

PHYSICS

Future of Atomic Energy

Sir John Cockcroft, head of Britain's Atomic Research Establishment, answers questions most often asked about the industrial future of atomic energy.

By SIR JOHN COCKCROFT

Sir John Cockcroft won the Nobel Prize in physics in 1951 and played an important role in atomic development, having collaborated as early as 1932 in the first successful high-voltage atom-smashing machine. He is a member of the United Kingdom Atomic Energy Authority.

➤ PROGRESS IN the peaceful application of atomic energy in Britain has excited world-wide interest, and I have been asked many questions on the possibilities of the use of atomic power for industrial purposes in other countries. Here are answers to questions I am sometimes asked:

Q. Do you think that atomic reactors for power purposes will be of value to less developed countries, and how soon will atomic power be available to them?

A. Atomic power will be of just as much value to less developed countries as water power or power from coal and gas; where an undeveloped country has ample resources of conventional power, atomic power will have no advantages for the next 10 to 15 years until its cost becomes less than conventional power costs. Its immediate role in the world is to supplement conventional energy sources where they are becoming inadequate. For such purposes it could become available in the early 1960's.

Q. Does disposal of atomic waste present any difficult problem?

A. The disposal of atomic waste is one of the many technological problems which have to be solved during the next decade. This, like the other problems, is being extensively worked on, and there is no reason to suppose it cannot be solved, since the volume of the waste produce is very small when concentrated.

Q. Is there an immediate prospect of getting electricity from atomic power?

A. Atomic power will be available in Britain on a scale comparable with that from a normal large power station within two to three years.

Q. Will the cost of atomic power compare favorably with that of power generated by orthodox means?

A. Atomic power is likely to cost rather more than conventional power during the first five years of its use, but the cost will probably be little different from conventional power costs in ten years' time.

Q. What is the likelihood of ships being powered by atomic units as an economic proposition?

A. Commercial atomic ship propulsion is



ATOMIC EXPERT—Prof. Sir John Cockcroft, who answers queries about energy for the future, assumes a thoughtful pose in this official British Information Services portrait.

not likely to be economic for the next decade.

Q. To what extent are products of atomic energy being used for medical purposes?

A. The by-products of atomic energy are being used on a greater scale for medical purposes; Harwell and its outstation send out 12,000 consignments a year to hospitals throughout the world.

Q. What is the potential range of use of atomic energy products in industry?

A. The use of atomic energy products in industry is steadily growing; some of the applications in use already are the following:

Control of thickness of strip material for rolling mills, discharging of static electricity in textile operations, radiography, oil prospecting, control of movement of fluids in pipelines, detection of leaks in water mains, fire alarms, industrial research, detection of liquid level in enclosed systems, preionization in gas discharge tubes, testing the efficiency of filters, measurement of wear in test engines for testing lubricants, checking efficiency of industrial mixing processes, investigations of alloy structure and casting

procedure, checking migration of constituents in paper manufacture, measurement of plant nutrients in soil and uptake of fertilizer, investigation of silt movements in an estuary and microanalysis of trace constituents in chemical and metals.

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MEDICINE

Lung's "Coin Shadows" May Indicate Cancer

➤ SHADOWS THAT look like coins in the lungs may indicate the beginnings of lung cancer, Dr. Alexander G. Gilliam of the National Cancer Institute, Bethesda, Md., reported to the Fifth Inter-American Congress of Radiology meeting in Washington.

Patients with incipient cancer causing "coin shadows," he pointed out, are highly selected cases from specialized centers. To find out whether these shadows truly represent the beginning of lung cancer, the Institute is surveying all persons found to have them in an X-ray survey of the general population, trying to follow them through to ultimate diagnosis.

Some have already submitted to surgery, he said, "but a large number have thus far refused further diagnostic investigation."

Dr. Gilliam noted that there is some evidence that lung cancer is insidious, giving no indication of its presence for many years.

Dr. Leo G. Rigler, director of the department of radiology at the University of Minnesota Medical School, said that development of lung cancer is a much slower, more prolonged process that had been thought.

On the other hand, Dr. Gilliam said, there is also evidence that lung cancer is of short duration, diagnosed only briefly before it strikes the patient down.

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ELECTRONICS

Glass Rods Guide Tiny Radio Waves

➤ NEW KINDS of circuit elements using glass rods split in half to guide radio waves only one-twelfth of an inch long were reported by Dr. D. D. King of Johns Hopkins University.

Placing the flat face on a thin metal plate provides the necessary guidance for the tiny radio waves, known as millimeter waves, he told the International Scientific Radio Union meeting in Washington.

Millimeter waves at present are a laboratory curiosity being studied by scientists to learn about their properties.

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