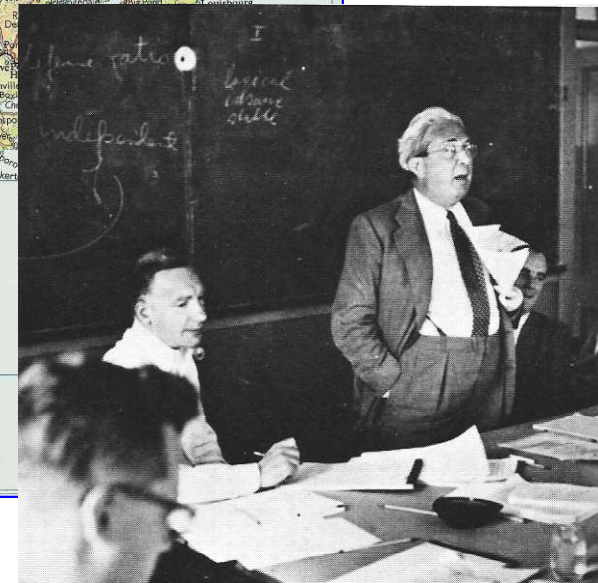
Pugwash, Nova Scotia



Pugwash, Nova Scotia



Rotblat & Szilard at the first conference



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- **Russell-Einstein Manifesto**
- **The Pugwash Conferences**
 - **Secretary General 1957-1973**
 - **President 1988-1997**
 - **Nobel Peace Laureate 1995**

Some Pugwash Achievements

- Kept lines of communication open during Cold War.
- Critical influence on Arms Control:
 - Helped lay foundations for, e.g.
 - Nuclear Non-Proliferation Treaty 1968
 - Antiballistic Missile Treaty 1972
 - The Partial Test Ban Treaty
 - Biological Weapons Convention
 - Chemical Weapons Convention
- First links between Kissinger and North Vietnamese in the Vietnam War
- Informal channels in the Arab-Israeli, Korean and Kashmir conflicts

Some more personal achievements

- Co-Founded the Campaign for Nuclear Disarmament
- Initiated the Stockholm International Peace Research Institute
- Largely responsible for World Health Organisations 1984 and 1987 reports on the effects of nuclear war on health and health services
- The WMD Awareness Programme (2002-)

**A founding principle of
Pugwash was the ethical
use of science generally**

**Jo was particularly concerned
to raise the need for the ethical
use of science among school
and university students**

Student/Young Pugwash

**took up the task of trying to
develop a code of conduct for
scientists**

“One could not help admiring this man of indomitable energy, moral integrity and high culture. Yet the most important thing about him was that even in very old age his mind remained crystal clear and his convictions firm. In a changed world facing new challenges, he addressed the people, ordinary citizens as well as world leaders, with an urgent appeal to rid the world of nuclear weapons, for in the final analysis this is the only way to a secure existence for future generations.”



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“Expressing my condolences for the passing of this remarkable man, I pay tribute to his long and eventful life, dedicated to serving the people, a life that is truly an inspiring example to all of us.”

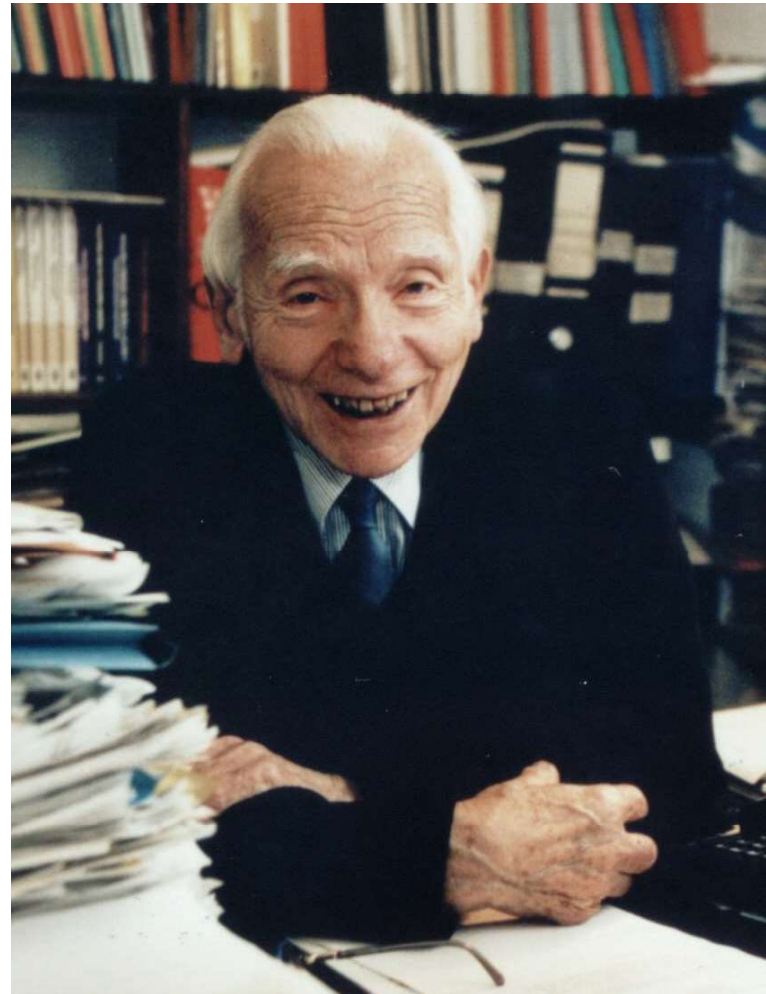


**But above all, he was a
compassionate human being...**



...with compassionate aims...

“My short-term goal is the abolition of nuclear weapons, and my long-term goal is the abolition of war”



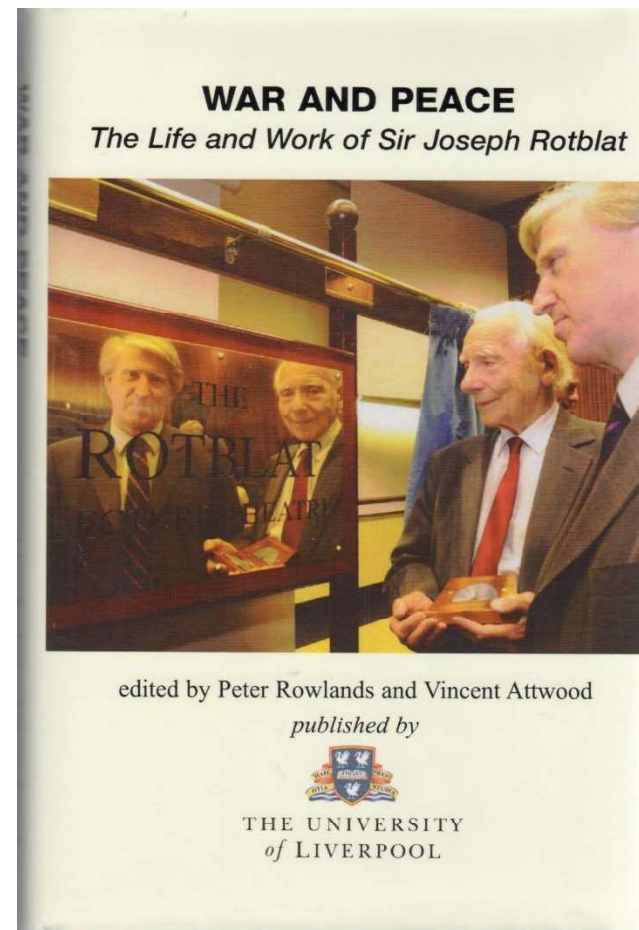
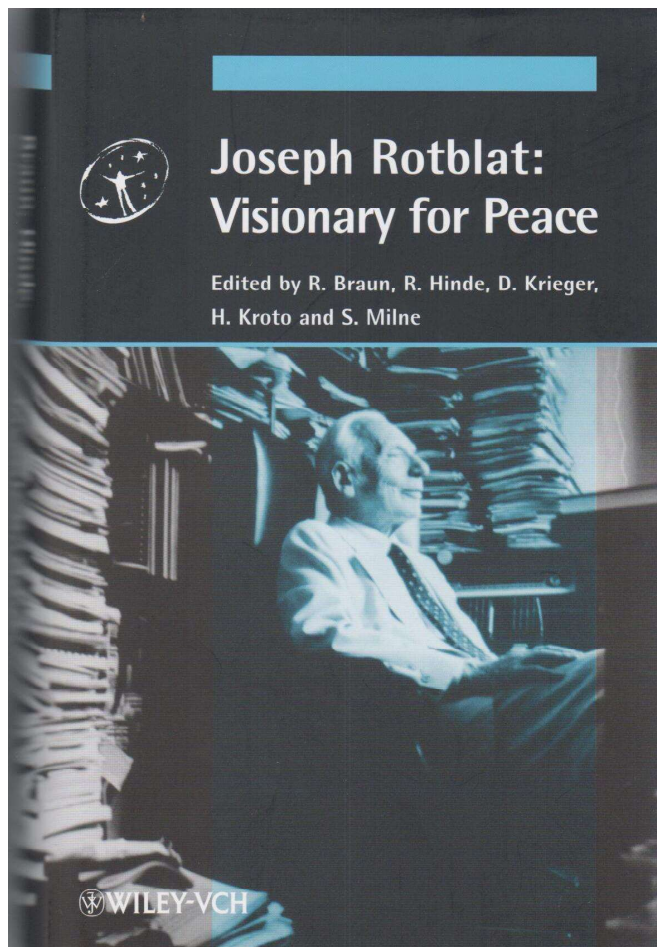
...and a great sense of humour...



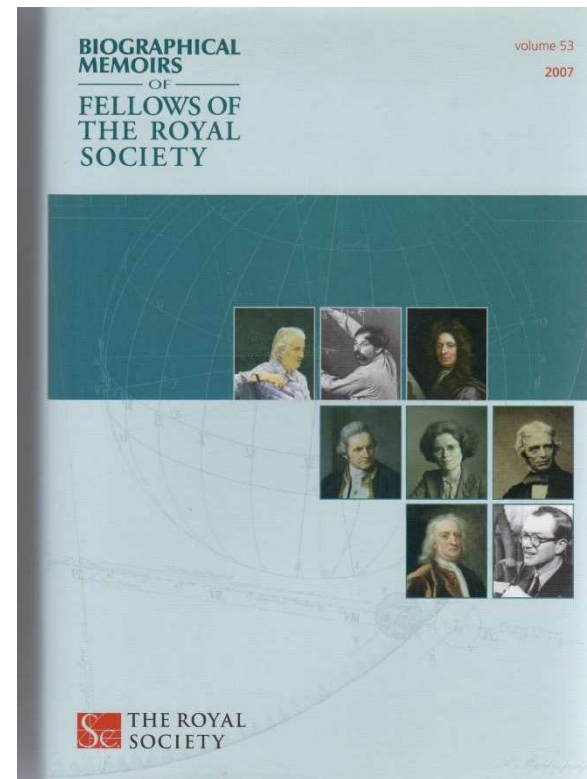
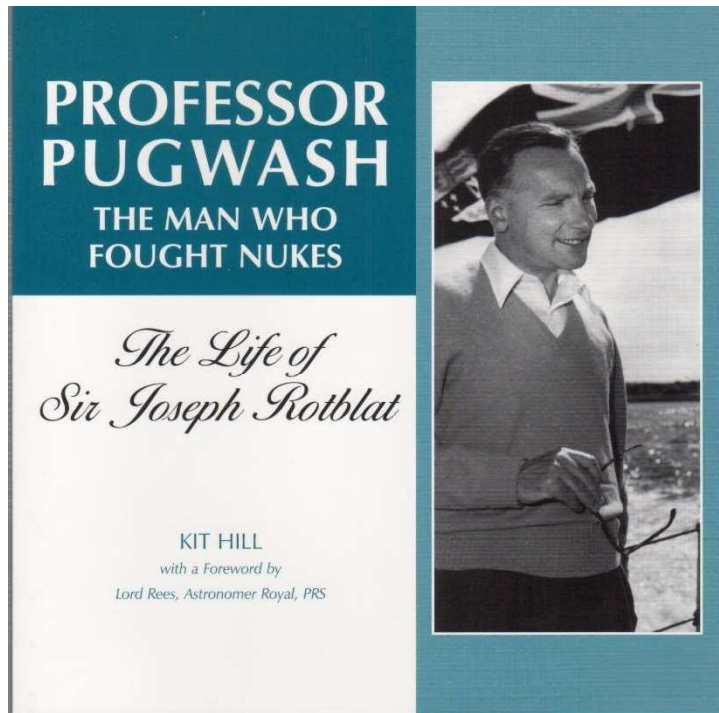
Bertrand Russell

**“If ever these evils are eradicated,
his name should stand very high
indeed among the heroes”**

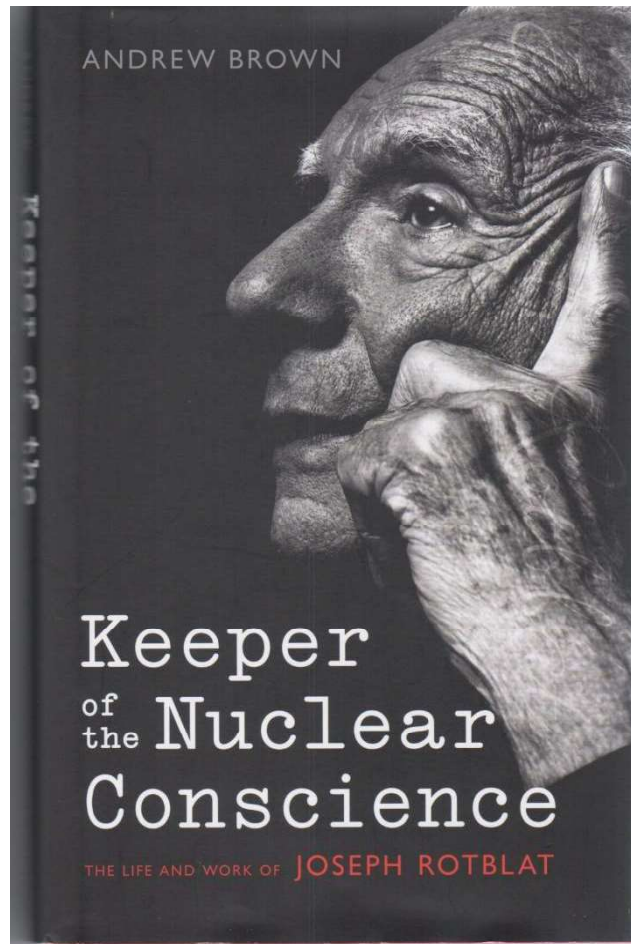
Some recent books

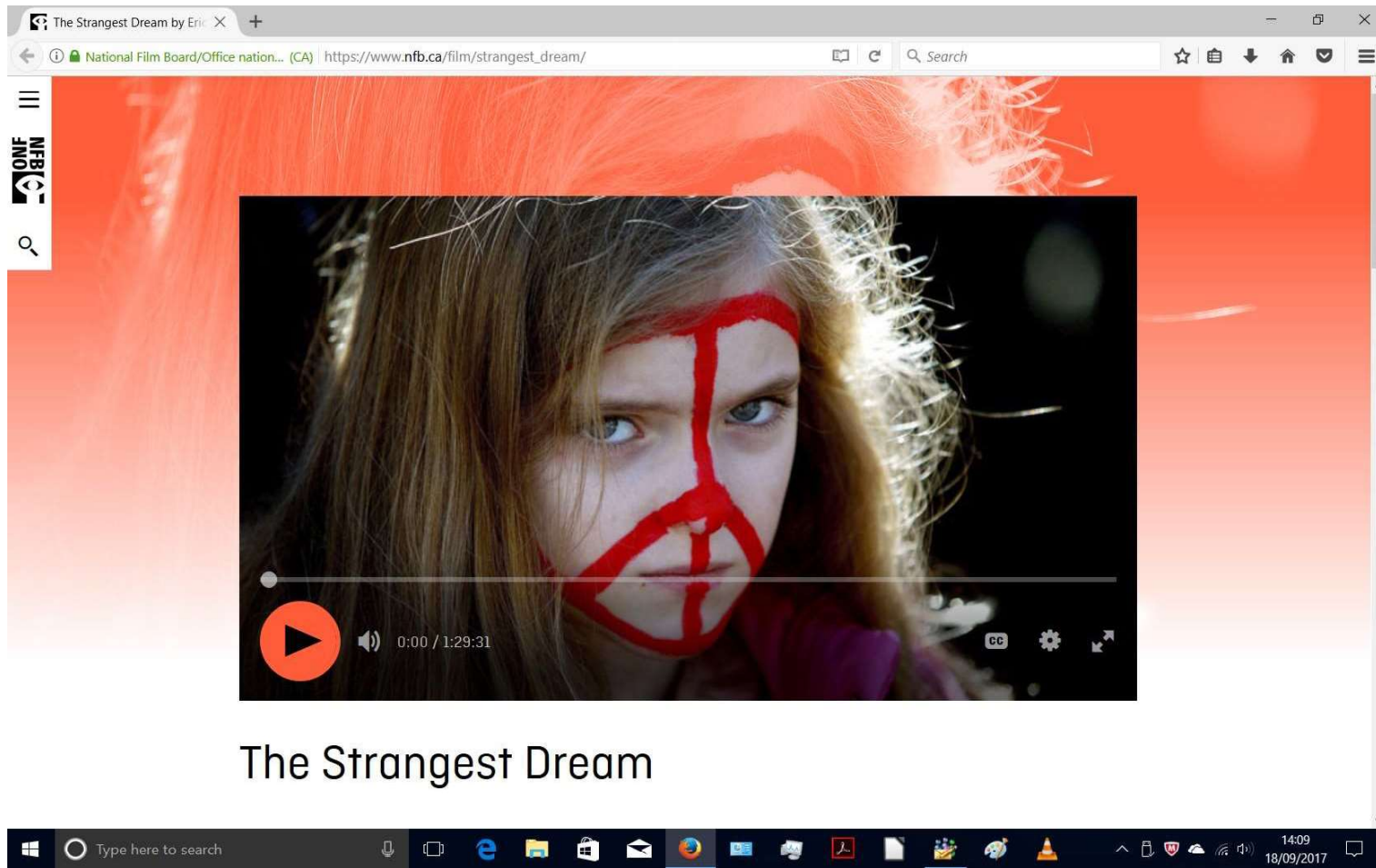


Some recent books



and a biography...





https://www.nfb.ca/film/strangest_dream/



