The conclusion is drawn that the fenestra of the umbrella passed below the level of the floor of the anterior cranial fossa and did not penetrate the dura of the right middle cranial fossa in view of the absence of cerebrospinal fluid rhinorrhoea. Anticipated vascular complications due to the lodgement of the tip of the fenestra near the posterior end of the contralateral cavernous sinus have not so far developed.

The pathological report reveals no direct injury to the globe of the left eye, which had been displaced into the lacrimal fossa. This fact could not be appreciated at the time of the operation, which required the sacrifice of that eye for reasons of urgent surgical access. The case demonstrates the need for careful investigation and the need for precautions in the management of deeply penetrating orbital injuries.

It is a pleasure to thank Mr. G. K. Burr, consultant ophthalmologist, for referring the case; Professor Norman Ashton, Institute of Ophthalmology, University of London, for the pathological report and guidance to the literature; and my associates for their assistance.

—I am, etc.,

H. H. Gossman
Plymouth General Hospital, Plymouth.

Liquor Bilirubin Levels

SIR,—I would like to make one point in connection with the article by Mr. E. D. Morris and others (6 May, p. 352) on the use of liquor examination in Rh and immunization. When considering the significance of the liquor bilirubin level it is very important to take into account the stage of gestation at which this was carried out as the bilirubin level tends to fall as pregnancy advances. Our conclusions concerning the value of "liquor ratio" in predicting stillbirth are based on tests carried out at 34–36 weeks' gestation and the same level would not be expected to be applicable prior to 30 weeks' stage of gestation at which most examinations referred to in this article were carried out.

The pattern of liquor bilirubin during pregnancy is illustrated in the following Figure which represents 11 Rh-negative preg-

![Figure showing liquor bilirubin levels](image)

...gestation when selection of patients for intra-uterine transfusion might be contemplated.

The "exception" at 34 weeks illustrates one important source of error in liquor examination. At the initial tap a small amount of blood was aspirated which sub-sequently was to be foetal in origin. The needle was repositioned and liquor obtained, but in retrospect it is probable that the small amount of foetal serum, with its high protein and bilirubin content, in a small volume of liquor would produce a very large error. It is the opinion of many that when serious contamination with blood occurs any sample of liquor should be discarded and a fresh one be obtained.—I am, etc.,

The Royal Victoria Infirmary, Newcastle upon Tyne.

SIR,—The estimation of bilirubin in liquor amnii from Rhesus-positive women by Mr. E. D. Morris and others (6 May, p. 352) is of great interest in establishing the "normal" range, and they have apparently improved the value of these estimations by relating the concentration of bilirubin to the protein content and, presumably, to the volume of the liquor amnii. Results were expressed as a bilirubin \( \mu g/ml \) / protein mg/ml, but they might be more easily understood if expressed as bilirubin mg/l of protein, and I would like to suggest that results are written in this manner, if protein estimations are to become a usual part of the assessment of Rhesus-sensitized pregnancies.

There are both chemical and spectrophotometric methods in general use at present for the estimation of bilirubin in liquor amnii. The chemical methods have the advantage of giving quantitative results, but it is the experience of some workers that spectrophotometric methods demonstrate minor changes in pigment concentration more accurately. Unfortunately, spectrophotometric methods give erroneous results unless corrections are made for contamination with haemoglobin. Scott and Alvey's sub-traction of optical density due to absorption by oxyhaemoglobin (O.D. 574 m\( \nu \)) from a peak of absorption for bilirubin (O.D. 454 m\( \nu \)), but as the ratio haemoglobin O.D. 454 m\( \nu \) approximately 0.75, the correction is not wholly accurate. The O.D. of haemoglobin at 490 m\( \nu \) and 520 m\( \nu \) is approximately the same, and the difference of O.D. at these two wavelengths can be taken as due to bilirubin alone, but Mr. Morris and his colleagues and other workers have found this method satisfactory, possibly because of the rising curve of O.D. of turbidity and other pigments between these two points. The same errors enter the method of Liley, who calculates the O.D. 454 m\( \nu \) of a line drawn from T.D. 550 m\( \nu \) to O.D. 565 m\( \nu \). The spectrophotometric method of Fleming and Woolf incorporates correction factors for turbidity, methaemalbumin, and oxyhaemoglobin, and I have found that the same bilirubin result can be obtained after heavy contamination of specimens with haemoglobin in vitro.

The estimation of the concentration of bilirubin in liquor amnii still needs refinement as a diagnostic tool, and a method would be preferable which expressed results as bilirubin, not as a ratio or an optical density figure.—I am, etc.,

A. F. Fleming
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King Edward Memorial Hospital for Women,
Subiaco, Western Australia.

References


Narcosis for Chronic Tension

SIR,—Dr. William W. Sargent's statement (27 May, p. 573), "Meanwhile, I remain satisfied that there are in this country and elsewhere, many hundreds of still-well-preserved patients, many of them in the back wards of our mental hospitals, who would be greatly helped if they could only be given combined narcosis, E.C.T., and drug treatment—provided only that, prior to their long illness, they were able to cope with life's ordinary stresses," should not be allowed to pass without strong protest.

Such a statement, I feel, could be the cause of much distress to the staff of our mental hospitals and to relatives of patients who may happen upon it. No doubt every doctor has his professional failures, and, working in a teaching hospital, Dr. Sargent probably sees many of the failures of treatment by colleagues working in mental hospitals. Those of us who work in mental hospitals also see the failures of treatment in patients coming from teaching hospitals and professorial units.

If generalizations have to be made, in most psychiatric units physical treatments are given, if anything to an excess, as they are sometimes used as a substitute for the understanding and adjustment of the personality of the patient. Surely the main reason for failure in the treatment of "good-prognosis patients" in the psychiatric units is the lack of a healing personal contact between the patient and his physician, nurse, and relatives.—I am, etc.,

G. I. Twefik.
Near Worcester.

Neurotoxic Effects of Piperazine

SIR,—There are few reports in the British literature on the neurotoxic effects of piperazine, and this case is therefore thought to be of interest.

A girl of 4 years 5 months was admitted to hospital on 15 January 1967, her mother giving the history that since awakening that morning the child had been unable to stand or sit without falling over. There was no previous history of ill-health except for a threadworm infestation, for which, for the two days before admission, she had received from her family doctor piperazine citrate 1 teaspoonful a day. Examination showed a small child whose weight at 12 kg. and height at 92 cm. were both under the 3rd percentile. She was afebrile but
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appeared disoriented and could not communi-
cate. She was quite unable to stand or sit
without falling over, and could not hold a cup
to feed herself owing to frequent and repeated
myoclonic jerks of her head and limbs. No other
neurological abnormalities were found.

On examination was normal. Lumbar
puncture revealed no abnormality. Twenty-four
hours after admission she was perfectly well.

The piperazine dosage was slightly in
excess of that recommended by the manu-
facturers and it is probable that overdose
contributed to the toxic neurological signs.
The frequency of reports of piperazine neuro-
toxicity in the Continental literature has
been explained by the use of the highly
soluble piperazine hexahydrate, as opposed to
the less soluble piperazine salts which are
prescribed in Britain. Schuch et al. noted
that a higher incidence of abnormal electro-
encephalograms occurred in children on
therapeutic doses of piperazine hexahydrate
compared with the less soluble piperazine
tartrate, and thought that neurotoxicity was
a true side-effect not necessarily due to
overdosage. They showed that children with
neurological lesions or abnormal E.E.G.s are
particularly at risk during piperazine therapy,
and other authors are in agreement with them.1

Theoretically the less soluble piperazine
salts should have a lower incidence of neuro-
toxicity. Of the salts available piperazine
dipate is the least soluble and is known to
be an effective anthelminetic. To date there
have been no reports in the literature of
neurotoxic side-effects from the use of this
particular preparation, and it should perhaps
therefore be prescribed in preference to the
more soluble piperazine citrate which is used
in some quantities in Great Britain.—I am,
etc.,

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Department of Child Health,
University of St. Andrews,
Scotland.

REFERENCES

1 Schuch, P., Stephn, U., and Jacobi, G., Lancet,
1965, ii, 114.
2 Sneek, J., and van den Brande, J. L.,

Heroin Addiction

Sir,—Your correspondents Dr. G. G.
Gray and Dr. P. A. L. Chapple (22 April,
p. 246) draw attention to the proposed
compulsory notification under the
DANGEROUS DRUGS BILL, 1967, of heroin addiction.

Such an enactment could present a serious
challenge to medical psychotherapists because
it would generally destroy the right of a
medical psychotherapist to treat confidentially
any patient who was a heroin addict. Appar-
ently a non-medical psychotherapist would
not be subject to this law and confidentional
treatment could be obtained from him.

The medically qualified psychotherapist will be in
a very difficult position because if he claims
to treat patients in confidence and discovers
that one of his patients is an addict he must
either break faith with his patient or else
he will be liable for the £1,000 fine or the
10 years imprisonment for doing his duty. This
is unfair both to the psychotherapist and the
patient. Surely the law should operate
only in the case of a doctor who prescribes or
arranges for the prescription of drugs for

an addict. And isn’t the severity of the
penalty in that order of things which we tend
to condemn in those States which impose such
penalties for political offences?

Furthermore, once this measure has been
established it may be extended not only to
other forms of addiction but possibly to all
forms of antisocial behaviour which may come
to the psychotherapist’s notice.—I am, etc.,

Uffolune Clinic, Birmingham. D. T. MACLAY.

Compulsory Treatment of Addicts

Sir,—Dr. N. C. Lendon seems to be
making the quite common mistake of con-
fusing both drugs and motives (13 May, p. 444).
Amphetamines are peddled in order to
make money, while heroin is usually sold
in order to survive; but in any case Dr.
Lendon’s “kindly compulsion” of 20-40
years’ imprisonment is not one I think we
shall see in this country. Dr. M. M. Glatt’s
encouraging letter (13 May, p. 444) I think
refers to addicts being compulsorily admitted
to a unit comprising a number of patients
who were given heroin in the belief that a
new arrival, although initially negatively motivated, is
quite likely to adopt the positive motivation of his peers.
However, if the peer group in the hospital is negatively
motivated—and this may happen if the majority of its
members are being forcibly subjected to treat-
ment—the chances of a new arrival being able to
get off drugs is probably diminished.—I am, etc.,

Gane Hill Hospital, H. DAK BECKETT.
Coulston, Surrey.

Conference on Tropical Medicine

Sir,—May I be permitted to remove a
misunderstanding that has crept into the
report of the Conference on Tropical Medi-
cine recently held at the Royal College of
The statement of the duration for leprosy
should read: “Whatever the drug
given, the total length of treatment
advised is: in tuberculoid (and indeterminate)
leprosy—at least two years, or one year
after all clinical signs of activity have ceased;
in multibacillary leprosy (lepromatous and
borderline)—at least four years, or two years
after all clinical and bacteriological evidence
of activity have disappeared.”—I am, etc.,

S. G. BROWNE.
London W.1.

Glycosuria in Pregnancy

Sir,—I would like to offer one or two
observations on the article of Dr. J. Fine
(28 January, p. 205). Both this paper and
Dr. Fine’s previous one (8 May 1965, p. 1209)
rest entirely on the accuracy of the
glycose oxidase-peroxidase technique normally
used for estimating blood glucose being
equally accurate in urine. In my opinion
this is not so, for several reasons. My major
point is that filtering through charcoal alone
removes some glucose from urine, or indeed
from a pure glucose solution. Secondly, this
filtering does not remove all colour or enzyme
inhibitors.

The two main articles quoted1,2 are con-
cerned with the estimation of glucose in blood
and cerebrospinal fluid and mention urine
but briefly. Marks3 is a little more detailed,
but even so his use of acid-washed activated
charcoal is a quotation from J. D. Teller, and
he points out that the resulting filtrate often
has a pH low enough to affect the buffering
activity of the enzyme solutions. The table
he gives for glucose recovery after such
filtration is “reconstruction or completion” yet
the scanty figures quoted are in fact only
88%, 78%, and 91%. This raises an impor-
tant point in that Dr. Fine does not say
whether his figures are the result of direct
observation or of an added glucose recovery
technique.

I have been concerned for some time with
urinary glucose estimations, as I wished to
pursue the work of Joplin, Fraser, and May4 in
descibing a diazo-glucose oxidase test for prediabetes.
My experience is that filtering a pure glucose solution alone
through activated charcoal can remove some of
the glucose. This can be shown by using a cylinder with a 190.9 mm. tube giving
1° rotation for each 1% of glucose. The
Hartmann machine is accurate to 0.05*
and will thus detect 50 mg./100 ml. Thus, an
estimation of glucose independent of enzyme
activity is possible where the only variable
was the filtration effect. Recovery varied
between 75% and 85%, but never more, using
a 1% solution. Even if one accepted
that activated charcoal removed all colour and
enzyme inhibitors, therefore, recovery would
still not be complete. It can also be shown
that ascorbic acid is not in fact completely
recovered, as this too is optically active, nor
is uric acid completely cleared, even to the
naked eye on occasion. Coming to the enzyme
technique itself, it could be shown that one
urine specimen, divided into many samples
and estimated individually after filtration,
gave widely varying results by direct estima-
tion and by added glucose recovery technique.
Here the time and temperature control during
incubation proved to cause marked variations
in the final result.

I would venture to say that for all practical
purposes the glucose oxidase-peroxidase system is of no value in estimating down to
the remarkably small degrees quoted by Dr.
Fine—that is, 1-5 mg./100 ml. Too many
sources for error exist. Apart from those
discussed, there are the possibilities of
peroxidases being present from detersents on
the glassware, etc., or contamination of the
urine sample. Gluthathione may be present
in varying degrees in urine as well as
ascorbic and uric acids. If the method is
used at all I suggest that experimental varia-
tion alone could account for the hypoglucuric
and hyperglucuric phenomena described.—I am,
etc.,

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Princess Maternity
Hospital.
Newcastle upon Tyne.

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1 Haggert, A. St. G., and Nixon, D. A., Lancet,
1957, 2, 368.
3 Joplin, G., P. Fraser, R., and Keddy, K. J.,