withdraw the dose into the same syringe."

Three out of four manufacturers of insulin give almost identical instructions. Only A.B. Insulin Ltd. state: "Never change the type of insulin or the dose, or mix one type of insulin with another, except on the instructions of your doctor. . . ." One well-known textbook1 dealing with the subject of mixtures of soluble insulin and protamine zinc insulin states: "The two insulins can be given either as separate injections or mixed in the proper proportion immediately prior to injection." The Action and Use Section of P.B.P.C.2 after discussing the use of protamine zinc insulin goes on to state: "... a dose of unmodified insulin is often given at the same time to tide over the period until the protamine zinc insulin is absorbed: the two insulins may be mixed in the syringe immediately before the injection is given."

Malins, writing in Prescribers' Journal,3 discusses protamine zinc insulin and states: "P.Z.I. is still widely used though it may be an example of what will convert a proportion of any soluble insulin which may be added to it into the long acting form. Nevertheless, P.Z.I./S.I. mixtures have not been very successful. On the other hand, a standard textbook of therapeutics4 discussing the same subject states: "... some insulin preparations ... cannot be mixed with one another in the same syringe as this would alter their normal times of action—for example, soluble insulin and protamine zinc insulin."

It is apparent that there is a difference of opinion regarding the mixing of soluble and protamine zinc insulin. In my view such mixtures introduce a degree of unpredictability in the time of action by reason of the variable combination of soluble insulin with the excess protamine present in protamine zinc insulin.

Whatever our views, three out of four major manufacturers of insulin make no allowance for such differing opinions in the instructions which they enclose with their insulin preparations. The purpose of this communication is to bring this to the notice of members of the profession who may be unaware of the present of the manufacturers' instructions, and to promote a most uniform point of view so that the risk of patients receiving conflicting advice may be minimized. —I am, etc.,

D. N. S. Malone.

Department of Medicine,
Western General Hospital,
Edinburgh.

REFERENCES

**Correspondence**

**11 July 1970**

**British Medical Journal**

**107**

**Woman** (aged 31). Right-sided pyelitis. Consecutive tracings from normal left ureter showing effect after injection of 20 mg papaveretum intravenously. The peristaltic wave has been made to disappear for almost two minutes.

**Typing the Gonococcus**

SIR,—During a recent investigation into certain properties of N. gonorrhoeae it was found possible to classify the organism into different serological groups, using a similar technique to that of Lancashire1 for the classification of haemolytic streptococci. Antisera were produced by the intravenous inoculation into rabbits and cockerels of suspensions of gonococci. The crude serum invariably had to be absorbed to avoid cross-prefection with other groups.

Of the 181 strains of N. gonorrhoeae examined (with five different antisera) 143 strains could be classified into one or other of five serological groups. Thirty-eight gave no reaction to any of these five antisera (N.G.=non-groupable), but other groups than the five could no doubt be developed if further antisera were made. Forty-three strains (M.G.=multi-group) gave positive precipitin tests with two or more of the absorbed sera, suggesting that the patient probably had a "mixed infection."

The strains examined came from varying places: Southampton, Birmingham, Portsmouth, Aldershot, Liverpool, London, and one unknown source. They were classified as follows:

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8</td>
<td>4.4</td>
</tr>
<tr>
<td>C</td>
<td>45</td>
<td>24.86</td>
</tr>
<tr>
<td>D</td>
<td>7</td>
<td>3.8</td>
</tr>
<tr>
<td>E</td>
<td>10</td>
<td>5.52</td>
</tr>
<tr>
<td>F</td>
<td>10</td>
<td>5.52</td>
</tr>
<tr>
<td>G</td>
<td>43</td>
<td>23.75</td>
</tr>
<tr>
<td>N.G.</td>
<td>38</td>
<td>20.99</td>
</tr>
</tbody>
</table>

It was found that repeated subculture caused the gonococcus rapidly to lose its specificity so that it was necessary repeatedly to take a "group" strain from recently isolated and tested organisms to keep as the stock strain for control tests and for antiserum production. Lyophilized strains always gave clear-cut results when reconstituted.

Examination by this method of all strains of N. gonorrhoeae isolated throughout the country would add much to the knowledge of the epidemiology of gonococcal infections, especially if methods of "typing" within the groups could be developed as was done in the case of the haemolytic streptococci.

The technique of the test is very simple and is used in nearly all laboratories in the country for the grouping of haemolytic streptococci.

The work described above was done during the holding of the Insole Research Award, B.M.A., 1967. —I am, etc.,

R. IRENE HUTCHISON.
Harborne, Birmingham 17.

REFERENCE
1 Lancashire, R. C., Journal of Experimental Medicine, 1933, 57, 571.

**Migrating Intravenous Catheter**

SIR,—In 1964 the secretaries of the medical protection organizations issued a communiqué1 drawing attention to the dangers of disruption of plastic intravenous catheters, particularly those which are inserted through the needle; this was occasioned by previous reports of this mishap. We think it appropriate to re-emphasize this danger by reporting the following case.

A 23-year-old pregnant woman was admitted to a London hospital suffering...
from severe vomiting of late pregnancy. She was given intravenous fluids via the right cephalic vein using an Intracath Bard Davol catheter. Later the drip was leaking, therefore the catheter was withdrawn and adjusted. As this was still unsatisfactory a second infusion set was set up. The first catheter was removed and found to be incomplete. X-rays were taken which showed the missing portion to have migrated through the superior vena cava into the right atrium.

She was transferred to Hammersmith Hospital and treated firstly with intravenous fluid, anticoagulants, and antibiotics. On the sixth day, because of her continued vomiting, rising blood pressure, albuminuria, and the failure of surgical induction a caesarean section was performed and a live baby delivered. Recovery was uneventful.

A week later the position of the catheter in the right atrium was checked by another x-ray; then through a median-sternotomy incision we exposed the heart and by introducing a finger into the right atrial appendage 12 cm of catheter was pulled out. She was discharged on the twelfth day.

We must stress that when these catheters are used the manufacturers' instructions must be followed and that the catheter must not be pulled through the needle to "adjust the drip." This was most probably the manoeuvre which, in this case, caused division and subsequent migration of the catheter.

Happily, the outcome was good, but the patient had undergone an extra operation and a cardiotomy. —We are, etc.,

K. M. MOGHISI
H. H. BENTALL
Royal Postgraduate Medical School,
Hammersmith Hospital,
London W.12

REFERENCE
1 Addison, P. H., Constable, H., and Millar, C. C., British Medical Journal, 1964, 2, 1600.

Haemophilus aphrophilus Endocarditis

SIR,—I was very interested to read the case report on Haemophilus aphrophilus endocarditis by Drs. R. M. Pine and H. Ballard1 in May, 1969. The case report is certainly rare. Spencer and Mitchell2 reported a case of subacute endocarditis due to Haemophilus aphrophilus and briefly reviewed the only other 11 case reports they were able to find. Farrand et al.3 recorded a case which was not published at the time of the review. The case reported by Drs. Pine and Ballard appears to be the first in which there was no pre-existing cardiac lesion. Although they state their case was similar in this respect to the original description of the disease by Kharit,4 a careful reading of the post-mortem findings suggests that the mitral valve which was infected by Haemophilus aphrophilus was scarred by rheumatic heart disease.

Haemophilus aphrophilus is rarely isolated from any source. Only four strains had been isolated by the National Collection of Type Cultures, London, up to June 1969. Two were from cases of cerebral abscess in man, one from subacute bacterial endocarditis in man, and one from the forelimb of a rabbit. (S. P. Lapage, personal communication.) Experience of treating

Haemophilus aphrophilus endocarditis is therefore limited. Penicillin is effective treatment, and cephaloridin and streptomycin appears to be an effective alternative regimen when the patient is hypersensitive to penicillin.

The organism of Haemophilus aphrophilus and the port of entry are not known, but there is some evidence that dogs may act as a reservoir. There are two reported cases of brain abscess due to Haemophilus aphrophilus in which the organism was isolated from the mouths of the patients' dogs, which habitually licked them about the face and neck.—I am, etc.,

ALAN SPICER
B.M.H. Münster,
B.F.P.O. 17.

REFERENCES
3 Kharit, O., Journal of Pathology and Bacteriology, 1940, 50, 497.

Cervico-oculo-acoustic Dysplasia

SIR,—There has been recent interest1,4 in the above rare condition which is essentially a development defect with brevicolis and ocular and auditory disturbances. There may also be mental deficiency. Descriptions of it have come from radiologists, otologists, oculists, and specialists in mental deficiency. Most cases so far described have been in children and usually females. I would like to report a case in an adult.

The patient was born on 17 February 1937 and was the last of five children. The parents were aged 42 years at her birth and they and the other children were normal. Pregnancy and birth were normal; but there was an ocipital meningocele. She is a helpless idiot. In stature she is small, with small hands and feet. There is Klippel-Feil syndrome with brevicolis, low hairline, and small low-set ears. She is mute, with a small, smooth tongue; and partially deaf, with small, relatively acellar mastoids. The middle ear canals cannot be identified on the right side. She is blind: There is prosis, and paenesis of all the ocular muscles. There are lateral nystagmus and contracted non-fixating pupils. There is bilateral optic atrophy of primary type. There are flexion contractures of the legs with exaggerated tendon reflexes and bilateral ankle clonus: plantar reflexes are flexor.

She is epileptic, her first fit having been at the age of 12 years, and although the epilepsy is now well controlled she used to go into status. Menarche was at the age of 14 years. Leucocyte chromosome analysis shows a normal female karyotype. Kahn tests and plasma amino-acids are normal; there is no galactosaemia.—I am, etc.,

D. A. PRIMROSE,
Royal Scottish National Hospital,
Larbert, Stirlings.

REFERENCES
4 Fraser, W. I., and MacGillivray, R. C., Journal of Mental Deficiency Research, 1968, 12, 322.

Acute Malaria in Newborn Infants

SIR,—Because of the incidence of acute malarial fever in newborn infants within 48 hours of birth, 50 control mothers who had prenatal care (including prophylactic treatment against malaria) and were later delivered at the Eastern Nigeria Medical Centre (now called Federal Medical Centre), Nigeria, had their blood tested for presence of malarial parasites in the peripheral blood on admission for delivery. In the delivery room smears were taken from the cord blood. Within one hour of delivery smears of the peripheral blood of both the mothers and their babies were taken.

In more than one third of the cases malarial parasites were found in the cord blood and in the peripheral blood of the mothers and their babies. All the infants who had positive malarial parasite smears were given 0-3 ml. to 0-5 ml. chloroquine intramuscularly. This study was done from 1965 to 1967.

I should like to know the experiences of other doctors working in the tropics as my findings are contrary to those of Blacklock and Gordon.—I am, etc.,

NLOAGH E. OKEE,
Brookline, Mass., U.S.A.

REFERENCE