Haemolysis of blood agar was greatly decreased by anaerobiosis. Growth in glucose broth was gelatinous with organisms in long chains. The group polysaccharide was destroyed by formamide but not by acid extraction. The strain was sensitive to penicillin, erythromycin, tetracycline, and trimethoprim with sulphamethoxazole, but resistant to streptomycin and bacitracin.

The streptococci were possibly secondary opportunist pathogens; it is unlikely that they reached the lungs by mechanical interference, or as a result of postmortem change, as no resuscitation was attempted and the necropsy was performed soon after death.

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Value of prolonged Incubation of Selenite for the Isolation of Salmonellae from Faeces

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When investigating the carrier state of children involved in an epidemic of salmonellosis, the faeces of several children failed to grow salmonellae from the subculture made on deoxycholate citrate agar after one day's incubation in selenite, but salmonellae were isolated from some of these selenite specimens incubated for a further four days before they were subcultured. Of the isolations 7.5% were only obtained by the prolonged incubation in selenite.

When this improvement in the isolation rate was appreciated the same technique was adopted for the isolation of salmonellae from routine specimens. The number of salmonellae identified in these specimens has been relatively small but the proportion only isolated by five days' selenite incubation would appear to be about the same as that from the clearance specimens of children who were carriers.

Carcinomas of the Ampulla of Vater and the Duodenum

A. KENNEDY AND J. H. BLUMGART (*University of Sheffield and Sheffield Royal Infirmary*)

Thirty-two cases of carcinoma of the

ampulla of Vater and second part of the duodenum have been classified on the basis of their morphology and the results correlated with the clinical histories of the patients.

Two types of tumour were discernible. Ten tumours were polypoid papillary adenocarcinomas arising at the ampulla. Nineteen were adenocarcinomas without a papillary pattern, of which 15 were ampullary and four were duodenal in origin. The three remaining tumours were ampullary but were of mixed histological pattern.

Polypoid lesions in the ampullary region were associated with jaundice which was often intermittent; they were only slightly invasive and the patients came to operation rapidly. The non-papillary tumours were more invasive and more often involved the lymph nodes. They were often associated with pain, were frequently misdiagnosed, and patients only came to laparotomy after a long interval. The duodenal tumours caused vomiting of pyloric type without jaundice. Because of the varying forms of management by different surgeons the data do not provide a clear-cut difference in the survival of the two groups of patients but it is suggested that this pathological classification has clinical relevance and may have prognostic importance.

Ankylosis of the Stapedio-Vestibular Joint

M. I. WRIGHT (*University of Manchester*)

This joint develops in cartilage and is unique in shape and size. It is a symphysis composed of elastin fibres and cartilage. Age changes may include osteophytes. Adhesions following chronic middle ear infections may leave the joint space unaffected but preventing mobility. 'Otosclerosis' is apparently a progressive ankylosis, probably inherited as a dominant. A small area of fixation is enough to cause deafness. The peak age of onset is the third decade. The sex-ratio is 1 to 1, but women are more severely affected. Growth in the footplate of the stapes may increase the weight of the bone by 100%. Histopathology of the joint space includes calcification of fibres and cartilage and ossification. The operation specimen shows reactive bone, containing large resorption spaces. These may contain osteoblasts and cells with more primitive features, including the ability to divide, and multicellular osteoclasts. There is plentiful ground substances, which may be

basophilic as may the bone. These are the features of a very active lesion. Inactive lesions may contain large spaces in which are somewhat featureless cells, possibly fibrocytes; the bone is reactive in collagen pattern, but the appearance in polarized light is partly obscured, and the bone is weakly eosinophilic, with few cells. No time relationship exists invariably, except that inactive is presumed to follow active lesions: very active lesions indeed may be present many years after the onset of the disease. Cement lines are not a feature of the lesion. Electron microscopy suggests the presence of chondrocytes and histiocytes in some of the resorption spaces.

Harness: Its Implications for Laboratory Design

D. K. GRAY (*Department of Health and Social Security*)

Harness is the code name given to a programme for rationalization of NHS hospital planning and design. The name is derived by analogy with the electrical harness used in motor car design. In the hospital design context it represents a multi-purpose street system to which standard (Harness) hospital departments may be attached in a variety of configurations.

Within the Harness concept of hospital planning the street system is adaptable to the majority of site configurations and is thus itself potentially unique to any given situation. The Harness design departments are, however, standardized, albeit in a range of sizes to suit district general hospitals of between 750 and 1200 beds.

Harness does not imply standardized whole hospitals since a wide range of permutations of departmental sizes and departmental relationships is provided for, thus making the total system adaptable to a variety of local requirements.

The Harness concept, at least in its mark I form—hopefully there will be mark IA, IB etc versions later—requires that all hospital departments be accommodated in multiples of 50 feet squares of space arranged in a chequer board fashion, alternate squares being courtyards to provide natural light and ventilation.

The Harness design system recognizes what is frequently unacknowledged in building design, namely that space envelopes are in large measure predetermined by architectural form, and that facility planners must adjust to structural

constraints. In the Harness case space is made available in multiples of 2,500 sq ft squares, of which 10 are required for a 25,000 sq ft laboratory to serve a notional catchment area of 250,000 population. (In some areas of the building smaller increments than 2,500 sq ft are possible.)

The initial reaction to a proposition to standardize laboratory design may well be that it cannot provide for the variations of practice which we know currently obtains in the NHS. In favour of standardization is that since all laboratories rapidly become obsolete, whoever designs them, there is little in principle to choose between alternative designs. It may even be that where funds are limited one good standard design could well be less quickly obsolete than many of the laboratory designs produced by 'one-only' laboratory planners who have limited opportunity to learn from their mistakes.

More important than the detail of laboratory layout is overall availability of usable space, provision for expansion, and an adaptable arrangement of benching systems. The Harness solution, for which four leading clinical pathologists—one from each major discipline—have been coopted, aims to meet all these requirements.

Designing by Function

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Hospital activities carried out in free space would be far more convenient but perhaps less comfortable.

Providing for people to do what they need to do, now and in the immediate future, with the freedom of free space but in a controlled, fully serviced environment and at a reasonable cost generates the conflicts out of which arise conferences such as this one.

The resolution of such conflicts involves two different kinds of people; those with a knowledge of the activities to be enclosed and those with a knowledge of the enclosing techniques, but unfortunately these different people also have different languages and objectives.

Traditional methods of briefing have done little or nothing to draw the two sides together mainly because such methods accept without question both hierarchies and spaces. As a result design discussion has centred on the 'how' rather than the 'what'.

Questioning traditional hierarchies, demarcation lines, and operational methods

very often throws up new ideas on 'how to do it'. But perhaps even more important it provides an educative process which encourages both sides of the team to understand their own problems and those of others more clearly.

In recent practice it has been found that because of a clearer understanding of the 'what' such things as overlapping activities can be identified and grouped together in a smaller but more appropriate space and hence at less cost.

For the future, the traditional briefing methods are not good enough. The shift must be from a 'spaced based' approach (where functions are fitted into spaces) to a 'function based' approach (determining the functions around which spaces are delineated). This is especially important if the growing acceptance of standardization is not going to make life intolerable.

Special Requirements for Automation and Mechanization

L. G. WHITBY (*Department of Clinical Chemistry, Royal Infirmary, Edinburgh*)

'Automation', for design purposes, was taken to include mechanization and these two concepts were not separately considered, but the requirements for those departments intending to install a computer were discussed. It was assumed that these equipment features implied laboratories with large workloads, serving a group of hospitals or even several groups of hospitals.

The input of work to the laboratory and arrangements for the output of reports have to be taken into account when considering the external relationships and the optimum siting for the laboratory. The reception area, specimen handling, and storage areas must be capable of dealing with large workloads, especially at peak periods. As far as the laboratory itself is concerned, this is preferably subdivisible into (1) an automated area, (2) an area for manual and special techniques, (3) a computer (EDP) area, and (4) an office and administration area. The separate automated area is desirable so as to achieve in it a smooth factory-type operation, and the British Standards Institution (1970) has recommended that the EDP area should be kept separate.

When designing the automated area, account must be taken of the likely space requirements of the equipment, but if possible allowance should be made for the inevitable changes in instrumental design

so that, in due course, bench-top or free-standing equipment may be used, some of it requiring all-round access. Services need to be considered in relation to the equipment itself (ventilation, electricity supply, drainage of effluent, etcetera) and to the support of the automated equipment in daily operation, access to the laboratory for bulk supplies, space for bulk storage, an area for the preparation of reagents in bulk, and arrangements for bulk disposal. The particular dependence of automated equipment on an adequate and reliable electricity supply must be stressed, with the consequent need to consider headroom and output. Noise is a feature of the operation of much automated equipment that has too often been overlooked.

Most of the special design considerations for automated equipment are relevant also to the computer (EDP) area. The British Standards Institution publication advocated that the EDP area should be separate, which raises the important problem of communication within the laboratory, the correct siting of internal windows, hatches, doorways, provision for closed circuit television, etcetera. Computer manufacturers specify the environmental requirements for their equipment and the other special needs include a reliable electricity supply, false flooring for cabling, protection of equipment and records from stray magnetic fields, a separate fireproof records store, and again the recognition that noise may be a major problem (which may be largely overcome by subdividing the EDP area).

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Lung Tumours

L. KREYBERG (*Institute of General and Experimental Pathology, Oslo*)

The Centre for Lung Tumours was the first of the WHO international reference centres to be established, and the WHO monograph 'The histological typing of lung tumours' was consequently the prototype for the succeeding volumes. In the years that have passed since its publication, a number of controversial points have emerged, although the scheme of classification, as a whole, has been favourably received and can be applied