relationship is much more clear between cervical spondylosis and the carpal tunnel symptoms, relief from the most peripheral symptoms can only be obtained ultimately by the peripheral operation, and this does not necessarily invalidate a central cause.—I am, etc.,

Wellington, Shropshire.

G. K. ROSE.

Oral Vitamin B₁₂ in Pernicious Anaemia

SIR,—In your annotation on oral vitamin B₁₂ in pernicious anaemia (*Journal*, June 2, p. 1287) it is stated that unless given in very large doses oral vitamin B₁₂ does not produce haematological remission. This is not strictly correct. In 1954 Dr. Z. M. Hall and I published evidence in your columns¹ that daily doses of 50 µg. oral vitamin B₁₂ solution taken when fasting—without intrinsic factor—could produce haematological remission in patients suffering from pernicious anaemia, and we reviewed previously published work on this subject at that time. A daily dose of 50 µg. can hardly be regarded as very large; indeed, it is only 20 µg. higher than that given daily in a trial² you quote in which a combined vitamin B₁₂—intrinsic factor preparation was given orally to cases of pernicious anaemia when in relapse. Since our earlier report I have studied a further 14 patients with pernicious anaemia in relapse who have co-operated in taking daily oral doses of 50–200 µg. vitamin B₁₂ first thing each morning when fasting. In some, long-term studies of up to two years have been possible, and in general the results have been surprisingly good, the majority of them obtaining an apparently complete remission with a return of the serum vitamin B₁₂ level to within normal range. It is hoped to publish details of these cases in the future.

I would stress, however, that this has been an experimental trial and that, as mentioned in our paper¹ and in your recent annotation, regular intramuscular injections of vitamin B₁₂ still remain the routine treatment of choice in the management of patients suffering from pernicious anaemia.—I am, etc.,

Birmingham.

J. N. MARSHALL CHALMERS.

REFERENCES

- ¹ Chalmers, J. N. M., and Hall, Z. M., *British Medical Journal*, 1954, 1, 1179.
- ² Blackburn, E. K., Cohen, H., and Wilson, G. M., *ibid.*, 1955, 2, 461.

Pulmonary Function in Pneumoconiosis

SIR,—Professor J. Gough (*Journal*, May 12, p. 1110) has paid us the compliment of a very careful scrutiny of our report.¹ His essential criticisms are that the generalizations in the preface and summary give too benign a view of the relationship of simple pneumoconiosis to disability, especially in the oldest age group we studied (mean age 55). Furthermore, he thinks our views are based on a misinterpretation of our findings, particularly in this group.

Generalizations are inevitable in a short summary, but the scatter about the average for each age/x-ray group is fully stated in the text. He suggests that we were wrong in basing our generalizations about men aged 55 with category 3 simple pneumoconiosis on the results for the men in the main experiment amalgamated with those subsequently examined at a near-by mine. He considers that the men in the main experiment who were more disabled on the average are more likely to be representative of the true picture. Whether or not we were correct in our conclusions is a matter of opinion, and we cannot do better than refer to pages 125–32 of our report, where the factors likely to have affected our results are discussed in great detail. Professor Gough is surely on rather uncertain grounds in assuming that because the men had left mining they "had presumably been disabled by simple pneumoconiosis to an extent that they were no longer employed in the mines." Under the Workmen's Compensation Act, 1925, men diagnosed as having pneumoconiosis were compulsorily suspended from the mines irrespective of the severity of disability, and many applied to the Board for a variety of reasons other than disability. Fortunately, as a result of

the work of our colleague, Dr. A. L. Cochrane, it has been possible since our report was written to examine much larger representative samples of miners, ex-miners, and non-miners living in geographically defined areas. These investigations (in the press) confirm and extend our conclusions (based on amalgamating the groups) by showing that in the age group 55–64 the ventilatory capacity of miners and ex-miners with category 3 simple pneumoconiosis is, if anything, higher than that of miners and ex-miners with no x-ray evidence of pneumoconiosis, while the ventilatory capacity of all miners and ex-miners of this age group is on the average lower than that of non-miners.

When we first saw the results for the group of men aged 55 with category 3 we also thought they might be due to focal emphysema, but for reasons given on page 145 we were unable to explain them in terms of the increased dead-space, as suggested by A. G. Heppleston.² Professor Gough now again suggests that the high average resting and exercise ventilation in the group may be caused by focal emphysema. We are not as impressed as Professor Gough by the differences in the average resting ventilation. The average for the group is only 1 l./min. greater than those in category 1/2 aged 45, the next highest age group, and 2 l./min. greater than those with category B aged 55. The difference in the average exercise ventilation is rather more striking, but Table 5 (p. 233) shows that the scatter about the average is abnormally high in this group. When taken in conjunction with the results mentioned above, we think it would be unwise to place special emphasis on the results for men of this age/x-ray group. In addition, unless a sudden onset of focal emphysema at the age of 55 or so is postulated, changes of the same type but less marked would be expected in the 45 age group. Such changes have not been observed.

Professor Gough's question cannot be answered in pathological terms, because fortunately all the men in the group in which he is especially interested are still alive after more than seven years. We stated on page 142: "The downward trend (of the index of functional emphysema) from normal subjects to group B is suggestive evidence, though not proof, that men with simple and group B complicated pneumoconiosis also have some degree of emphysema, and that in each radiological group men in the age group 55 have on the average more evidence of emphysema than younger men." Later work has indicated that the reduced ventilatory capacity is associated with an increased air-ways resistance and that there is no significant decrease in the expiratory muscle force; their ventilatory defect is therefore of the obstructive type. We do not claim that the physiological cause of the disability in miners with category 3 simple pneumoconiosis has been fully elucidated, but it does not at present appear to be obviously different in type from that in miners without radiological pneumoconiosis.

Professor Gough objects to our statement that simple pneumoconiosis has a relatively small effect but accentuates the exertional breathlessness that normally comes on with age, and adds, "unless, at the same time, it is recognized that there are many exceptions to this generalization, especially at the age of 55 and over." Figure 25 (p. 97) shows the results of the maximum voluntary ventilation (the single test which relates best to breathlessness) and the scatter demonstrates the wide range in each age/x-ray group. The average change with increase of x-ray category of simple pneumoconiosis is small, and there are, if anything, more men with very low values among the miners without pneumoconiosis or with categories 1 and 2 than with category 3. Surely the important point is not the increasing proportion of severely disabled men with increasing radiological pneumoconiosis, but the excess among the elderly miners as compared with elderly non-miners. There is also the important corollary that there are many fit miners with well-developed simple pneumoconiosis. "Pathologists find the highest incidence of focal emphysema in the age group 55 and above." This interesting statement by Professor Gough would be much more valuable if he would give some actual figures for its prevalence related to age using a classification of its severity of proved repeatability. The excellent large sections of the lung could provide a means for developing such a classification, and it would then be possible to make quantitative comparative measurements, as is done in life using the International Classification of radiographs. Our impression is that severe focal emphysema only occurs in about 5% of cases of miners at necropsy, whereas cases of emphysema of types not so specifically related to dust foci are much more frequent.

When it is realized in addition that post-mortem cases are necessarily a selected group with a bias towards the more disabled, the difficulty of attributing disability to severe focal emphysema becomes even greater.

We suspect that the differences in viewpoint between Professor Gough and ourselves, if they do exist, probably result from the following causes: (1) He sees cases at necropsy which, even if unselected, are not a representative sample of the living, since they will include over a given period too many of those who were disabled. (2) There is an imperfect correlation in simple pneumoconiosis between the severity of the pneumoconiosis diagnosed radiologically and its assessment at necropsy. (3) He is prepared to translate pathological changes after death into disability during life. We find it difficult enough to measure disability quantitatively in life.

We entirely agree with Professor Gough's last paragraph, and would like to draw attention to the section in our report on page 148 dealing with the relevance of our findings to compensation, where the advantages and severe limitations of the use of the radiograph are discussed. We would like to see the time when benefit is paid in life on the basis of actual disability and not on pathological changes unidentifiable in life, or on radiological changes not necessarily closely related to disability.

We are most grateful to Professor Gough for pointing out the misprint on page 100; 3_{ss} should read 3_{ss}. We would like to take this opportunity of correcting an error in your leading article (*Journal*, April 7, p. 790), where clearly the clinical application of carbon-monoxide uptake was intended, for its use by Marie Krogh (1915)³ is well known.—We are, etc.,

Cardiff.
London, W.12.

J. C. GILSON.
P. HUGH-JONES.

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- ¹ Gilson, J. C., and Hugh-Jones, P., with Oldham, P. D., and Meade, F., *Spec. Rep. Ser. med. Res. Coun. (Lond.)*, 1955, 290.
- ² Heppleston, A. G., *J. Path. Bact.*, 1953, **66**, 235.
- ³ Krogh, M., *J. Physiol. (Lond.)*, 1915, **49**, 271.

Tuberculosis and Mass Radiography

SIR,—I have been following with interest the recent correspondence relating to tuberculosis and mass radiography. It is regretted that I have been unable to enter the discussion sooner, as the *Journals* reach me only after an unavoidable delay.

In the letter of Dr. R. Hardy (*Journal*, April 14, p. 858) he states that "compulsion does not seem to be the solution" and that "it is a method against which many lay (and medical) persons will fight to the last ditch." He asks "if the end would justify such a means." In New South Wales compulsory x-ray surveys have been in force since April 30, 1953. With four mobile units, the Anti-Tuberculosis Association of New South Wales has so far x-rayed 1,363,661 persons. In the Sydney metropolitan area 890,824 people were x-rayed, which represents 88% of the eligible population—i.e., over 14 years of age. From this number 1,170 new cases of pulmonary tuberculosis were found, proven bacteriologically and in need of active treatment. In a similar survey of some country areas of New South Wales the same association has so far x-rayed 171,500 people, which represents 90% of the eligible population. Ninety-four new active cases of pulmonary tuberculosis were detected. In a repeat survey of the Sydney metropolitan area, which is still in progress, so far 301,337 people have been x-rayed, with the discovery of 200 new active cases and several others still under investigation.

The results of the above surveys answer a number of questions as to their value. The introduction of compulsory legislation was approved by the public and facilitated this extensive case-finding programme. In Australia, a country where compulsion of any kind is vigorously resented, it is to the credit of all concerned that such a ready response was experienced. There have not been any prosecutions for non-attendance. Despite this, it would appear that the plain common-sense approach of the public, with the support of the press, radio, and medical profession,

accounted for such a prompt response to a measure which was in their own interests. The attendance of those in the older age groups was most noticeable, a feature not observed in voluntary surveys. This group, especially the males, proved to be a most important source of infection as confirmed by our findings.¹ There is no doubt that the success of our surveys will contribute greatly to the ultimate control of tuberculosis in New South Wales.

This letter is submitted with the purpose of supporting the statements of Drs. G. Lissant Cox and A. L. Cochrane and Professor J. Crofton (*Journal*, March 25, p. 684), who suggest that "compulsory examination should be carried out in Britain, etc." With the higher tuberculosis incidence in the United Kingdom such measures should produce results as satisfactory as in New South Wales.—I am, etc.,

Sydney, Australia.

C. RUBINSTEIN.

REFERENCE

- ¹ Rubinstein, C., *Med. J. Aust.*, 1956, **1**, 572.

Headache and Eye Pain in Schoolchildren

SIR,—I read with great interest the observations of Drs. Enid L. Hughes and Christine E. Cooper (*Journal*, May 19, p. 1138) on "Headache and Eye Pain in Schoolchildren," and it was a particular point of interest to me that one of the authors had herself experienced severe headaches during an attack of "fibrositis" of the neck, relief being obtained by massage and heat.

Some years ago I published an article in the *Journal* (July 6, 1929, p. 15), "Headaches of Peripheral Origin," attributing these headaches (as far as I was aware for the first time) solely to extensive fibrositis of the nuchal and trapezius region, which I found always present. I then suggested that these symptoms could be cured by proper massage and heat treatment.

Regarding the eye pain, to which the authors seem to ascribe a special significance in connexion with a "trigger point," I do not think this should be treated as a separate symptom, because it is just part of one morbid process. In fact, the rheumatic noxae (the causative factor) have a special chemical affinity not only for the muscular and connective tissues but also for the nerve sheaths, producing local inflammation therein. It is logical that any inflamed nerve sheath, when under pressure, will give pain and conduct that pain through its nerve to all those parts which it serves.

I should mention that, in related cases where nerves also are involved, quicker and better results are obtained if massage and heat treatment is combined with injections of vitamin B₁ in large doses, as this latter would appear to have definite neurotropic effect.—I am, etc.,

London, W.1.

L. SCHMIDT.

Abdominal Migraine in Children

SIR,—Dr. H. G. Farquhar's paper (*Journal*, May 12, p. 1082) is as much to be welcomed as Dr. J. J. Kempton's earlier study under another name (*Journal*, January 14, p. 83). The important thing is for all doctors to realize the unitary nature of the syndrome. On the point of nomenclature, therefore, I would support Dr. Farquhar against Dr. J. J. Kempton's protest (*Journal*, May 26, p. 1238), with this reservation, that the word "abdominal" can safely be omitted from the title, not because it is contradictory but because it is self-evidently implied in our concept of migraine.

Any adult sufferer with migraine can rebut Dr. Kempton's statement that you cannot have it in the abdomen. What matters the derivation of "hemicrania" to the patient in the throes of the visceral symptoms of nausea, vomiting, abdominal turmoil, and pain? All migraine at all ages is abdominal in part of its symptomatology. In younger children, however, the headache and visual disturbances dominate the picture less than in adults, though migraine may still be confidently recognized by the periodic prostration, pallor, abdominal pain, nausea, and vomiting. The natural history of migraine evolves through the age groups. Failure