that refuse to allow free dissemination of their abstracts (even though these are readily available to the CD-ROM services) and, secondly, to ask whether the BMJ Publishing Group could exert some influence on other publishers. Is there no way that publishers could get together, if only in the interests of standardisation of policies? Could not all publishers agree that abstracts should be as free from constraints as reference citations?

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*Although abstracts of scientific articles enjoy the same copyright protection as the articles they summarise (except in the United Kingdom), publishers of scientific periodicals have traditionally made them available to abstracting and indexing services without charge. Over the past few years, however, there has been a huge increase in the number of requests to use abstracts in various electronic products: diskettes, CD-ROMs, and online services. Many medical journals have also introduced structured abstracts. These changes are causing publishers to rethink. They are also worried that with digitisation they may lose control over the use and even integrity of their abstracts. We may thus see more publishers either refusing permission for their abstracts to be used or levying a fee for digital use; but it is very much the policy of the BMJ Publishing Group whenever possible to make all our material available as cheaply as possible, especially to doctors and others working in very poor countries.—EDITOR

Reasons for increased incidence of tuberculosis

EDITOR,—A Hayward and colleagues¹ disagree with our conclusion that the 12% increase in the incidence of tuberculosis in England and Wales between 1988 and 1992 affected the "low risk" white and West Indian communities as well as the "high risk" Indian subcontinent, African, and refugee communities.² They restate our conclusion that the data on incidence by local authority districts in England and Wales are uninformative on this point because the increase was concentrated in poor districts and ethnic group and poverty are highly correlated across districts. Data on incidence over time according to ethnic group are necessary to examine the issue, and such data were available for the London Borough of Hackney.

It was possible to assess changes over time in the size of the ethnic minority communities by using census data for 1981 and 1991 as an unpublished survey by Hackney Borough Council after the census in 1981 showed that the country of birth of the head of household was then an accurate estimate of the ethnic origin of people in Hackney. The data for Hackney showed that the proportionate increase in incidence affected white, West Indian, and Indian subcontinent residents equally. The cases occurring among the relatively large African and refugee communities in Hackney accounted for less than half the increase in cases from 1988 to 1992.

The accuracy of our estimates of the size of these communities is not relevant here; there is no doubt that in most other socioeconomically deprived districts these communities are smaller or non-existent, so there will be even fewer cases than in Hackney. Perhaps the simplest evidence that tuberculosis has increased in white people comes from the Irish data we cited³: the Republic of Ireland has few non-white residents but recorded a greater increase in tuberculosis (16%) than that in England and Wales (12%).

While the recent increase in tuberculosis did occur in white people, the disease remains far more common in certain ethnic minority groups. The data of M J Doherty and colleagues on incidence in London boroughs in 1991 confirm this,³ but they are uninformative on the ethnic mix for the increase between 1988 and 1992.

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- 2 Bhatti N, Law MR, Morris JK, Halliday R, Moore-Gillon J. Increasing incidence of tuberculosis in England and Wales: a study of the likely causes. *BMJ* 1995;310:967-9. (15 April.)
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Ethical imperative to publish extends to academics too

EDITOR,—I support John Pearn's view that publication of research findings is an ethical imperative.¹ The medical community at large can assess the status of something only if all the relevant information is available.

The pharmaceutical industry is often accused of selective publication of results, and there is some truth in the accusation. There is just as much truth, however, in the charge that academics also fail to publish important items of information. They may not be driven by financial conflicts of interest, but to an academic career other forms of conflict are likely to be just as important, but these tend to be ignored by those drawing up guidelines. The urge to ensure the survival of a point of view with which an academic has become identified is often a stronger driving force leading to bias than is any possible financial gain or loss.

In the context of the pharmaceutical industry I believe that all the research done by a company in both toxicological and clinical areas should be freely published. There are, however, genuine but relatively easily surmountable reasons why this is not a sensible policy for any company that respects, as it must by law, the interests of its shareholders. When a company applies for approval for a new drug in the United Kingdom the law provides that the company's dossier should remain confidential for 10 years. Most other countries have similar laws providing for protection for between six and 10 years. This means that during this period the regulatory authorities cannot use the information in the company's files to license generic copies of the new drug.

If the information in these files is published, however, then the regulatory authorities may decide that there is sufficient information in the public domain for a generic licence to be issued before the expiry of the 10 year confidentiality period. If a product does not have full patent protection then it is in the company's commercial interest not to allow publication before expiry of the 10 year deadline. This is clearly not in the interest of the wider medical community or the public. The situation could easily be corrected. A statement from the European Medicines Evalua-

tion Agency, endorsed by all member countries, could be made to the effect that published material would not influence licensing decisions during the 10 year confidentiality period. This would eliminate a major reason for the non-publication of material by pharmaceutical companies.

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1 Pearn J. Publication: an ethical imperative. *BMJ* 1995;310:1313-5. (20 May.)

100 years of x rays

EDITOR,—I think it pertinent to mention the importance of the discovery of x rays in another area that has affected our medical lives, besides those areas mentioned by Daniel J Nolan.¹ The news took some time to reach South Australia: all communication took six weeks by boat. The discovery was exciting for my grandfather William Bragg, who was professor of physics at Adelaide University, and figure 1 shows an x ray picture of his hand, dated 1 June 1896. The abnormality of the little finger is a result of a childhood injury. That same summer his son, William Laurence Bragg, who was a toddler, broke his left elbow. I believe that the x ray film of his arm, obtained in 1896, was the first film to be used to diagnose a fracture in Australia.

Both Professor Bragg and his eldest son (later my uncle) became increasingly fascinated by x rays, and this led to the birth of x ray crystallography. In 1915 they shared the Nobel prize for their discovery of the structure of salt. From the beginning my uncle, later Sir Laurence Bragg, foresaw the possibility of discovering the structure of biological chemicals, seeing the excitement of working out biological enzymatic reactions from a structural perspective. I remember visiting the Davy Faraday Research Laboratories at the Royal Institution in the 1950s, just as the structure of lysosyme was being discovered.

Sir Laurence went on to supervise the work of Crick and Watson when they discovered the double helix in Cambridge, and this was the crowning of his career in x ray crystallography: his original vision had been fulfilled. It was a joy to him to travel to Stockholm to celebrate the 50th

FIG 1—x Ray picture of Professor William Bragg's hand, obtained in 1896 (reproduced from reference 2 by permission; source—Flinders Medical Centre, Adelaide, Australia)