membrane abnormality that was common to all the exocrine glands involved—including those lining the bronchial tree.

Dr. ALEXANDER SPOCK and his co-workers (Duke University, North Carolina, U.S.A.) reported the discovery of a serum factor which they suggested was unique to cystic fibrosis. Studies had shown that patients' serum contained a factor which could induce an asymmetrical ciliary beat of the cilia of normal respiratory tract epithelium in tissue cultures. Dr. Spock illustrated his findings with a film, and stated that the sera from 75 patients had all produced this effect, while the sera from 75 patients with other diseases—including leukaemia, diabetes, and bronchitis—had not interfered with normal ciliary action. This serum factor had also been demonstrated in the parents of these patients, and appeared to be a macro-globulin.

Diagnosis

Dr. B. HADORN and his co-workers (University of Zurich) reported the use of a triple-lumen double-balloon tube for collection of pancreatic juice. In cystic fibrosis the volume of juice had been found to be grossly reduced, whereas in other types of pancreatic insufficiency the volume was normal though deficient in enzymes and bicarbonate content. The method allowed an exact analysis of exocrine pancreatic function, and was also useful in the differentiation of different types of pancreatic disease.

Dr. DAVID LAWSON (Queen Mary's Hospital, Carshalton) described the development of a sodium-sensitive electrode for the measurement of parotid saliva pNa at the

orifice of Stenson's duct. Direct readings were obtained, and these had shown raised levels in patients with cystic fibrosis, with only a slight overlap into the normal range.

Dr. H. BOCH (Frankfurt, Germany) and Dr. U. STEPHAN (Erlangen, Germany) had found consistently raised levels of sodium and potassium in the nails of patients with the disease. They concluded that examination of nail clippings might be a valuable screening test for cystic fibrosis—for example, when the patient lived a long way from hospital.

Treatment

Professor DI SANT'AGNESE said that pulmonary involvement still dominated the clinical picture, and pointed out that it was responsible for over 90% of deaths. Nevertheless, early diagnosis and treatment were unquestionably effective in prolonging life. Moreover, most older patients tolerated their pulmonary disease well, and many were able to work full-time and even to engage in physical exercise. Deficiency of pancreatic function seemed to become less important with age.

Dr. A. P. NORMAN (Hospital for Sick Children, London) described the abnormalities of intestinal absorption in cystic fibrosis. These were largely due to the absence of pancreatic enzymes and could be ameliorated by giving pancreatin by mouth, together with a suitable diet. The Chairman of the conference, Professor ETTORE ROSSI (University of Berne), and Dr. OTMAR TÖNZ (University of Berne), reporting work on iron absorption in cystic fibrosis, showed that

most patients with the disease had normal haemoglobin levels. Absence of pancreatic juice had been found actually to assist the absorption of inorganic iron.

Dr. LEROY W. MATTHEWS (Cleveland, Ohio, U.S.A.) described the use of ultrasonic nebulizers which produce a fine hypotonic saline mist of almost uniform particle size in the prophylaxis of cystic fibrosis. None of a group of 156 patients placed on routine mist therapy and postural drainage before appreciable lung damage had occurred had died. Some patients in the group had been treated for over six years; all slept every night in a mist tent; and none had developed severe pulmonary disease.

Professor PAUL R. PATTERSON (Albany, U.S.A.) said that bronchoscopic saline wash-outs had also been of benefit in improving pulmonary function, reducing infection and assisting weight gain in more severe cases. After bronchial lavage finger-clubbing had decreased, the patients' colour had improved, and it was often several months before antibiotics were needed. Professor Patterson had observed inflammation of the bronchial mucosa following the use of mucolytic agent *N*-acetyl cysteine, and he felt that it had no place in the treatment of cystic fibrosis. Dr. LAWSON also pointed out that 5% *N*-acetyl cysteine had a markedly adverse effect on the penetration of mucus by inhaled antibiotics.

Summarizing treatment methods in relation to prognosis, Dr. W. J. WARWICK (University of Minnesota, U.S.A.) said that the prophylactic use of antibiotics, vitamins, pancreatic enzymes, aerosols, and pulmonary drainage had extended the median life expectancy in patients with cystic fibrosis from 7 months to 21 years.

NEW APPLIANCES

Technique for Self-administration of Heparin

Dr. D. B. EVANS,* Department of Medicine, Fulham Hospital, London, writes: Teflon-Silastic arteriovenous shunts implanted in peripheral vessels of patients with chronic

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renal failure, for the purpose of intermittent haemodialysis, occasionally clot. It is the experience of most of us that the vein is the commonest site of primary thrombosis, and retrograde extension into the shunt and artery follows.

Prompt declotting usually allows the shunt to continue functioning provided that the thrombus is removed completely and irreversible harm has not resulted to the artery or vein. Total heparinization of the patient for a period of 10 to 14 days has

FIG. 1

FIG. 2

been found beneficial in preventing secondary clotting.

By introducing a small latex rubber medication sleeve into the shunt as shown in Fig. 1, patients can be taught to administer heparin to themselves and consequently they need not stay in hospital.

The rubber medication sleeve of a Capon-Heaton transfusion set has been used for this purpose. The nylon connectors and adjacent rubber are removed from both ends. The remaining 2 in. (5 cm.) of rubber is then siliconized and sterilized by autoclaving. Siliconization of the rubber sleeve is achieved by using Siliclad (manufactured by Clay

Adams, New York 10). When required, the sleeve is easily and accurately fitted over the Teflon (P.T.F.E.) connectors of the Scribner shunt and the junctions are bridged over with Johnson's clear Bandaid for safety. Injection into this self-sealing rubber sleeve is carried out with a No. 17 gauge intradermal needle after swabbing the site of injection with tincture of iodine (Fig. 2).

The tendency to clotting is *not* increased significantly by the incorporation of the rubber segment into the circuit, and it has been used for blood sampling on several occasions, for as long as 14 days, without increasing the clotting tendency. By inject-

ing heparin to prevent secondary clotting, many shunts have been saved. Provided a small-gauge needle is used for injecting the heparin, minimal trauma to the rubber occurs. The heparin regimen recommended is 4,000 units four-hourly for an average-size patient and 5,000 units for a large person.

Acknowledgements are made to Professor H. E. de Wardener for encouragement; to Drs. J. R. Curtis and A. J. Wing for permission to reproduce Fig. 2; and to the Department of Medical Photography, Addenbrooke's Hospital, for Fig. 1.

TOMORROW'S BUILDINGS

New Charing Cross Hospital at Fulham

On 3 October work was due to start on the excavations and pile driving for the new Charing Cross Hospital at Fulham. This stage is expected to be completed by August 1967, and it is planned to be followed immediately by the building of the superstructure. Phase I of the building—which is the major part of the project and comprises the main ward and laboratory block and part of the outpatients department—will cost about £10m. In addition it is proposed that two out of the three residential blocks will be built during the time that Phase I is under construction.

The new building will have seventeen floors, and will provide 640 beds out of the planned total of 900. Most of these will be housed in standard wards of 26 beds. There will also be a sterile ward, a metabolic ward, an intensive-care unit, an acute-care ward, two private wards, and a large geriatric unit.

The operation-theatre floor will have ten theatres, two of which will have viewing galleries. A recovery ward capable of

receiving 20 patients will be closely associated with the operating theatres.

Ward Design

The wards will be of the "race track" design—that is, the patients' rooms will be around the periphery of the building and the service rooms will be on the inside. Each ward will have two six-bed rooms, two four-bed rooms, and six single-bed rooms. One of the single-bed rooms will be designed so that it can be used for isolation purposes and will have its own bathroom and lavatory. A lavatory has been provided immediately adjacent to all patients' bedrooms, so that patients will not have to cross a corridor to get to it. Each ward will have its own day- or sitting-room and a treatment suite. A room will also be provided in each ward for patients to wash and dry items of personal clothing if they want to. In addition there will be overnight stay facilities for relatives of seriously ill patients. The ward block

and much of the laboratory block will be air-conditioned. The laboratory block will be linked with the ward block and will have fifteen floors allocated to pathology, research, and teaching.

Once the building is completed it is planned that the medical school will increase its intake to 70 students per year and the teaching facilities have been designed with this in mind, and also to provide for post-graduate training. The hospital will have a school of nursing, schools of physiotherapy and radiography, and training facilities for medical and psychiatric social workers. Thus eventually there will be about 900 medical, nursing, and other students undergoing training.

Another feature of the new building is the unit that has been designed for general practitioners (see *B.M.J.*, 1965, **1**, 1548). Situated in the main block, this will contain a minor-operation theatre, recovery room, treatment rooms, a laboratory, and a club room, together with offices for secretarial and nursing staff.

Model of proposed new Charing Cross Hospital at Fulham. (Architect, Ralph Tubbs.)