# Letters

## HETE: New Observations

In her article "Thromboxanes: The power behind the prostaglandins?" (Research News, 21 Nov., p 770), Gina Bari Kolata indicates that HETE, the lipoxygenase metabolite of arachidonic acid, has no known biological function. Recently, we have shown that HETE is at least biologically active as a chemoattractant for human polymorphonuclear leukocytes in vitro (*1*). Although the chemotactic role of HETE in vivo remains to be determined, it is clear that both of the endogenous arachidonate oxygenating systems of platelets can elaborate mediators of inflammation. These new observations suggest that the platelet is a locus for linking hemostasis with certain inflammatory events via selective oxygenation of arachidonic acid.

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### References

1. S. R. Turner, J. A. Tainer, W. S. Lynn, *Nature (London)* **257**, 680 (1975).

## X-ray Scanners

Arthur L. Robinson's Research News articles "Image reconstruction (I): Computerized x-ray scanners" (7 Nov., p. 542) and "Image reconstruction (II): Computerized scanner explosion" (14 Nov., p. 647) point to the critical societal issue emerging from the development, marketing, and use of these remarkable devices, of whether the ". . . cost will translate into a quantifiable improvement in health care. . . ." Yet Robinson shuns the dispassionate examination of the issue by stating, "But to those who have suffered through pneumoencephalography, the value of the CAT [computerized axial tomography]-scanner may be more obvious."

It is not axiomatic that the patients studied by the 200 scanners now operating in this country (many of them " . . . up to 16 hours a day, 5 or 6 days per week") would otherwise have been slated for pneumoencephalography. It is not known what portion of those patients truly require the detailed work-up for neurological disease which calls for that examination. For that matter, it is not known what portion are being sent for CAT-scan in lieu of consultation by a neurologist or even in place of a detailed work-up by a general practitioner. It is also not known how many physicians, taking on the investment opportunity which may accompany marketing of some of these devices, now find themselves saddled with a monthly mortgage payment that might create a conflict of interest which could influence usage.

While "full-fledged breakthroughs are rare," as Robinson states, quantum leaps in medical diagnosis or therapy do happen with enough frequency to suggest cautions worth paying attention to. Not uncommonly, such developments are hailed with a lack of discrimination, which leads initially to a sacrifice of resources, both human (in terms of morbidity and mortality of patients) and financial. The relative mix of morbidity, mortality, and dollar expenditure will vary with the particular "breakthrough," but it is the responsibility of both health care leaders and an informed public to avoid a cycle of enthusiasm, uncritical embrace, overzealous application, and ultimate retrenchment—with its inevitable embarrassing display of the irrationality of those who claim to embrace the scientific method, to say nothing of the prodigality. (In fairness, the fault is not to be laid entirely at the doorsteps of the physician and the hospital. Demands from patients on the one hand, and pressures from the industries that foresee expanding and profitable markets, on the other, must also be indicted as powerful sources in the untrammeled explosion of use that follows a "breakthrough.")

Perhaps it is reasonable to restrict the CAT-scanner to a few university hospitals and to insist upon the application of protocols for study of its proper use, on the grounds that society can afford another 2 or 3 years of wait more readily than they can afford the waste that uncontrolled use will likely bring over the same period. The problem will still remain, once such studies are completed, of whether the nation's physicians will follow the developed guidelines. It is likely that they will. Indeed, the likelihood that they will exercise prudent judgment, once "prudence" is defined, is much greater if, by that time, there is not a CAT-scanner gracing the diagnostic radiology suite of every hospital, clinic, and office in this country.

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## Geothermal Energy Production

Years ago, when developing the use of tritium (radioactive isotope of hydrogen, 12-year half-life) for hydrologic purposes, my students and I measured the tritium in many different kinds of natural waters. Others, particularly coordinating with the International Atomic Energy Agency, have assembled a vast library of data on the surface waters of the world.

I now serve as a member of the University of California Energy Council, a body created to cooperate with the new California Energy Commission. The council has been reviewing the chances of generating energy by means of a "dry" geothermal method—that of drilling into an extinct volcano (if there is such) and injecting water, which should then reissue as steam. The Los Alamos Laboratory already has major efforts under way on this project, and Los Alamos, being operated by the University of California, is represented on our Energy Council.

It is becoming clear that there is nothing wrong with this "dry" geothermal method provided that the geochemistry is favorable. The fear is that the high-pressure, high-temperature conditions will cause the water to be so corrosive that it will plug the cracks making contact with the hot rock and thus block the flow of steam.

In this connection, I reexamined our early tritium data for natural water (*1*) and found evidence that the steam at the Geysers geothermal field near Calistoga, California (the site of a large geothermal electric power generating plant) is formed, at least in substantial part, from *rainwater of recent origin.*

By chance, an abrupt 50-fold increase in tritium concentration in rain occurred in Chicago and elsewhere in the Northern Hemisphere sometime between 2 and 19 March 1954, following nuclear weapons tests. The samples at the Geysers were taken on 23 March 1954 by D. E. White of the U.S. Geological Survey. Measurement revealed that the hot water was about 10