# Science® News

A Science Service Publication
Vol. 106/November 2, 1974/No. 18
Incorporating Science News Letter


## Of the Week



## Research Notes



## Articles



## Departments



**COVER:** New studies yield stronger evidence for relationships between overcrowding, aberrant human behavior and crime. See p. 282. (Drawing: Interpress film "Attention")




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Printed in U.S.A. Second class postage paid at Washington, D.C. Established as Science News Letter ® in mimeograph form March 13, 1922. Title registered as trademark U.S. and Canadian Patent Offices.

Published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington, D.C. 20036. (202-785-2255). Cable SCIENSERV.


# To the Editor

### The usefulness of science

I must say that I was rather saddened by the letter from Mr. Daniel Byrne (SN: 10/12/74, p. 227). His perception of the "impractical" nature of the research into new elements done by today's nuclear physicists is rather nearsighted, I believe.

Ignoring the obvious (i.e., that Mr. Byrne has a somewhat limited knowledge of nuclear physics), I would like to point out that such research does indeed have very great scientific importance, such as checking half-life theories and theories on nuclear disintegration to name a few.

Of course, there is always the possibility that Mr. Byrne feels that these, too, are "impractical" and an appalling waste of money. In that case, I would like to call his attention to other "impractical wastes" of money, such as the vast amount of money spent in teaching students some of the arts and humanities. After all, by Mr. Byrne's line of reasoning, what use do these have? How can painting pictures and reading literary works help solve man's immediate world food problems, health problems, social problems, etc.?

Leaving out the possibility that said scientific research might unearth various solutions to these problems along the way, I can see, by Mr. Byrne's reasoning, that all studies without immediate practical application are useless. Knowledge for its own sake and the pleasure studying it may bring to people is worthless, obviously.

As for our nuclear physicists, I would like to congratulate them on their discovery and tell them to keep up the good work.

*Jeffrey Currier*
*Gloucester, Mass.*

**A recent** Letter to the Editor critized scientists ("?") for "fiddling around with elements like children with toys." The author of the letter, Mr. Daniel Byrne, could perceive no pragmatic use whatsoever for the scientists' meanderings.

I do not intend to use SCIENCE NEWS as my sounding board but this is something that must be said. What if, Mr. Byrne, Robert Hooke hadn't wasted his time and money on that funny looking invention of his called the microscope? What if Sir Alexander Fleming hadn't frittered away his hours playing with those smelly old molds? (This led to the discovery of penicillin.) The implication is obvious. The practical aspects of these experiments did not reveal themselves until sometimes hundreds of years later.

Likewise, the discovery of element 106, the Apollo space program, and others, may have derived benefits which will hide in obscurity for decades to come, yet they will appear. I shudder to think of the long-range opportunities missed if this type of questioning and experimenting were to cease.

*Roger M. Davis Jr.*
*Kensington, Md.*

**As a confirmed** applied, "practical" scientist, I would like to disagree with Mr. Byrne's letter, because every important aspect of practical technology today was, at one time, just as esoteric as element 106 is today. Two prime examples are high-energy particle accelerators (they are now being considered for use in cancer therapy) and the physics of semiconductors (used in pocket calculators and low-cost computers). I agree that most scientific work should be used to solve the world's problems (and this is where I prefer to work), but we must devote a portion of science and technology funding to pure research, as an investment in the future. If you want to harvest the crops, you must plant the seeds.

*Peter Heimann*
*College Park, Md.*

**Daniel Byrne** has written the kind of untutored demand for relevance that unfortunately is so widespread. He wants practical applications for the discovery of element 106.

Let me give him some possible examples. It is only through this and similar experimentation with radioactive elements that we understand and improve ways to generate atomic energy through fission and eventually fusion processes. The energy frees petrochemicals to be made into fertilizers for the world's farms. Radioactive tracers help diagnose internal disease, and X-ray and radioactive treatments are being used to cure certain types of cancers. The food from the fertilized fields helps end malnutrition on an international scale.

So here are some—and not all—of the connections between these studies and the solutions to "the world food problems, health problems, social problems, etc." This research will benefit Mr. Byrne's grandchildren, even if the chain from basic to applied research isn't rushed through in his lifetime. If scientists devote all their time now to what we might think is practical, where will we get our breakthroughs to help us survive posterity?

*Jay M. Pasachoff*
*Chairman, Astronomy Department*
*Williams College*
*Williamstown, Mass.*

**I am disappointed** in David Byrne's attitude that he expressed about the newest element 106. There is much scientific research which may not be applicable to practical problems in the foreseeable future, but eventually it is applied. Use of pions for cancer therapy can be considered as an example. Support of basic research on frontier problems in science is extremely necessary to keep the scientific intelligentsia alive. The intellectual pursuit of knowledge will come to an end if only mission-oriented research is supported.

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