to the editor

Sandwich superconductivity

The lively article "Superconductivity in two dimensions" (SN: 6/20, p. 602) by Dietrick E. Thomsen brings together some interesting viewpoints, but also unfortunately implies some relationships that have not been established, and therefore either do not exist, or remain for the future to confirm. There is no experimental evidence relating the superconductivity in the layered organometallic compounds whose discovery F. J. Gamble, F. DiSalvo, R. A. Klemm and myself reported recently and the hypothetical superconducting models proposed by Prof. W. A. Little of Stanford and V. L. Ginsburg of the Lebedev Institute, Moscow, which you have described. As correctly stated, our new compounds are either three-dimensional superconductors which contain organic molecules, or else weakly linked two-dimensional superconductors in which metallic molecular planes are separated by organic molecules. Our results so far lean toward the latter, primarily because the transitions are surprisingly independent of the particular organic molecule which is intercalated between the metallic layers. In either case there does exist an opportunity to look for mechanisms of the Little or Ginsburg type.

We had the same attitude when we first observed the superconductivity in the intercalated organic compounds that you now report Dr. Matthias to have. But after we went through an intercalation cycle chemically and found when removing the organic molecules (by heating) that the original compound as determined by X-ray diffraction weight and the superconducting transition had returned, we became convinced that we were not seeing an impurity effect. Subsequent heat capacity measurements on powdered intercalated material by J. P. Maita of the Bell Laboratories as well as on a single-crystal intercalated flake here by R. L. Greene show that we are not dealing with an impurity effect. The lack of the Meissner effect—defined as the expulsion of flux which occurs when a superconductor is cooled through its transition in a magnetic field—is easily explained by either defects in the structure, or perhaps by a special property of a weakly coupled two-dimensional system. When the magnetic flux lines are pinned (a necessary condition for good superconducting magnetic material) no Meissner effect will be observed, no matter how small or large the external field, because if the flux lines cannot move, they cannot be expelled. Very little is known as yet about the microscopic details of flux pinning.

Dr. T. H. Geballe
W. W. Hansen Laboratories of Physics
Stanford University,
Stanford, Calif.

Under the title, "Superconductivity in two dimensions," (SN: 6/20, p. 602) which I think is appropriate, you have a subtitle: "Scientists think superconductivity can be induced at higher temperatures in sandwiches of organic compounds and metals." Now while there are some scientists who think this, your article implies we do. In fact I am sure we have never said this and I regret that you have attributed these beliefs to us, because I feel that we have reported some very interesting phenomena that don't need jazzing up, to borrow from the Matthias vernacular.

It is true that these materials offer us the opportunity to examine the speculations of Ginzberg and those of Little and although we shall do so we have never said that we are confident that high temperature superconductivity will result.

Aside from this and the irrelevant insertion of Bernd Matthias into the article I thought it was rather good.

Dr. Fred Gamble
Senior Chemical Physicist
Palo Alto, Calif.

(We did not mean to imply, nor did the story say, that Drs. Gamble and Geballe were members of the high-temperature-superconductivity school. This work, as Dr. Geballe suggests in his letter, is being used by its proponents. Ed.)

An unhealthy tale

Your article, "The Changing of the Guard," (SN: 6/13, p. 572) deals with a problem about which I have necessarily developed strong feelings. My own experience and that of others, several of whom were mentioned in your story, tell an unhealthy tale about some of the practices developing within the Government.

These are troubled times for the country, and many people who have been inclined to ignore public affairs in the past now feel impelled to at least limited involvement in social matters of all kinds. I believe that, if that interest is sustained, the long-range effects in the nation will be good. Concern, not just for the scientific community, but for the country, was a strong factor in my willingness to go to Washington to work with the National Science Foundation. The same instincts lead me and others to great concern about the nation's travail in all areas including problems of the environment, the economy, and our prolonged military involvement in Southeast Asia.

As a general policy, I am rather conservative about public expression of my views concerning the war and partisan politics. There is no doubt that a scientist who continuously utters pronouncements on every subject will come to be ignored on every matter, including those where his expertise can make him especially helpful. However, a person who is forever silent may never have any effect at all. When I was asked by the California Institute of Technology students to contribute comments at the rally on May 1, I felt that I could not in good conscience refuse. This was not intended to flout the members of the Administration who were considering my appointment and I will admit to some temptation to soft pedal my feelings because I realized that a job I really wanted to try would be jeopardized.

My critics have focused on two points: First, my comments placed the advocates of my appointment in an

SCIENCE NEWS

SUBSCRIPTION DEPARTMENT
231 WEST CENTER STREET
MARION, OHIO 43302

Subscription rate: 1 yr., $7.50; 2 yrs., $13.50; 3 yrs., 19.50. Special trial offer: 39 weeks, $3.97. Single copy, 25 cents. $1.00 per year for foreign postage. Change of address: Three weeks' notice is required. Please state exactly how magazine is to be addressed. Include zip code. 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. Indexed in last Science News of June and December, in Reader's Guide to Periodical Literature, Abridged Guide and the Engineering Index. Member of Audit Bureau of Circulation. UNSOLICITED MANUSCRIPTS will not be returned unless accompanied by a stamped, self-addressed envelope.
Published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington, D.C. 20036. NOrth 7-2255. Cable Address: SCIENSERV.