The effect of intravenous urea was discussed and the fall in pressure after the administration of the conventional dosage compared with that following 5 g. A similar reduction in pressure occurred with the smaller dose but was of shorter duration.

Reductions in intracranial pressure following the use of Mannitol and Frusemide were also compared with the results seen with urea. Difficulties arose in comparing pressure changes due to those drugs in different patients under varying conditions. However, the opportunity to show the response of 40 g. urea, 250 ml. 20% Mannitol, and 30 mg. Frusemide each given intravenously to the same patient, under similar conditions, was taken. Reduction in pressure followed with each drug, the largest and most rapid fall followed the administration of urea. Duration of the response was most prolonged with Frusemide.

OBSERVATIONS ON C.S.F. FLOW USING ISOTOPE VENTRICULOGRAPHY

GORDON BROCKLEHURST (Cambridge) described the use of radioactive isotopes in the diagnosis of hydrocephalus and in investigating the behaviour of cerebrospinal fluid in various pathological states. Observations on cerebrospinal fluid flow were made in 27 patients after the injection of 50 microcuries of radioactive iodinated serum albumin (R.I.S.A.) into the lateral ventricle. He used a combination of serial scanning with a Magna scanner and profile scanning and body counting in a whole body counting chamber at intervals of one, six, and 24 hours. The majority of patients were children with meningo-myeloceles requiring assessment of hydrocephalus within the first few days of closure of the spinal lesion or older children requiring assessment of suspected recurrent hydrocephalus. A few other types of obstructive hydrocephalus were included.

He had found that in the normal, R.I.S.A. was found in the lateral ventricles and fourth at one hour, in the basal cisterns at six hours, and none remained after 24 hours. Body scan showed all the activity in the head at one hour and present elsewhere in the body at significantly high levels at six and 24 hours. In the obstructed case R.I.S.A. remained in the lateral ventricle and none appeared elsewhere in the body at 24 hours.

In three patients with normal flow and 18 patients with evidence of total obstruction these findings correlated excellently with the clinical findings and subsequent progress. In the remaining six patients evidence of partial block also correlated well with the clinical features.

He concluded that failure of R.I.S.A. to reach the surface of the hemispheres in 24 hours was a reliable indication of hydrocephalus and that this abnormality could precede overt clinical signs. He noted that the appearance of R.I.S.A. in the body without evidence of normal flow through the conventional cerebrospinal fluid pathways and some variations in flow patterns within the ventricles suggested that there were other factors influencing the behaviour of cerebrospinal fluid in such patients and that this might complicate the picture of simple obstruction.

MENTAL SYMPTOMS IN PATIENTS WITH ACOUSTIC NEUROMAS

Miss S. M. WOODCOCK (Preston) described the mental symptoms in a series of 31 patients with acoustic neuromas. In this series she had found at least seven patients with mental symptoms and the case histories of these patients were presented. She said that five of these had left-sided tumours and it might be that lesions on the side of the dominant hemisphere were more likely to cause memory disturbance. When E.E.G.s had been done there was a tendency to show temporal lobe abnormalities and this too might be associated with memory disturbance. The ages ranged from 37 to 68 with an average of 55.9 years.

The mental symptoms encountered included personality deterioration, memory disturbance, intellectual deterioration, confusion, depression, euphoria, and psychoneurotic traits. She concluded that these symptoms might be caused by cerebral arteriosclerosis but were most probably due to vascular disturbance from distortion of the brainstem.

MICROGLIOMATOSIS

A. A. MILLER (Preston) said that the classical microglioma arising from cells which represented reticular tissue in the nervous system was a rare tumour and the atypical variety was even rarer and presented a formidable diagnostic problem. The common site was around the fourth ventricle involving the brainstem and cerebellum but they could occur in the cerebral hemispheres or infiltrate the leptomeninges diffusely. He reviewed the literature on this subject and stressed that a diagnostic feature was the impregnation of the more mature cells by silver carbonate stains. He felt that there was a range of tumours in this group from the very anaplastic reticulum cell sarcoma, through the microglioma, to tumours in which the inflammatory elements predominated. He gave case histories of three patients illustrating these three types of tumour. He concluded that the term microglioma was now used in a wider context than formerly and also with a different meaning. It was no longer a distinct entity but one of a number of types within the primary reticuloses of the brain.

THE EARLY MANAGEMENT OF THE SEVERELY INJURED

R. S. GARDEN (Preston) discussed the organization necessary to deal with severely injured patients in the early stages. He noted that his hospital served a population of 350,000 and received an average of 2,000 road accident cases per year. He stressed that the treatment of the gravely injured patient depended largely on the organization of an accident service. In his department they had moved away from the traditional method of staffing by junior resident doctors and the department was now staffed by full-time medical officers, two of whom were on duty at any time of the day or night. This had made it possible to provide consultant cover, to train the younger men in emergency work, and to undertake research.

An important innovation had been made to make the ambulance worker an integral part of the team and when he realized this he emerged as a surprisingly enthusiastic and capable member of the emergency department staff. Regular lectures and demonstrations were given to ambulance crews and particular emphasis was placed on the importance of maintaining the airway. In one series of 182 patients who died as a result of road accidents, no less than 36% of those dead on arrival had aspirated blood, mucus, or gastric contents into the respiratory passages. As a result the ambulance worker was fully prepared to answer questions on state of consciousness, position of patient, or the amount of bleeding when he arrived at the hospital.

He said that for many years local ambulances had been provided with simple suction and resuscitation equipment, but the most successful innovation had been the provision of radio communication between the ambulance crews and the hospital doctor. This experiment had started six years ago and had amply proved its worth.

THE FIGHT AGAINST FUSIFORMIS

M. J. BETTY (Newcastle) discussed the problem of treating cerebral abscess due to anaerobic organisms of the fusiformis group (bacteroides). He noted that these were difficult to culture and often occurred in association with other anaerobic and with aerobic organisms. He stated that these organisms were strict anaerobes, Gram-negative and non-sporing. Of the four species recognized, *F. fragilis* had been most commonly found and this was invariably resistant to penicillin.

He then described in detail four patients who had cerebral abscesses due to this organism. Three were associated with middle ear infection and the fourth with cyanotic congenital heart disease. The main problem had been due to delay in diagnosis and infection by an organism which was both difficult to culture and to eradicate. The fusiformis organisms most commonly isolated were resistant to penicillin and the most useful drugs were erythromycin and chloromycetin. Erythromycin in high dosage and over long periods would achieve bactericidal levels and eradicate the infection. The organisms were also sensitive to lincomycin which might prove of value.

He stressed that the important factor in treatment was high dosage, preferably intravenous, of erythromycin or chloromycetin continued over a period of several weeks. This therapy should be started immediately if an initial smear showed Gram-negative bacilli of the fusiformis type. The associated anaerobic bacilli were almost invariably penicillin sensitive.

THE USE OF DEXAMETHASONE IN THE CONTROL OF CEREBRAL OEDEMA

JOHN P. WISSINGER (Minneapolis), LYLE A. FRENCH (Minneapolis), and F. JOHN GILLINGHAM (Edinburgh) presented their experience with the use of steroids for the control of cerebral oedema using material from the

University of Minnesota and the Department of Surgical Neurology in Edinburgh. Signs and symptoms of increased intracranial pressure showed striking remission after the administration of the potent glucocorticoid, dexamethasone (Decadron).

Initial dosage of dexamethasone recommended by the authors was 10 mg. intravenously followed by 4 mg. intramuscularly every six hours. This high dosage was maintained until a maximum response was achieved which was usually in a period of three to four days, then the dosage was decreased gradually over a period of five to seven days.

In 249 patients with brain tumour, 212 showed signs of greatly increased intracranial pressure, 31 were comatose. Two hundred and two of the 249 cases showed improvement after treatment with dexamethasone. Evidence of improvement was the prompt and continued relief for the duration of treatment of signs and symptoms of increased intracranial pressure and/or alleviation of neurological deficits. The onset of response was almost invariably within 12 to 18 hours after beginning therapy and maximum neurological improvement was usually obtained within four days. Fifty-eight patients with operative and postoperative oedema were treated. Seven patients were comatose. In 12 to 24 hours after starting dexamethasone, 43 patients showed striking improvement. Three moribund patients failed to respond.

Sixty-three patients with closed head trauma, comatose for 24 hours or more, were treated with dexamethasone. Thirty-five were awake and orientated 24 hours after therapy was started.

Forty out of 46 patients with subarachnoid haemorrhage and signs of increased intracranial pressure showed symptomatic improvement after treatment with dexamethasone. Eight patients developed signs of increased intracranial pressure after beginning x-ray therapy. After treatment with dexamethasone all showed relief of nausea, vomiting, and headache within 24 hours. In six cases of intracerebral haematoma none showed improvement with dexamethasone. Two out of three patients with pseudo-tumour cerebri showed improvement with dexamethasone therapy. Complications with the use of dexamethasone in 433 cases were rare. Gastrointestinal ulceration and bleeding occurred in four, activation of preexisting duodenal ulcer in one, psychotic disturbances in five, impaired wound healing in seven, masking of postoperative clot in three, salt and water retention in two, salt-losing syndrome in one, severe oedema after the discontinuance of therapy in three.

The authors showed electron microscopic studies of oedematous brain before and after the use of dexamethasone. There was marked diminution in swelling of the astrocytes and the ultrastructure of the white matter had returned to near normal with disappearance of the greatly expanded extracellular space.

DERMOID TUMOURS OF THE SPINAL CORD

IAN BAILEY (London) discussed spinal dermoids and their associated tumours and classified them on the basis of number of germ layers represented. He stated that the