

HOSPITAL ENGINEERING

International Federation Issue



- Electrical safety in operating rooms – an Australian approach
- The Austin Hospital today
- WIMS – up and running down under

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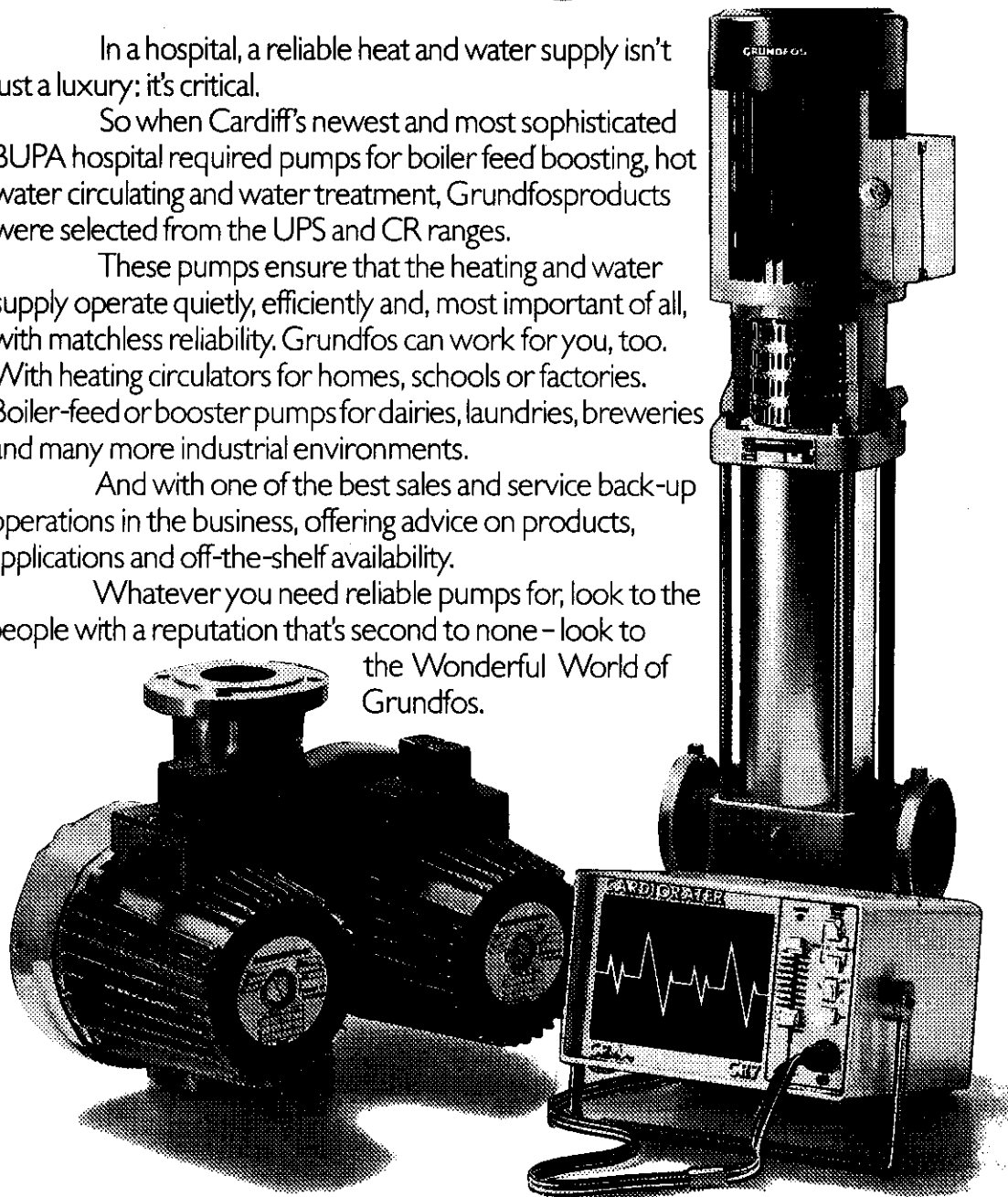
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HOSPITAL ENGINEERING



I.F.H.E.

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Dr Murray retires after a distinguished career in engineering. Looking back, he thinks of the future and passes on a thought for the years ahead.

Some reflections on retirement

KEN MURRAY BSc(Eng) PhD CEng FIMechE FIHospE

I suppose most of us looking back over our careers are struck by the accidents of life which have led to changes in direction and the random way our careers seem to have developed. Very few of us I imagine have ended up even vaguely near the destination we had in mind when we started out.

In my case, once I had been put off a career in medicine by being told that I would have to memorise Grays Anatomy, I set my sights on a life with engines and machines having been inspired by the poetry of motion of the working models in the Science Museum, the evocative smells of petrol, oil and steam, and the musical sound of well engineered machinery.

The first major turning point occurred when I was called up for National Service and drafted to REME when despite my declared

preference for mechanical engineering I was given a first class training in electronics and telecommunications. I did get back on course again when I left the army and was given a grant to study for a degree in mechanical engineering. I even took up employment with a firm of diesel engine and gas turbine manufacturers but further random events diverted me into education, building services and then hospital engineering.

Although this meandering across the map of life may appear to indicate a lack of single-mindedness or strength of purpose, I am unrepentant and hold the view that one should take opportunities as they present themselves and use them to broaden experience and outlook. And mentioning breadth of outlook brings me to a theme on which I am inclined to preach.

Many engineers in my view are far too insular and are reluctant to the point of arrogance to look beyond the boundaries of the engineering concern. Perhaps it is because we are trained to pursue a unique solution to a problem. If we calculate the duty of a pump or the load on a flange there is only one answer and we either get it right or its wrong. Perhaps we chose engineering for a career because we feel safe with such closed ended problems and are uncomfortable with open ended situations where there is a wide range of possible solutions and no golden rule as to which is the best. This point is often illustrated on a multi-disciplinary management course when after a lengthy discussion of possible ways of dealing with a complex human relations problem the engineer asks 'what is the right answer?'. Once we realise that we have this tendency we are more than half way to correcting it. It is not that we should be any



Dr Murray

DR MURRAY has had long and distinguished service with the Institute of Hospital Engineering. He was Chairman of the Institute/DHSS Keele Courses Committee for eight years, with final responsibility within the DHSS for all aspects of the course, and continued his responsibilities after the 'Keele' courses had transferred to Falfield. He was a Member of Council, Chairman of the International Affairs Committee, Member of the Finance and General Purposes Committee, and Member of the Education Committee. Dr Murray was the representative of the Institute on the Council of the International Federation of Hospital Engineering for eight years. His contribution within the IFHE is recognised as being an outstanding contribution to the progress of the International Federation. During the whole of this period Dr Murray firmly and tenaciously maintained the influence of the Institute within the IFHE. He also acted as Chairman of the Institute/DHSS working group which organised and operated the two International Seminars on Appropriate Technology, which the Institute was asked to organise by the IFHE.

SOMMAIRE FRANÇAIS

Quelques réflexions d'un ingénieur en retraite

L'auteur se penche sur les divers événements de sa vie qui l'ont conduit à devenir un technicien spécialisé dans le génie hospitalier. Il considère son expérience comme étant précieuse en ce sens qu'elle lui a permis d'avoir des idées plus larges en ce qui concerne le travail et l'existence en général. Du fait que les ingénieurs sont formés dans le but de pouvoir trouver une solution unique à un problème donné, l'auteur remarque qu'ils sont souvent perplexes en présence d'un problème à solutions multiples. Aussi est-il d'avis que l'un des devoirs de l'ingénieur consiste à s'intéresser aux interactions entre divers domaines et à considérer sa propre contribution par rapport à un contexte global.

continued on page 21

TALKING POINT

The author is Treasurer of IFHE and a Health Service Regional Works Officer in London.

Balancing the operational costs

BASIL HERMON CBE CEng MICE FIMechE FCIBS CIHospE

Overseas travellers will see new hospitals being built in many parts of the world and many which have been built and opened over the past 20 years and some of these are only partially opened. One international construction firm has estimated that projects now being planned probably amount to many thousands of million dollars. Although these capital sums appear large they are not difficult to raise and therefore governments, health authorities and other health-care management bodies all too frequently embark upon new projects without giving proper thought to the long term running cost commitment to follow. The traveller will also see many hospitals very old and comparatively new which are in poor condition, with equipment out-dated and sometimes coming close to being unsafe.

When estimates of running costs are prepared most attention is naturally given to manpower because it would absorb about 70% of the total but is this the right proportion, are authorities employing staff without allowing sufficient money to maintain a reasonable environment for them to work in, do they appreciate that modern sophisticated diagnostic and therapy equipment often has a life of less than eight years and that even to sustain this period it needs to be regularly maintained by specialists at contract price levels which often seem to be beyond the available finance. So are we doing our sums correctly, have we got the balance right between the manpower and the buildings, equipment, tools and consumables it needs to do its job.

Hospital engineers invariably prepare estimates of the cost to maintain buildings and equipment and to bring the dilapidated assets up to a reasonable standard, but the amount they are allocated is often what is left after money for manpower and drugs has been set aside and this

is usually substantially below that which is needed. If authorities experience difficulty in filling staff vacancies they may add a little more to the engineer's budget in that year but conversely when other budgets go out of control and authorities are tending to overspend they will invariably rescue the situation in the short-term by deferring maintenance and equipment replacement without appreciating the size of the backlog which is accumulating and that some deferred maintenance will have to be done eventually at a far higher price.

The option of cutting back the manpower and maybe the level of service to fit more equitably the building and equipment to provide that service is seldom considered when costs are running ahead of allocations. Actually a cut in manpower whilst reducing the number of beds in use will often increase the throughput in the remaining beds and provide the incentive to do more day surgery so, overall, the same or even an enhanced level of service is provided. If the reduction of the number of beds becomes permanent the volume of buildings can be reduced which then reduces the maintenance and replacement bill.

To get the balance between manpower and non-staff costs right in new hospitals, building and engineering designers should build up estimates of maintenance and replacement costs as they select components and medical planners should be aware of the equivalent annual charge to follow when they specify diagnostic and therapy equipment for inclusion in a new project; when these costs are added to the estimated manpower and consumables authorities can judge whether they can really afford to build and operate a hospital of the size originally proposed.

But what of the vast decaying

hospital building and engineering stock which exists and which will have to provide a service well into the 21st century – the backlog of maintenance is enormous and as politicians and benefactors are usually concerned only with what is achieved in the short term it is doubtful whether any worthwhile initiatives will be taken to reduce it.

The health-care services in many countries have developed in the past in an uncoordinated manner because hospitals were erected or extended whenever substantial gifts were made by grateful benefactors or through voluntary contributions with the result that many cities have more hospital beds than necessary or they do not relate properly to population centres. Some planning authorities are now realising the need to close entire hospitals and to make other hospitals more efficient and more sensitive to the needs of the local population, but they have to do so in the face of fierce opposition from staff and other organisations, wherever

SOMMAIRE FRANÇAIS

Les hôpitaux nouvellement créés restent souvent partiellement ou complètement fermés en raison du manque de fonds nécessaires à leur fonctionnement. Quant aux hôpitaux déjà existants, ils demeurent à un niveau beaucoup trop bas. Les responsables de leur financement répartissent-ils les fonds dans de justes proportions – qu'il s'agisse de la main-d'œuvre, des locaux ou de leur équipement – de façon à leur permettre de fonctionner dans de bonnes conditions? Les ingénieurs chargés de l'organisation de ces hôpitaux se consacrent-ils suffisamment à l'étude de l'aménagement rationnel des établissements hospitaliers?

IFHE News

India

New course at Thapar

Starting in July 1984, is a one year post-diploma course in hospital engineering at the Thapar Polytechnic, Patalia. It is designed as a co-operative programme in which the Thapar Polytechnic and the Post-Graduate Institute of Medicine Research Centre, Chandigarh, have agreed to be partners in education and training. For further details apply to the Principal. D.R. Gupta, Thapar Polytechnic, Patalia, India.

Spain

6th Annual Meeting of AEDIAH

The 6th Annual Meeting of AEDIAH was held on 31 May-1 June in Seville. The theme was Advantage of Resources, Reception of Works, Installations and Equipment. The president of the Junta de Andalucia, Excmo. Sr. D. José Rodríguez de la Borbolla presided. The programme was made up of seven papers and three programmed communications. Among those present were Bruno Massara, and Joao Lopes-Galvao, General Secretary of the IFHE. A group of engineers and architects from Portugal were also welcomed. During the meeting the Premio AEDIAH-83 was

continued from page 3

they have achieved this kind of rationalisation they have saved very large sums of money some of which can be used to raise the standard in the remainder of the hospital estate. This demonstrates the need for staff concerned with estate management to get involved in the strategic planning of their local health services to prepare proposals for rationalisation of the estate, gaining capital from the sale of land and property, making better use of the scarce revenue and contributing to increasing the efficiency of the service.

This is a subject relevant to a number of the papers about estate management being presented at the 8th International Congress in Melbourne on 18-24 November 1984.

presented to the best articles published in 'Hospital 80' during 1983 on the subject of hospital engineering, architecture and maintenance.

The eight papers that were given at the meeting have been published in Spanish, and are obtainable from AEDIAH, Diagonal 647, 08028 Barcelona, Spain. Price 2.500 ptas.

Apology

In the June IFHE of the Journal the article Essendon and District Memorial Hospital was wrongly credited to W. Geerlings (he writes in this issue on the Austin Hospital). The author was in fact, John Yunchen of Yunchen, Freeman Pty Ltd, Melbourne, Australia.

America

Engineering asbestos standard voided

A three-judge panel of the United States Court of Appeals for the Fifth Circuit, New Orleans, has unanimously overturned an emergency regulation proposed by the Occupational Safety and Health Administration (OSHA) last November to limit employee exposure to asbestos with a content limit of half a fibre per cubic centimetre. OSHA claimed that the standard would have immediately begun to save lives, but the court disputed OSHA's precise figures.

The court upheld arguments by the asbestos industry that OSHA had failed to follow its own rulemaking procedures and that it had used its emergency powers without sufficient hearings or supporting evidence.

The court's decision, which was issued on March 7, agreed that asbestos 'doubtless may present a grave danger to workers'. The court added that OSHA had failed to demonstrate the need for an emergency rule, which bypasses the normal procedure of listening to arguments from all interested parties.

Although OSHA estimated that, in six months, the proposed emergency regulation might have saved the lives of 80 asbestos-exposed workers out of an at-risk work force estimated at

375,399, the court said, 'The actual number of lives saved is uncertain and is likely to be substantially less than 80'.

The judges ruled, accordingly, that OSHA had failed to present sufficient proof of an emergency. The court volunteered, however, that an asbestos standard might withstand a legal challenge 'if OSHA Promulgates it pursuant to proper notice-and-comment rulemaking procedures'.

Stanley Gillard

Stanley Gillard represented the UK Institute of Hospital Engineering on IFHE Council from 1970 to 1974 and was chairman of the Committee responsible for organising the 2nd Congress in London. His many international friends will be sorry to know that he died suddenly in May aged 74.

New D Members – Cundall, Johnston & Partners, Consulting Engineers

Cundall Johnston & Partners was established in 1976 to provide consultancy in structural, mechanical, electrical and civil engineering, primarily to the building industry. The practice can provide advice in all project stages, from feasibility through design, billing engineering quantities, site supervision, to completion and settlement of final accounts.

Where work in more than one discipline is entrusted to the practice, responsibility is accepted for engineering design co-ordination. In projects of a primarily engineering nature, the practice can act as design team leader, appointing and co-ordinating the work of other specialists.

A project partner is responsible for every commission. The partner is supported by a team of engineers and other technical staff appropriate to requirements. For multi-disciplinary projects, a partner from each discipline assumes responsibility for the execution of work in that

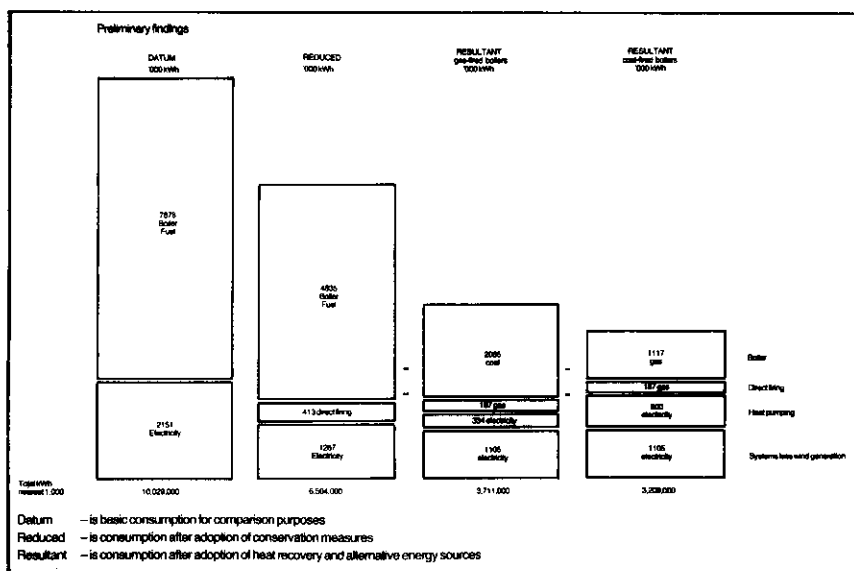
discipline under the direction of the project partner.

The practice has offices in London, Edinburgh and Newcastle upon Tyne. It has its own computing facilities as well as terminal access to major computer bureaux. Facsimile transmission and word processing are available in London and Newcastle upon Tyne.

In 1983 the practice received the CONSTRADO Structural Steel Design Award and a Financial Times commendation for the Civic Centre at Chester le Street.

A wide range of hospital work has been undertaken in all disciplines ranging from upgrading of departments or services to complete new buildings.

Innovative work undertaken includes a Low Energy Study on behalf of the Department of Health and Social Security for a 300-bed district general hospital. Proposals



Study for low energy hospital in the north of England

made in the study are for energy saving of over 60% by a combination of methods comprising conservation, use of alternative energy sources and

energy recovery.

Development work in hand includes standard designs for ultra-clean operating theatres.

WIMS – up and running down under

N P PIERCE BSc(Eng) FIHospE

In the three years since it became available, many branches of the NHS have installed WIMS – Works Information Management System – indeed very few hospital engineers could be unaware of its existence and the success that it has achieved.

Whilst WIMS was written and prepared for use in the NHS, other government departments soon recognised its suitability for their particular purposes. In addition, since it became available commercially, WIMS has been used in a cross-section of manufacturing, property-owning and service industries. Systems have been implemented for use in many different environments, including chemical and cable manufacture, breweries, airfields etc. Hospitals already implementing WIMS have been highly co-operative in permitting demonstrations for intending commercial users.

A significant factor when WIMS is used outside the NHS (for which royalties are payable) is that the

DHSS can have free access to, and free use of, any modifications or improvements carried out by a commercial user. This means that the basic WIMS will have user-expertise-input from the largest number and widest range of installations available.

Since being made available to non NHS users, the spread of information concerning WIMS has provided a flood of enquiries to the licensees from overseas, but particularly from Australia.

As a result, Peter Pierce of Pierce Management Services, together with the author of WIMS, Dr Malcolm Green of the DHSS, visited Australia in November 1983, carrying out a series of seminars and presentations to federal, state and commercial organisations in Canberra, Sydney and Melbourne. In addition, as a result of a long-standing government to government co-operation, an invitation had been given to the DHSS to enable presentations to be

SOMMAIRE FRANÇAIS

Le Système de Gestion Automatisée de l'Information en Ateliers mis en oeuvre en Australie.

Le Système de Gestion Automatisée de l'Information en Ateliers du National Health Service fonctionne au Royaume-Uni depuis environ 3 ans. Suite à sa mise en oeuvre au sein du N.H.S., il a été proposé aux utilisateurs commerciaux en dehors de cette administration et a reçu un très bon accueil. Ceci a donné lieu à de nombreuses innovations et améliorations sur le plan commercial par rapport au système introduit dans l'intérêt des utilisateurs au sein du N.H.S.

La pénétration des marchés étrangers publics et commerciaux ne cesse de croître, ce qui est d'autant plus bénéfique au N.H.S.

Cet exposé insiste tout particulièrement sur les dernières réussites propres à l'Australie.



Peter Pierce (R) handing over the WIMS operating manual to Syd Wookey of the Australian Department of Housing and Construction who have now installed four systems.

made to the Hong Kong Government. A stop-over was arranged on the journey for this to be fulfilled.

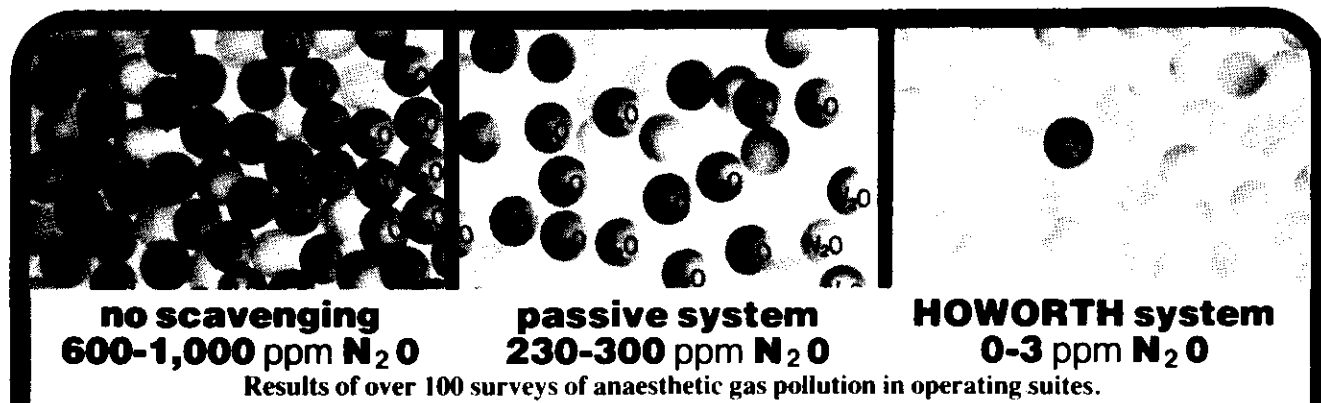
To provide support services and back-up to match that provided in the UK, the Sydney-based consultancy of Kilpatrick Green Pty Ltd was appointed as the services agent in Australia.

As a direct result of this venture, the first sales were made and a return trip to Australia was made in March 1984. During this tour, the first implementation was made for the Department of Housing and Construction in Canberra and, pre-implementation consultancy was provided to several of the prospective

users. A paper was presented at the 1st Australian 'Computers in Maintenance' Conferences and Exhibitions held in Melbourne (World Trade Centre) and Sydney (Menzies Hotel). The conferences attracted some 500 Australian maintenance managers who showed great interest in WIMS. Further sales have been made to state health authorities, hospitals, private companies and government departments.

A further joint visit to Australia is planned to coincide with the 8th Congress of the Federation of Hospital Engineers in Melbourne, where Dr Malcolm Green will present a paper and Peter Pierce will attend as a delegate. Kilpatrick Green will demonstrate WIMS at the concurrent exhibition.

The position of WIMS as a world leader in its field is being strengthened almost daily and plans are under way to satisfy the market interest in North America and parts of Africa.



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The Austin Hospital, Heidelberg, Victoria, will be hosting a visit from delegates of the 8th Congress to inspect features of interest such as a laminar flow installation. A paper on this subject will be presented at the Congress.

The Austin Hospital, today

W GEERLINGS CEng MIMarE MIHE Aust (Sen) BHA

The Harold Stokes Block, as Stage 2 is officially called, is the second part of a major building programme which began almost twenty years ago.

The ten storey Stage 1 Clinical Sciences Building, which opened in 1971, marked the change of the Austin from an institution distinguished in the care and treatment of chronic diseases to a community and teaching hospital through its affiliation with The University of Melbourne. Stage 2 is another landmark for the Austin.

The Harold Stokes Block, named as a tribute to former hospital President, Sir Harold Stokes, marks a century of growth and compassion for the Austin Hospital and has been one of the most exciting phases in the expansion of the hospital. It provides administrative and diagnostic services for a major portion of the hospital. The focus of patient care has moved from the many old hospital buildings to consolidation within the modern Harold Stokes Block and nearby 'A' Block, 3KZ Block and Heidelberg House.

Situated nine miles north east of Melbourne in Heidelberg, the Austin is a major hospital for the north east metropolitan region of Melbourne, and in the spinal, renal and several other specialities provides a service for Victoria, and other parts of Australia. Its catchment population exceeds 500,000 people.

Along with the construction of the 10 level Harold Stokes Block, an adjacent 506 vehicle capacity multi-storey carpark in Burgundy Street was built.

Every attempt has been made to provide a non-institutional atmosphere at the Austin, and the use of colour co-ordination in offices and ward areas assists in this aim.

The Austin is proud of the outstanding facilities provided in the new Harold Stokes Block: areas such



Stage 2, level 3, waiting area and pharmacy

as nuclear medicine, coronary care, surgical intensive care and spinal intensive care. All sixteen intensive care rooms are provided with individual laminar flow ventilation to minimise cross infection and at the same time optimise access to and visual contact with the patients. A suite of ten operating theatres has been included on level 2 of the building, with two having sophisticated laminar flow ventilation. The Harold Stokes Block houses modern medical and surgical wards, and commissioned beds to date in the new building number 210.

With the completion of the Harold Stokes Block, the Austin building programme can now move onto consolidation of facilities. Renovation and upgrading is planned for the 3KZ and 'A' Blocks, to provide modern amenities and services, as now exist in the Harold Stokes Block.

In 101 years the Austin Hospital has grown from 66 beds in 1882 to 466 beds in 1983. The growth of the Austin in terms of beds, outpatient facilities, diagnostic and treatment departments, together with the advanced technology and systems which will be used, particularly in the Harold Stokes Block has put the Austin in the forefront of Australian hospitals.

Construction management

In 1976, the Premier of Victoria, the Hon Sir Rupert Hamer, ED MP, gave permission to commence construction

SOMMAIRE FRANÇAIS

Le Austin Hospital

Le Austin hospital est un hôpital général disposant de 446 lits et situé à 14 km au nord-est de Melbourne en Australie. Cet article décrit la méthode de recours aux entreprises pour le gestion de la construction du nouveau Bloc Harold Stokes. Le recours à une telle méthode a permis d'économiser plus de 2,5 millions de dollars australiens. Il a fallu sept années pour qu ce bloc de neuf étages et de 33.445 mètres carrés voit le jour, du concept de départ à la signature du contrat, ce à quoi sont venues s'ajouter les six années nécessaires à sa construction. Cet article passe ensuite en revue les principaux services techniques. Les délégués qui assisteront au 8ème Congrès International de Melbourne du 18 au 24 Novembre 1984 pourront visiter le Austin Hospital.

of the Stage 2 building.

The hospital appointed Costain Australia Limited, as Construction Managers for the project, a unique arrangement which had never been used before on such a major hospital project in Australia.

The process of 'construction management' which had been used successfully overseas involved a major building contractor with years of experience, entering into a contract with the hospital to provide a professional service for a fee. In this case, Costain Australia Ltd., was bound professionally to apply the proper combination of management activities to the project to achieve time, cost and quality control. As the hospital's agent, Costain entered into direct contract with individual contractors to carry out portions of the work and was responsible for co-ordinating all such contracts. Direct contracts were awarded as a result of public tender and selection by Austin and their consultant team.

The project was managed through a project control team comprising senior hospital staff, Costain Australia Ltd., the architects Yuncken Freeman Pty. Ltd., other professional consultants and representatives of the Health Commission of Victoria.

The aim in setting up the Stage 2 project in this way, was to have the best possible combination of flexibility, cost control, time performance and quality control. In all, more than \$2.5 million was saved by the Harold Stokes Block being built in this way.

Planning and commissioning

Although Stage 2 of the building programme had been in the planning for some time, it was in 1971 that a special planning team – the Project Team – came into being with Mr M J Pavone as its leader. Other members of the original team were the General Manager, the Medical Superintendent and the Director of Nursing. The team had the assistance of a large number of people from the hospital and Melbourne University who made up the Planning Committee and many specialist sub-committees.

Subsequent to Mr Pavone's resignation, a Buildings Development



Stage 2, level 6, laboratory, western side

Department was incorporated into the hospital organisation and Mr A J L Macdonald was appointed manager, and this department in 1974 became responsible for the Stage 2 planning. Mr Macdonald left the hospital in 1978 and Mr F C Armstrong was appointed Buildings Development Manager. He retired in 1981 and Mr W Geerlings has occupied the position since that time.

In 1979, a Commissioning Committee was formed for the formidable task of commissioning the building. The work of this committee was considerably facilitated in the latter stages of the project by the establishment of a 'Joint Steering Committee' comprising senior representatives of the Austin and the Hospitals' Division of the Health Commission of Victoria.

Timetable of major events

Narrative agreed with Commission	—1969
Sketch planning commenced	—1971
Approval to proceed to working drawings	—Feb. 1973
Calling of tenders	—1973
Completion of working drawings	—April 1974
Signing of contracts	—March 1976
First concrete poured	—May 1976
Completion of concrete structure	—1979
Partial practical completion	—Jan. 1982

1. Structure

The Harold Stokes Block is a nine storey structure with the top floor left in shell. The building has a gross floor area of 33,445 square metres. Each of the lower three floors has a floor area of 4,407 square metres, each of the next three floors rising in a tower structure from a podium are 3,735 square metres and the upper three ward floors are 2,787 square metres each.

The Harold Stokes Block forms an extension of the base structure and podium of the Lance Townsend Building (Melbourne University), Stage 1 of the hospital's building programme.

The structure and services are designed to enable a future addition of six floors.

2. Statistics

Structure	—Reinforced concrete
Floors	—Concrete
Window frames	—Anodised aluminium
Height above ground at level 4 entry	—30.5 metres
Height below ground at level 4 entry	—12.2 metres
Weight	—36,378 tonnes
No. of rooms	—973
No. of doors	—2332
Total floor area	—33,445 square metres
Floor area ward floor	—2,787 square metres
Airconditioning	—850 TR (3,000 kW)
No. of lifts	—5
Concrete	—11,716 cu. metres (2,930 truckloads)
Ventilation	—225,000 litres per second
No. of sprinklers & fire protection	—5,000
No. of light fittings	—7,000
Construction time	—312 weeks
Cost of furniture & equipment	—\$2.7 million

Engineering services – key technical details

1. Mechanical Services

(a) Steam generation

Supplied from existing hospital boilerhouse, comprising:

Four Trevor A type water tube boilers generating 4550 Kg steam per hour each. Gas fired with oil standby.

One General Energy (Gibson Wells) straight water tube modular steam boiler with economiser. Gas fired with provision for oil standby. Installed to accommodate new building load.

(b) Air conditioning/ventilation systems

All air systems

(i) Level 2 general purpose operating theatres

High velocity 100% fresh air zone systems. Two theatres per air handling unit. Final air filtration is achieved through HEPA 1 micron air filters. Vertical air flow at 65-70 F.P.M. achieves approximately 400 air changes per hour over the operating table.

(ii) Level 2 special operating theatres

High velocity ducted zone reheat systems. Laminar flow ventilation is provided over the entire theatre ceiling. Each theatre is served by its own air handling unit. Pressurisation is maintained by provision of approximately 1,500 l/sec. excess supply air. 30 air changes per hour are supplied to each theatre (12,600 l/sec.). Air is supplied to a filter plenum covering the entire ceiling. Air velocity .7 to .9 m/s (25mm below filters) and .1 to .45 lm above the floor.

Roughing filters are fitted under the perimeter floor return air grilles, removable after raising the grille in sections. 'Meracell' preceded by a lint screen.

Prefilters. First bank of prefilters is situated in the air handling unit upstream of the cooling coil. This comprises flat dry media panel filters with an efficiency of 80% against No. 2 test dust.

Second bank of prefilters is situated downstream of the fan in the air handling unit, of the 'Pyrocube' type, with efficiencies of 98% and 90% to BS 2831 test dust Nos. 2 and 3 respectively.

Final filters consist of 2in thick resinated wool media backed either side by a protective layer of tontine (H.E.) media, similar to 'MEPA 95', supplied by Rainbow Filters Pty. Ltd. Weight of filter media 125 g/ft² plus or minus 5g. Efficiency is not less than 95% against BS 2831 test dust No. 1.

The media is held in a re-usable steel frame, the nominal size of which has been selected to be 23in x 23in to also match the level 5 laminar flow ceiling layouts.

(iii) Levels 1 and 2 general

Low velocity 100% fresh air zone system.

(iv) Levels 5 to 8 – zone reheat system. Specialised departments on levels 5 and 6 – 100% fresh air.

Smoke removal system ensures safe evacuation of patients.

Cooling by reticulated chilled water at 6.7°C.

Heating by reticulated heating hot water at 9.3°C.

Isolating rooms – separate air handling systems with positive/negative pressure controls.

(c) Central chilled water plant

Two Trane steam generated, absorption cold generators (chillers).

■ No. 1 – 600 tonnes refrigeration capacity.

■ No. 2 – 200 tonnes refrigeration capacity.

Two identical cooling towers located on level 10 are common to both chillers.

Stainless steel condenser water piping.

(d) Water supply systems

Cold water piped under mains pressure to twin 7,000 gal. storage tanks in the sub-basement, then pumped to two 3,000 gal. storage tanks on level 10.

Two 3,000 gal. flushometer water storage tanks located on level 9.

Two steam heated instantaneous heating hot water calorifiers.

Domestic hot water supplied via 2,000 gal. roof storage tank and steam heated calorifiers with a storage capacity of 2,000 gal.

(e) Medical gases

Medical air is supplied via two Broomwade compressors of the vertical reciprocating carbon ring type, with a capacity of 100 c.f.m. at 100 psi. Filtration is achieved via mist separators and cartridge type filters with filtration efficiency of min. 99.999% with 0.3 micron particles.

Vacuum pumps – two Broomwade suction units each 471 sec. piped to hospital reticulated vacuum system.

Oxygen is supplied from existing 15000 litre bulk oxygen tank on hospital grounds.

Reticulated throughout building –

natural gas, nitrous oxide, nitrogen, hydrogen and propane.

2. Fire protection systems

(a) Sprinkler systems

Building is fully sprinklered throughout occupied spaces and false ceilings.

A dry pipe sprinkler system is provided in the P.A.B.X. equipment room, telephone switch room, electrical switch room and lift machine room.

3. Electrical installation

(a) HV Supply and substation

Outgoing substation supply of 5000 KVA capacity.

Harold Stokes Block electricity supply is from the Lance Townsend substation.

Lance Townsend substation has two additional transformers each of 1500 KVA to maintain load.

(b) LV Main power supply and distribution

Main switchboard takes two independent supplies from substation.

Standby generator (in boilerhouse) will supply continuous alternator output of 600 KVA to essential services in a 'black out' situation.

An uninterruptable power supply system, via batteries, is installed for surgical lights with a capacity of 20 kW for 30 minutes.

There are three separate power distribution systems to distribution boards throughout the building.

(i) General light and power.

(ii) Essential light and power (automatically supplied from the standby generator).

(iii) Emergency light and power (supplied automatically from a battery inverter system).

(c) Lighting

Generally fluorescent throughout with incandescent feature lighting.

Typical light fitting is an open diffuser 2 x 40 watt low brightness combination light/air fitting with aluminium reflector.

Ward lighting is by a multi function



The new staff dining room, one of the most sophisticated in Australian hospitals

overbed unit housing general illumination light, reading light, examination light, general purpose power outlets, nurse call system.

(d) Nurse call system

Gladstone system throughout.

Combination of visual and audio visual system.

(e) Television systems

MATV wiring distribution to patient bed wards.

(f) Communication systems

Systems include general paging, individual paging (beepers), fire and emergency warning and communication system, intercom systems.

4. Waste disposal

Garbage and linen chutes.

Incinerator, capacity of 1250 lbs. of general hospital waste per hour. Capable of destroying waste up to 85% wet, full capacity burning is achieved with 50% wet

Lift specification:

Lift	Load	Speed	Dimension
A	3900 lb	500 f.p.m.	5'4" x 8'9"
B	4600 lb	500 f.p.m.	5'4" x 8'3"
D	5500 lb	500 f.p.m.	5'3" x 9'5"
E	4600 lb	500 f.p.m.	5'4" x 8'3"
F	4000 lb	500 f.p.m.	5'5" x 7'3"
G	7750 lb	500 f.p.m.	8'6" x 8'
J	3300 lb	500 f.p.m.	4'2" x 8'

waste. Also capable of destroying pathological wastes.

5. Vertical transportation

Provision for a total of ten lifts in the central cone.

6. Vertical system

PABX system is a cross bar type 900 extensions.

Exchange lines: Incoming 40 lines
Indialling 11 lines
Outgoing 39 lines

7. Building automation system

Engineering Services Automatic supervisory system is proposed to provide remote monitoring and control of engineering services plant, equipment and systems installed for the Harold Stokes Block. The system will include a central processor, an operator's terminal and a high speed printer. The installation will achieve plant control, operation monitoring and fault detection, with all information collected to one controller position.

The author is an electrical engineer in the Health Section of the Department of Public Works, NSW, Australia. Previously he was the Deputy Group Engineer for the Hillingdon Group of Hospitals in the North West Metropolitan Region.

Electrical safety in operating rooms – an Australian approach

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Introduction

Electrical safety is considered in two aspects, the protection of the patient, and the protection of the staff. The two are quite different as will be explained later. The former is distinguished by the terminology of microshock, the latter by macroshock.

The protection from macroshock follows modern standard practice; protection from microshock is another matter, and the methods used are understood to be different throughout the world.

This paper sets out to present the Australian approach to the microshock hazard.

SOMMAIRE FRANÇAIS

La sécurité en matière d'électricité dans les blocs opératoires – l'approche australienne

En ce qui concerne l'installation électrique, la sécurité peut être envisagée sous deux aspects, la protection du patient d'une part et celle du personnel d'autre part car il s'agit bien là de deux choses tout à fait différentes. La première se définit en termes de microchoc, la dernière en termes de macrochoc. La protection

contre le macrochoc se situe dans la lignée de la pratique moderne standard tandis que la protection contre le macrochoc et les méthodes auxquelles elle a recours varient d'un pays à l'autre. Cette étude examine l'approche australienne en ce qui concerne les risques présentés par le microchoc.

Brief history

Research on the physiology of the heart muscle in respect of ventricular fibrillation has been active for over two decades; the Australian impetus came from a papers by Dr Loughman and Mr Watson¹⁺² which set the guidelines for an Australian Standards Association Standard³. The work by Loughman and Watson was carried out at the Prince Henry Hospital in Sydney, Australia, and involved the accurate measurements and statistical analysis of fibrillation currents in patients. From this data it was possible to deduce the most critical electrical paramaters of the heart, viz, that a safe level of fibrillation current is 100 microamps, and that the impedance of the heart is 1000 ohms. This formed the basis of the Australian Standard.

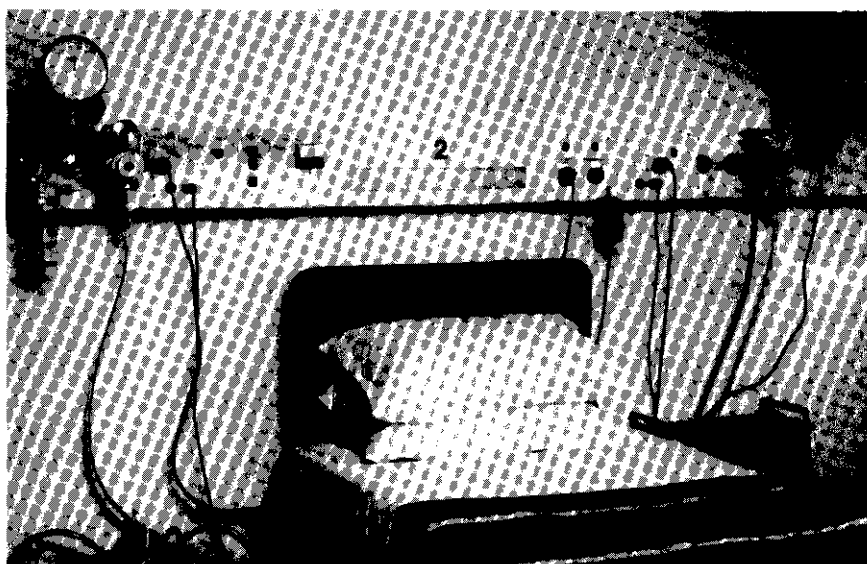
Microshock defined

Firstly for the heart muscle to function as a pump, the cardiac

muscle fibres must polarize and depolarize uniformly; this is normally controlled by the Sino Atrial Node, which initiates the depolarization wave causing contraction of the myocardium. For a more detailed account, see the paper by Loughman and Watson (1971). If a heart rate is 60 beats per minute, the cycle time in engineering terms is 1000 milliseconds. There is a short period of about 40 milliseconds during this cycle in which a 50 HZ current in excess of 100 microamps from an external source will cause individual fibres to contract in a random manner. This is termed ventricular fibrillation, and the whole heart just quivers and ceases to act as a pump.

(Incidentally, this makes the operation of a defibrillator more obvious as in this case a DC pulse of sufficient magnitude is applied indirectly to the heart to force all the fibres to contract at the same time and be able to accept the next pulse from the Sino Atrial Node). Secondly, the fibrillation current must reach the heart. The normal protection is the outer skin, which has an impedance depending on various physiological factors, but often up to 1 megohm. Then there is the impedance of the body tissue, which is lower. A current flowing between two points of the outer skin is unlikely to result in a current flowing through the heart, unless the current is much higher than is likely in an operating room; this may well be the case in industrial accidents or accidents to electrical staff working on live switchboards.⁴

However, for the conditions in an operating room, the parallel paths through the body tissue form a shunt which minimizes the current, passing through the heart. The only way the current can reach the heart directly is when the heart is exposed as in open heart surgery, or by some invasive procedure in which a catheter carrying a conductive substance is passed through the veins/arteries directly into the heart. Another example is where an electronic pacemaker is installed; the replacement of batteries affords a chance of current reaching the heart directly. Microshock therefore is the term adapted to indicate that a 50 HZ current exceeding 100 microamps can



Example of a class A installation. Note the line isolation monitor

be passed directly to the heart by some surgical procedure for a period of more than 40 milliseconds.

Sources of current

There are various ways in which a current as minute as 100 microamps can be picked up in an operating room. The most obvious is from faulty electro medical equipment, although over the years, this risk has diminished as older equipment is being phased out. Then there is other installed equipment such as the Surgical Luminaire (Operating light) which a member of the operating team has to touch to adjust. Another source is from earth currents in the building structure due to external occurrences.

To illustrate this source, consider a 'bolt on' fault to earth on a switchboard some way up a multistorey building which is close to the operating suite. If the fault level is say 20KA, and the breaker takes 5 cycles to clear the fault, the fault current will be diversified through the building structure for 100 milliseconds. The building structure may quite easily include the RSJ which supports the surgical Luminaire, or the copper piping of the medical gas and suction lines.

The solution – Australian style

This part of the story starts with persuading our medical colleagues to make certain decisions, ie which

procedures expose the patient to the risk of microshock and which do not. The Australian Standard defines the procedures as follows:

Class A procedure – a procedure whereby an electrical conductor is placed within the heart of a patient or is likely to come into contact with the heart, such conductor being accessible outside the patient's body. In this context, an electrical conductor includes insulated wires such as cardiac pacing electrodes and intracardiac ECG electrodes, or insulated tubes filled with conducting fluids.

Class B procedure – a procedure whereby a patient is connected to an item of electromedical equipment in such a manner that the impedance of the skin is reduced by electrode paste or by the entrance of conducting fluids, metal needles; saline-filled catheters, etc, but where direct contact with the heart is not possible, eg in extrathoracic procedures.

It necessarily follows that all surgical procedures must include at least class B procedures, but only some operations would be class A procedures.

The corollary to this is the concept of designating areas in which these procedures, are carried out as 'class A' areas and 'class B' areas respectively. At this point it should be observed that these class A and class B areas are not only applied to operating rooms, but any patient treatment area where there is a microshock risk.

Intensive care, coronary care, recovery etc., are examples of such areas.

The protection required for these areas is again divided into two groups:

- a) the limitation of current by time or magnitude
- b) the equilization of potentials within a designated area.

The latter will be described first as it is fundamental to microshock protection.

Equipotential patient reference earthing (EPRE)

To start with, a current of 100 microamps is too small to reliably operate commercial quality electrical apparatus. Apart from this, the leakage current which the circuit wiring will pass would exceed this value, and extraneous currents induced from stray fields would also be a nuisance.

Remembering that the impedance of the heart is taken as 1000 ohms, then the maximum potential which can exist across the heart for a current of 100 microamps is 100 millivolts. This leads to the solution that if the whole area is bonded together so that come what may, there can never be a potential difference between one point and another exceeding 100 millivolts. Then theoretically there can never be a current through the heart exceeding 100 microamps. However, to achieve this object, there are several points to be determined, for instances, what is the area, where is the reference point, what resistance is required. The first question is answered by Figure 1:

The second question, the reference point, is answered by a nominated point described as the 'Equipotential

Junction (EPJ)'. This may be a separate wall box with an earthing terminal marked EPJ. Alternatively, one of the earthing terminals on a multipurpose panel may be designated the EPJ.

The next question, as to what resistance is required, requires further assumptions in regard of fault current. There are two circumstances:

- a) where a final sub-circuit is protected by some earth leakage device in addition to the normal thermal/magnetic protection.
- b) where the circuit is only protected by normal thermal/magnetic protection.

In the case of a) the assumed maximum leakage current is taken as 1.0 amps. This recognises that an earth leakage device or isolation transformers will limit the current in the earthing system. Thus the maximum resistance from the earthed metal of any equipment connected to such a circuit must not exceed 0.1 ohms.

In the case of b) the assumed maximum current is taken as 10 amps. The electrical reticulation external to the class A area is not subject to limitation by earth leakage devices; in addition other reticulated services such as gas, water, suction which are likely to be present within the class A area may provide the earth path. Thus the maximum resistance to any exposed metal connected to any such service requires to have a maximum value of 0.01 ohms.

It is important to realise that this earthing is only an extension of the Australian Standards Association's Wiring Rules, and that the resistance of the earth between the EPJ and the neutral link in the distribution board

is not particularly important. It is only necessary to meet the minimum earth conductor requirements.

Limitation of current by time or magnitude

The limitation of current by time is relevant to the first part of this article (microshock defined) in which it was stated that the vulnerable time lasts for about 40 milliseconds in a cycle time of say 1000 milliseconds. It is required that an earth leakage device should operate within a specified time - 60 milliseconds at present, although many devices are now operating within 20-milliseconds. (The sensitivity is 10 mA and 5mA min.). Hence there is an acceptable level of safety based on the probability of an earth leakage current lasting 20-60 milliseconds occurring within the 1000 milliseconds cycle at the precise moment of the 40 millisecond vulnerable period. Remember that in any case that the Equipotential Patient Reference Earthing (EPRE) system will also prevent the effect of the leakage current from causing a fibrillating current.

The limitation of current by magnitude uses an isolating transformer and monitor. The transformer is made to a high standard such that the leakage is only 50 microamps. The monitor, termed a line isolation monitor, samples the impedance of each leg of the isolated supply. The monitor itself has a leakage of 50 microamps. When a leakage from equipment occurs and earths one leg of the transformer, an alarm is raised. The alarm level is adjustable, usually 5 milliamps, and a mute switch and indicator lamp is provided. The principal difference between these two methods is that the earth leakage devices provides a positive disconnection of a faulty appliance and prevents further use, whilst the isolation transformer only provides indication that a fault has occurred and leaves the remedial action in the hands of the surgeon or medical staff.

Practical application

An operating room engaged in openheart surgery would undoubtedly be a 'class A' area complete with an EPRE system for microshock

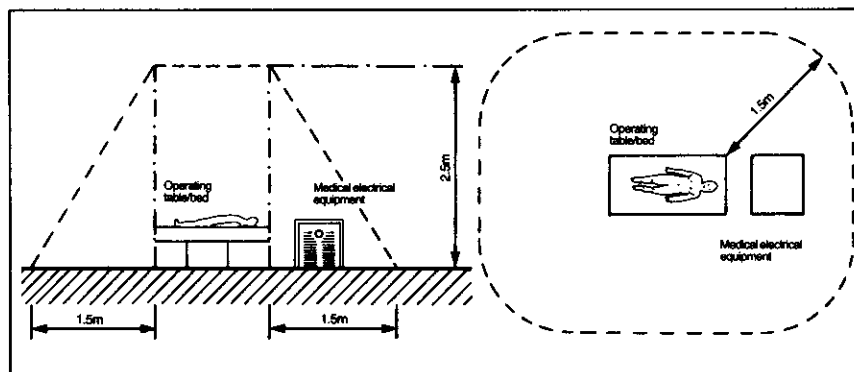


Figure 1. Patient equipotential area (EPAREA)

protection. Earthing leads of stranded green/yellow earthwire should be connected from the earthing studs on the wall panel to the various portable items of equipment. Protection may be either by earth leakage devices or isolation transformers. Isolation transformers would be employed on circuits supplying items such as cardiac Pulmonary By-Pass pumps due to the difficulty of manually operating these items.

An intensive care ward or coronary care ward would be a 'class A' area.

Operating rooms in which general surgery is carried out only require to be 'class B' areas. This does not give microshock protection as it is not required and avoids the costs associated with the EPRE installation; temporary upgrading can be achieved by using a portable unit comprising a IKVA transformer with live isolation monitor and EP Junction for emergency use.

Some difficulties have arisen where cleaning staff have used protected

socket outlets for vacuum cleaners and cause tripping. It is advisable to provide 'cleaners' outlets' away from the classified areas.

Microshock protection

There is not much to say about microshock protection as it is automatically provided in both the 'class A' and 'class B' areas.

Conclusion

This is the 'State of the Art' for electrical safety in operating rooms and similar areas in Australia at the present time. When the Australian Standard was introduced there was a tendency for any installation that resembled an operating room to be fully equipped with 'class A' facilities. Fortunately, as medical and engineering personnel have become more confident in interpreting the standard, only the larger complexes are likely to be fully equipped to 'class A'. If any Country is in the process of

producing a standard on this subject, a word of warning would not be amiss – avoid a ranking in the terminology, or better still, deliberately arrange it in reverse order.

The psychological effect of saying that 'class A' is better than 'class B' is that sometimes hospitals will require a 'class A' operating room for reasons other than purely medical.

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The author is a director of Health Building Consultants Pty. Ltd, a consortium firm established to provide planning and architectural services to the South Eastern Medical Complex. Mr Bartlett has directed the briefing, planning and functional design of the SEMC.

Queen Victoria Medical Centre – South Eastern Medical Complex – part 2

JAMES BARTLETT B Arch (Melbourne)

This is the second part of an article on the Queen Victoria Medical Centre. The author discusses in detail how the planning of the centre serves both staff and patients. Visitors to the IFHE Congress in Melbourne in November will be able to visit this hospital. (Part 1 of this article was featured in the June 1984 issue of the journal).

Level 1

The gentle slope across the site to the south permits a natural access route for trucks to the service and support departments which are located at Level 1.

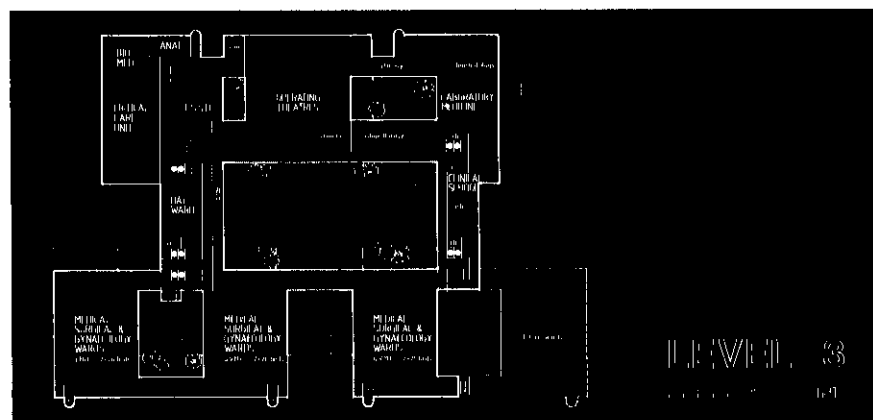
As most accommodation is below ground level, every effort has been made to avoid problems associated with deep planning and the lack of

contact with the external environment by the provision of a number of courtyards which penetrate working departments.

The primary circulation route connecting the four lift nodes provides this floor with a major traffic route for the horizontal distribution and collection of goods. All support departments plug into this circulation route and, as indicated on the plan,

supplies, linen and food are received at the loading dock, processed through each department, and issued via the primary circulation route to lifts for vertical distribution.

Staff arriving at the hospital may travel from the car parking zones, change in local locker areas or have a quick snack at the cafeteria en-route to their working department. The dining area overlooks the gardens in



bring light and air into these deeply planned areas.

All lifts in the hospital are sized to accommodate mobile beds and escorts, however the pattern of use is expected to be that visitors and goods will use the southern lift banks while inpatients will traverse to the north lifts for vertical movement.

Except in limited cases, the different traffic flows are separated by level and lift bank, coming together only at departmental entrances where single point control is required.

Level 3

This floor can be a hive of activity as it holds the majority of acute patients within the hospital.

To minimize this activity great attention has been paid to the simplification of staff and patient flow patterns and to the establishment of relevant departmental relationships.

A patient who requires immediate acute care need not be moved off this floor as all therapeutic and diagnostic services can be made available on Level 3. The need to wait upon lift movement is eliminated and the control of patient and supply movement over the entire floor becomes an achievable target.

The eight operating theatres will provide services not only to inpatients but also to outpatients who will be nursed in a Day Ward adjacent the Theatre complex with access from the public lift node.

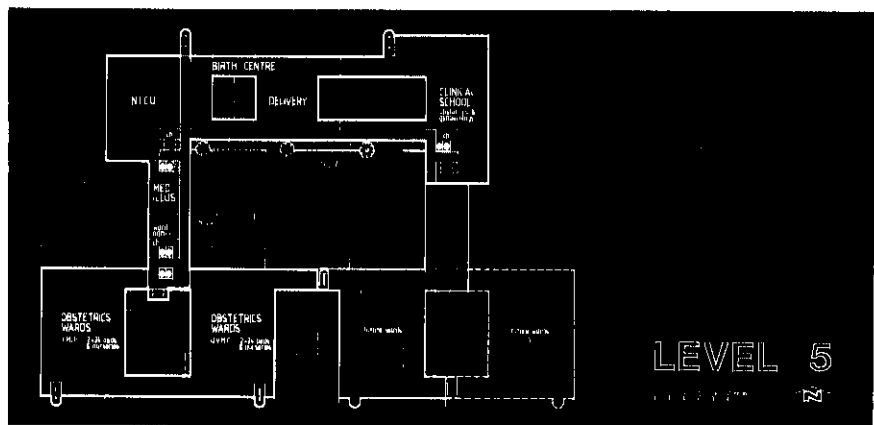
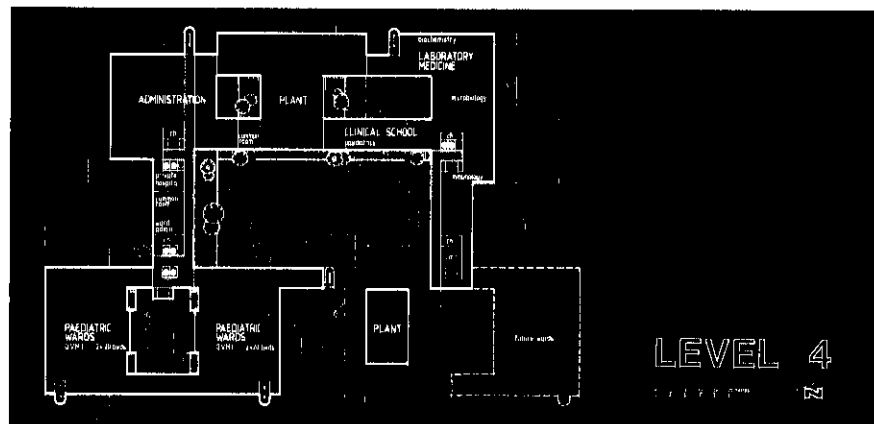
The Critical Care Unit provides an immediate back up to care for surgical patients too ill to be nursed within the general ward. It will also provide beds for medical patients in the Coronary Care Unit.

The busy Central Sterile Supply Department is placed adjacent the theatres and so avoids the need to establish a separate Theatre Sterile Supply Unit. This department services the total hospital.

Laboratories near the operating theatres will provide the support services required during invitro fertilization procedures and for general pathology investigations.

Level 4

Level 4 acts as a buffer between the two most active inpatient floors in the



hospital and is therefore an appropriate area to place administration departments which are most frequently visited by hospital staff. Apart from General Administration departments for both the public and the private hospitals, the area will hold Nursing and Medical Administration and the staff related departments of Personnel and Pay Office.

Staff Common Rooms are also provided at this level so that staff who are 'on call' may relax in an area which is not too remote from their working departments.

The Paediatric wards will hold children requiring both medical and surgical attention and will provide rehabilitation facilities for chronically disabled children. Several play areas, both internal and external, have been located so that they may be overlooked from the staff based within each ward. Parent care units within the single bed wards are a feature of the ward design, with permanent overnight accommodation for 34 parents spread among the 80 paediatric beds.

The area sandwiched between the

Operating Theatres at Level 3 and the Delivery Suite at Level 5, becomes an interstitial plant area servicing directly the departments above and below. This interstitial floor will result in a major cost saving as the special floor-to-floor heights required for operating theatres need not be imposed upon the remainder of Level 3.

At Levels 1 and 2, floor to floor heights are 4.2m, reflecting a general horizontal servicing principal, with universal layered zones in the ceiling spaces to ensure flexibility of planning and future use. Levels 3 to 5 have 3.9 floor to floor height, except for the operating theatres and plant, which is 4.2 and 3.6. Planning at these upper levels is essentially repetitive - wards above wards in the south, laboratories above laboratories in the north east and the low service intensity administration area at Level 4 sandwiched between critical Care and Neonatal Intensive Care Units at Levels 3 and 5 respectively. Because of this vertical repetition, and the lesser requirement for flexibility in these areas, servicing can have a greater proportion of vertical components and less demands on ceiling space.

Level 5

This floor contains the Obstetric Wards, Delivery Suite and the closely related Monash University departments of Obstetrics and Gynaecology, which are two of the major departments within the Clinical School.

The Clinical School forms an important partnership with the hospital and generates many of the progressive medical programmes which have contributed to the hospital's outstanding international reputation.

Where possible, the interface of teaching facilities with the clinical care of patients has been encouraged.

Teaching facilities have been provided within each clinical area in the hospital and the relative teaching departments have been located to minimize the distance travelled by academic staff and students.

The hospital has been a forerunner in the introduction of new techniques including a Birth Centre which is run in conjunction with the traditional suite of delivery rooms. The Birth Centre provides a service for those who wish to have their babies in an atmosphere more closely related to the home environment, but within the security of a hospital environment.

A special feature of the work

carried out at the hospital is the Neonatal Intensive Care Unit which is one of the few units in Victoria. It will provide accommodation for 48 babies, many of whom will be transferred from other regional hospitals.

As on all floors, the horizontal traverse from wards to support departments, in this case delivery suites, will take approximately 30 seconds, while the staff base in delivery will have the facility to pre-call a lift in the north west bank to speed access to acute facilities on Level 3, a similar facility being available in the Accident and Emergency Department at Level 2.

Cor Sonius, President of the IFHE, ends his term of office in November when he will be succeeded by Robert Cottrill of Australia. He looks back over his presidency and reviews some of the issues that have arisen during this time.

Valedictory

COR SONIUS, IFHE President

It has been a great pleasure to serve as President of IFHE. I have been President for 2½ years which is the longest period since the foundation of the International Federation of Hospital Engineering. The excellent assistance I received from the other officers during this period has made presidency very valuable.

My first action was the appointment of three members to the new Executive Committee in accordance with Article 7 of the Statute. They are:

Marvin Fischer, (deputy - Vinson Oviatt) delegate of the American Society of Hospital Engineering.

Jens Roesgaard of the Foreningen of Sygehus Maskinmestri Danmark and Bilude Oyebolu of the Nigerian Association of Health Engineering.

The first meeting of the Executive Committee was held in Madrid on 16 and 17 October 1982 and hosted by Maria Perez Sheriff. A major item on the agenda was the preparation of the final version of the new Rules and Standing Orders having taken into account all comments and suggestions received from Council members.

A second meeting of the Executive Committee and the 17th Council meeting were held in Copenhagen on

26 and 28 May 1983. The most important items discussed were:

The approval of the printed Statute and after some amendments the final approval of the Standing Orders. The welcome to IFHE Council of the Canadian Hospital Engineering Society; congratulations to Mr. Morawski, former Associate Member for his excellent work in forming this Society so quickly.

The report of Robert Cottrill on his mission to Japan.

Agreement to use a donation made by Mr. Ali U. Al-Zaid of Saudi Arabia to finance means of making IFHE better and more generally known.

The agreement to present Mr. Al-Zaid with a special 'Certificate of Acknowledgement' for special service rendered to the Federation.

The third Executive Committee meeting was held in Lausanne on 6 and 7 May 1984 and hosted by Joseph Flury, this time, unfortunately, without Maria Perez Sheriff who resigned as Vice-Secretary because of personal circumstances. Many thanks to Maria for the work she has done for the Federation and I hope circumstances will change. The major items on the agenda of the third meeting were:

The receipt of an application for membership from the Hospital Engineering Association of Japan.

A revision of the present fee structure for 'A' Members.

The General Secretary's announcement of his intention to resign at the Council meeting in Melbourne.

I thank João Galvão for all he has done for the Federation and for the kind friendship I and all the members of the Federation have received from him.

On 11-13 May 1983 I had the pleasure to represent the Federation at the Annual Conference of the UK Institute of Hospital Engineering in Manchester. It was a very enjoyable experience.

In Bergen (Norway) from 28 June till 1 July 1983 I represented the Federation in the Working Group of the World Health Organisation regarding Hospital Waste Management. This is the first step in technical cooperation between the World Health Organisation and the Federation and I hope not the last.

During my tour of Norway I visited two colleagues in Oslo and Bergen to stimulate the foundation of a national association and they agreed to give it a try.

During my trip of Europe in May and June this year I visited a number of colleagues in Athens, Zagreb and Vienna. I hope this will result in new relations for the Federation in the future.

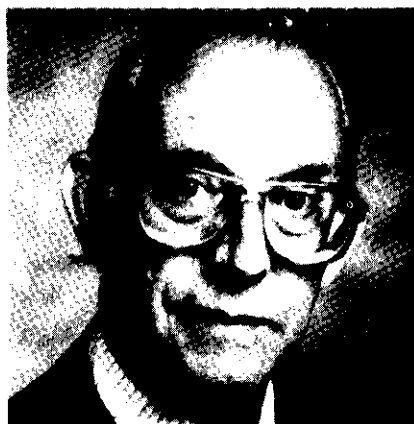
I attended the national conference of the Canadian Hospital Engineering Society in Halifax in July. Canada is one of the countries making a bid for the International Congress of the Federation in 1988 so I went at the invitation of the Minister of Tourism of the province of Alberta to visit the most excellent facilities available in Edmonton.

At the Canadian Hospital Engineering Society conference I spoke of what our Federation has achieved during the past years with very small financial resources. Seven successful international congresses and two seminars on appropriate technology were held and with the publication of 'Hospital Engineering' we have disseminated information all over the world.

Much is achieved but it is necessary to do more. In order to do more we need more manpower and more money. In order to get more manpower and to expand the base of our organisation it is necessary to allow individuals from other professional bodies into membership of the 'A' Member Associations. I know this is a controversial matter in some countries. I believe that both the engineers who work inside hospitals and those who work in private consultants offices on hospital related work are hospital engineers. Also those who manufacture and maintain medical equipment and installations should be regarded as hospital engineers and therefore must have the right to be a member of our organisations.

To broaden IFHE's membership and increase its income we changed the rules last year. We now include two categories. Governmental organisations, health authorities and other organisations, associations or institutions directly concerned with health care field can join as 'C' Members. Professional, commercial or industrial firms interested in the health care field can enter as 'D' Members.

It is with great pleasure that I can



inform you that the first 'D' Member to join the Federation comes from Canada and thanks to the effort of the British Institute of Hospital Engineering many from the UK have since joined. I hope other countries will soon follow.

Together we have to expand the activities of the Federation. One of the most important problems to solve is how we can assist our colleagues working in countries with minimal resources available so that they can provide sufficient support to health care.

In Falfield, England, the Hospital Estate Management & Engineering Centre is well equipped to instruct people. In 1979 and in 1982 the Federation initiated international seminars there.

The students attending these seminars gained very much knowledge but the attendance could have been a lot better. We must find ways to stimulate the authorities in the developing countries to send more hospital engineers to Falfield so that it will be possible to have a seminar each second year.

The support of the International Hospitals Federation and WHO is therefore necessary. We have to investigate the possibilities of supplying these students with the means to pass on their knowledge to others in their countries. In this respect a close cooperation with manufacturers of medical equipment is necessary.

There is a shortage of manpower to fulfill all our wishes. Most of the officers are part-timers who have other duties and obligations which take precedence over the commitment to the International Federation of Hospital Engineering.

The last year of my presidency I was retired as a hospital engineer and I experienced the advantage of having time available for our Federation as well as for the Dutch Association.

I think it is wise to mobilise our retired colleagues for assistance in our organisations and Federation. They are experienced engineers, they have time on their hands and cost less. On the other hand it is a pleasure to keep in touch with the previous work and have the satisfaction of being helpful to the community.

The most important events of our Federation are the International Congresses. Here we exchange knowledge and make friends. In November we have our International Congress in Melbourne and I hope to meet many colleagues. See you 18 November in Melbourne.

EN FRANÇAIS

J'ai rempli les fonctions de Président de la FIHE avec un plaisir profond. J'en ai été Président pendant 2 ans et demi ce qui représente la période la plus longue depuis la fondation de la Fédération Internationale d'Ingénierie Hospitalière. L'aide excellente que j'ai reçue des autres responsables au cours de cette période m'a été très précieuse pour cette présidence.

Ma première intervention a été de nommer trois membres au nouveau Comité Exécutif conformément à l'Article 7 des statuts. Ce sont:

M. Marvin Fischer, (suppléant M. Vinson Oviatt) délégué de l'American Society of Hospital Engineering.

M. Jens Roesgaard de Foreningen af Sygehus Maskinmestere i Danmark et M. Bilude Oyeolu de la Nigerian Association of Health Engineering.

La première réunion du Comité Exécutif a eu lieu à Madrid les 16 et 17 octobre 1982, sous les auspices de Mme Maria Perez Sheriff. Une question importante à l'ordre du jour fut la préparation de la version définitive des nouveaux statuts et règlements après avoir tenu compte de tous les commentaires et suggestions envoyés par les membres du Conseil.

Il y eut une seconde réunion du Comité Exécutif et la 17ème réunion du Conseil à Copenhague, les 26 et 28 mai 1983. Les questions les plus importantes qui ont été discutées furent:

L'approbation des Statuts écrits et après quelques modifications. L'approbation définitive des Règlements. L'accueil de la Canadian Hospital Engineering Society au sein du Conseil de la FIHE; félicitations à M. Morawsky, ancien membre associé, pour avoir, grâce à ses excellents travaux, formé cette société aussi rapidement.

Le rapport de M. Robert Cottrill

concernant sa mission au Japon.

Un accord pour l'emploi d'une donation faite par M. Ali U. Al-Zaid d'Arabie Saoudite, au financement de moyens permettant d'améliorer la FIIH et de la faire mieux connaître.

L'accord pour présenter un 'Certificat de Reconnaissance' spécial à M. Al-Zaid pour le service spécial rendu à la Fédération.

La troisième réunion du Comité Exécutif s'est tenue à Lausanne les 6 et 7 mai 1984 sous les auspices de M. Joseph Flury, cette fois et malheureusement sans la présence de Mme Maria Perez Sheriff qui a démissionné de ses fonctions de Vice-Secrétaire pour des raisons personnelles. Je souhaite remercier vivement Maria pour le travail fourni à la Fédération et j'espère que les circonstances qui l'ont contraintes à démissionner changeront. Les questions importantes qui se trouvaient à l'ordre du jour de cette troisième réunion furent:

La réception d'une demande d'adhésion de l'Hospital Engineering Association of Japan.

Une révision de la structure des cotisations actuelles pour les Membres 'A'.

L'annonce par le Secrétaire Général de son intention de démissionner à la réunion du Conseil à Melbourne.

Je remercie Joao Galvao pour tout ce qu'il a fait pour la Fédération et pour la gentillesse et l'amitié qu'il a données à tous les membres de la Fédération et à moi-même.

J'ai eu le plaisir de représenter la Fédération à la Conférence annuelle du

UK Institute of Hospital Engineering, du 11 au 13 mai 1983, à Manchester. Ce fut une expérience très agréable.

J'ai représenté la Fédération à Bergen (Norvège) du 18 juin au 1er juillet 1983 dans le Groupe d'Etude de l'Organisation Mondiale de la Santé en ce qui concerne la Gestion des Déchets Hospitaliers. C'est le premier pas vers une coopération technique entre l'Organisation Mondiale de la Santé et la Fédération et j'espère que ce ne sera pas le dernier.

Lors de mon voyage en Norvège, j'ai rendu visite à deux collègues à Oslo et Bergen, afin de stimuler la fondation d'une association nationale, ils ont accepté d'essayer.

Lors de mon voyage en Europe, aux mois de mai et juin de cette année j'ai rendu visite à plusieurs collègues à Athènes, Zagreb et Vienne. J'espère que ceci résultera en de nouvelles relations pour la Fédération dans le futur.

J'ai assisté à la conférence nationale de la Canadian Hospital Engineering Society à Halifax, au mois de juillet. Le Canada est l'un des pays qui a placé une enchère sur le Congrès International de la Fédération en 1988, et sur l'invitation du Ministre du Tourisme je suis allé ainsi dans la province d'Alberta visiter les facilités les plus modernes qui sont disponibles à Edmonton.

J'ai cité, lors de la conférence de la Canadian Hospital Engineering Society, les réalisations de notre Fédération au cours des années passées effectuées avec de très faibles ressources financières. Sept

congrès internationaux, couronnés de succès, et deux séminaires portant sur une technologie appropriée ont eu lieu et avec la publication de la revue 'Hospital Engineering' nous avons disséminé l'information dans le monde entier.

Nous avons déjà beaucoup fait, mais il reste nécessaire d'en faire encore plus. Pour en faire plus, il nous faut plus d'argent et plus d'effectifs. Afin d'obtenir plus d'effectifs et pour étendre la base de notre organisation il faut permettre aux personnes d'autres corps professionnels d'adhérer aux Associations de Membres 'A'. Je sais que cette question est l'objet de controverse dans quelques pays. Je pense que les ingénieurs qui travaillent au sein d'hôpitaux et ceux qui travaillent dans des bureaux-conseils privés sur des travaux d'hôpital connexes sont des ingénieurs hospitaliers. Ceux aussi qui fabriquent et entretiennent l'équipement médical et les installations devraient être considérés comme des ingénieurs hospitaliers et donc avoir le droit d'être membre de nos organisations.

Nous avons changé les règlements l'année dernière afin d'élargir le nombre d'adhérents de la FIIH et d'augmenter ses revenus.

Les organisations gouvernementales, les autorités sanitaires et autres organisations sanitaires, les associations ou institutions directement concernées par le domaine des soins médicaux peuvent adhérer comme Membres 'C'. Les sociétés professionnelles, commerciales ou industrielles dont les

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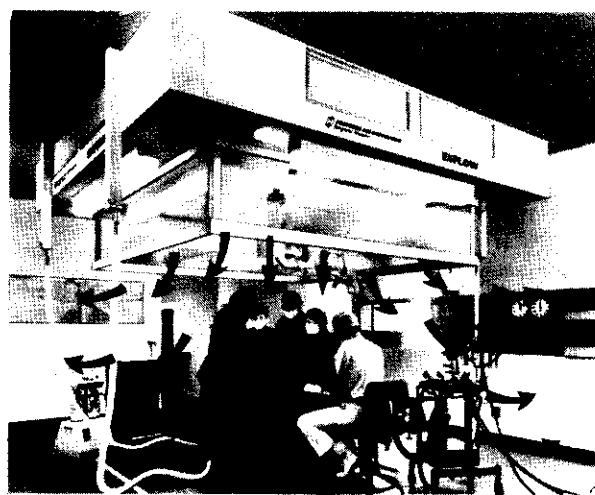
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intérêts portent sur le domaine des soins sanitaires peuvent adhérer en qualité de Membres 'D'.

C'est avec grand plaisir que je peux vous annoncer que le premier Member 'D' qui ait joint la Fédération vient du Canada, et grâce aux efforts du British Institute of Hospital Engineering nombreux sont les membres du Royaume-Uni qui nous ont rejoints depuis. J'espère que d'autres pays suivront bientôt.

Nous devons élargir ensemble les activités de la Fédération. L'un des problèmes les plus importants qu'il nous faut résoudre est de savoir comment nous pouvons assister nos collègues qui travaillent dans des pays où les ressources disponibles sont minimales, afin qu'ils puissent fournir le support suffisant aux soins sanitaires.

L'Hospital Estate Management & Engineering Centre à Falfield, en Angleterre, est bien équipé pour former des individus. La Fédération a initié des séminaires internationaux à Falfield en 1979 et 1982.

Les étudiants qui ont assisté à ces séminaires y ont gagné de très grandes connaissances cependant la participation aurait pu être bien supérieure. Nous devons trouver des moyens de stimuler les autorités des pays en voie de développement pour qu'elles envoient plus d'ingénieurs hospitaliers à Falfield de façon à rendre possible la tenue d'un séminaire une année sur deux.

Le support de l'International Hospitals Federation et de WHO est donc nécessaire. Nous devons rechercher des moyens de fournir les possibilités à ces étudiants de passer leurs connaissances à d'autres ingénieurs dans leur pays. Il est donc nécessaire, à cet égard, de former une proche coopération avec les fabricants d'équipement médical.

Nos effectifs sont insuffisants pour remplir tous nos souhaits. La plupart des responsables fournissent un temps partiel et ont d'autres devoirs et obligations qui ont priorité sur leur engagement envers la Fédération Internationale d'Ingénierie Hospitalière.

J'étais ingénieur hospitalier retraité la dernière année de ma présidence et j'ai pu voir quel était l'avantage d'avoir du temps disponible pour notre Fédération ainsi que pour l'Association Hollandaise.

Je pense qu'il est avisé de mobiliser nos collègues en retraite pour leur demander d'aider nos organisations et la Fédération. Ce sont des ingénieurs expérimentés, ils ont du temps et sont moins coûteux. D'un autre côté, c'est un plaisir que de garder le contact avec le travail effectué précédemment et d'avoir la satisfaction d'être utile à la communauté.

Les manifestations les plus importantes de notre Fédération sont les Congrès Internationaux. Nous y échangeons des connaissances et nous y faisons des amis. Nous aurons notre Congrès International à Melbourne, au mois de novembre et j'espère y rencontrer de nombreux collègues. Au 18 novembre à Melbourne.

Institute News

Jobswitch NHS

KG Goodwin TEng MIHospE MIPlantE, has been appointed Senior Engineer at Edgware Hospital, London. He moves from Napsbury Hospital, St Albans, Herts.

Private sector

Mr D C Muspratt and Mr Hans Laats have been appointed Associates responsible for building engineering services, by W F Johnson and Partners, Architects, Consulting Engineers and Quantity Surveyors of Leamington Spa, Bristol and Southampton.

Energising efficiency seminars

The Secretary of State for Energy, Mr. Peter Walker, has advised the Institute that he is leading a series of seminars on energy efficiency, to which top management from industry and commerce is invited. These are being held all round the country. Should any member wish to attend please contact the relevant Regional Energy Efficiency Office direct.

Record of experience

For the purposes of the Institute records and for on-going registration with the Board for Engineers Registration it is

FORTHCOMING BRANCH MEETINGS

North East Branch: Hon.Sec. G. Baxter Darlington (0325) 460100

October 9th Visit to R.V.I., Newcastle

November 13th 'Energy Conservation' South Cleveland Hospital

December 14th Visit to Cameron's Brewery, Hartlepool.

East Anglian Branch: Hon.Sec. J.A. Parker Norwich (0603) 611 233

September 15th Visit to RAF Station, Lakenheath Military Hospital.

November 24th 'Incineration/Heat Recovery' West Norwich Hospital.

Highland Branch: Hon.Sec. M.J. Shand Inverness (0463) 234 151

September 20th Visit to MacDermotts, Ardesier Inverness Oil Rig Construction Yard.

November Visit to Headquarters, Northern Constabulary, Inverness.

Mid Scotland Branch: Hon.Sec. S. Roberts Aberdeen (0224) 29901

September 22nd Visit to the new Raigmore Hospital.

Southern Branch: Hon.Sec. R.P. Boyce Chichester (0243) 781411

September 12th Visit to County Police HQ, Winchester.

November 15th Visit to Cathedral Stonemasons and tour to see cathedral restoration works, Chichester.

East Midlands Branch: Hon.Sec. E.A. Hall TN Nottingham (0602) 475783

September 27th Application of Electricity in the Health Service Electricity Centre, Broadmarsh, Nottingham.

Welsh Branch: Hon.Sec. M.J. Back Cardiff (0222) 755944 ext 2562

October 3rd Study tour Control Tower Complex, Rhosneig, Rhosneig.

Please contact the local Branch Secretary should you wish to attend any of the above meetings.

Branch Officers 1984/85

East Midlands Branch

Chairman: John M. Hemes

Secretary/Treasurer: E.A. Hall Esq, Messrs. E.G. Phillips Son and Partners, 26 Annesley Grove, Nottingham NG1 4GW, TN Nottingham (0602) 475783.

Highland Branch visit

Branch members' recently visited the Reversible Pumped Storage Power Station at Foyers, on Loch Ness. A short talk by the resident engineer on the history of the project and technical specification of the plant and equipment was followed by an extensive tour round the site. The station pumps water from Loch Ness to Loch Mhor, which is 600ft. above, by using electricity during low load periods, normally during the night. This 400mw load allows the thermal station at Peterhead to run much more efficiently and prevents load shedding. During the peak periods the turbines are reversed providing 300mw of generating capacity in 30 seconds, the station can therefore respond automatically to any demand up to a maximum of 18 hours.

The station is built on the site of Britain's first big hydro project, The British Aluminium Foyers Smelter, built in 1896 which ran until 1966. The original smelter power house is still there and now houses a modern 5mw turbo generator to make use of catchment water not diverted into Loch Mhor.

To prevent cavitation of the turbine blades the generators are sited below the surface of the Loch. During the visit the group passed through connecting tunnels 115ft. below the surface of Loch Ness, but did not meet the monster.

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necessary for every Institute member to maintain a record of experience and accordingly you are requested to instigate such a personal record.

As a matter of guidance it is suggested that the record should comprise details of each and every employer together with the relevant dates and duties, the exact position held, and the level of responsibility

in each position. Finally, but in fact most important, it is imperative that you state full details of all training received in any post held as this is essential for the purposes of seeking registration with the BER at the appropriate level.

The record will require, of course, a confirmatory signature by someone in a superior or supervisory position.

Engineering Council

At a two-day conference in York 200 engineering delegates gave backing to the policy statement on The Engineering Assembly and Regional Structure. The first-ever Assembly should be convened in mid-1985, and delegates will be elected regionally by their fellow registered engineers.

DWO's Falfield Conference

The National Association of Chief Works Officers of District Health Authorities was formed after the 1983 reorganisation. Roger Sear attended the first National Conference at Falfield in May, and reports on the occasion for the Journal

The conference which was attended by 84 delegates was a resounding success with many renowned speakers covering various aspects of estate management with particular reference to the future.

The conference was opened by Lord Glenarthur and was quickly followed by Ceri Davies, Assistant Director of Works Operations at the DHSS, who introduced the theme of the conference 'Estate Management - 1984 Onwards'. The NHS he said should not only be aware of the cost of operating its buildings, it should properly interrelate the quality and quantity of buildings with the amount of land owned. He emphasised the need for notional rents to have real

continued from page 2

less assertive in putting forward the engineering view but that we need to change our attitude from 'I win you lose' to 'I win you win'. The engineering problem is usually only part of a whole matrix of problems mostly open ended and each requiring a solution. We must take an interest in the interactions across the boundary and view our contribution in relation to the whole if we are to play our full part and earn the respect of others - end of sermon.

Although I am retiring from the DHSS I remain a member of Council of I Hosp E and Chairman of its International Affairs Committee. I look forward to a continuing involvement with the institute and to maintaining contact with my many friends in hospital engineering.



Study in concentration - DWO's give their attention to a speaker at the first Conference of the National Association of Chief Works Officers

teeth and to act as a penalty on those authorities with more buildings than they need and those who do not properly maintain their buildings.

These penalties he said would only operate on those authorities who failed to act on targets set within a prescribed period of time, possibly five years.

The second speaker, Richard Meara, District Administrator from North West Surrey Health Authority warned that 'the Ceri Davies report (the most positive initiative over the last two years) was not just for works officers but should be used with works officers as part of a truly integrated approach to planning and managing the health service.

He also said he hoped that the review of the works function would increase delegation and incentives to districts by recommending that schemes up to £2m or more were carried out by district works officers.

The second day included several speakers continuing the theme of the future with Mike Smith, District Works Officer, Gateshead, Sheila Howells, Regional Planning Officer,

South West Thames and Dr. Malcolm Green from the DHSS dealing very effectively with 'Performance Indicators', together with the planning process and 'WIMS'.

Idris Pearce from the National Property Advisory Panel spoke in the afternoon on the 'Commercial Approach' - 'The NHS is not in the speculative property business' he said. 'It should seek professional advice on the use and disposal of surplus land and buildings and act on that advice without taking risks.' During his talk which was both interesting and stimulating, he said that the private sector has much expertise to offer the health service but it should also be remembered and stressed that in the function of energy conservation and maintenance techniques and procedures the NHS was far ahead of the 'private sector'.

Later that day John Minter, Chairman of North East Essex Health Authority continued the theme of delegation to districts and said 'The time is right for district health authorities to be given full responsibility for all their revenue and

capital investment.'

The final day brought contributions from Gerard Coghlan, Chairman of West Birmingham Health Authority, and Dick Body, Superintending Engineer from the DHSS. They both gave a stimulating paper on future aspects of works training.

The conference was closed by its National Chairman, Bill Murray, on a note of optimism and enthusiasm for the future of the NHS, and in particular, on the contribution that district works officers will be able to make for the benefit of the health care of patients and the welfare of staff.

CROSS REFERENCE

Picked from the journals of professional colleagues, articles and news items of interest to hospital engineers.

ELECTRONICS & POWER

Tariffs and private networks - an article by JM Hunter and NM MacFadyen. The use of private networks for voice and data communications has become widespread among large UK companies. The decision by British Telecom to raise the tariffs for the leased circuits used in these networks will make costing such an operation even more complex. *July, page 519*

NEW CIVIL ENGINEER

Second opinion for alkali hit hospital - a news item reports on fears that alkali aggregate reaction problems at the Royal Devon & Exeter hospital is widespread. *19 July, page 8*

BUILDING SERVICES

Commissioning is quality assurance - an article by Alan Foster on the fact that buildings services installations are not handed over to a client in the state they should be and the way this situation should improve. *August, page 37*

NEXT MONTH October Special telecommunications issue

examines in depth the impact of modern electronic equipment on hospital design, maintenance and operation.

News

Meeting

An economic meeting, entitled 'Hospital Construction and Marketing Health-Care Products', will be held on Thursday 27 September 1984 at 3.00 p.m. at 6 Belgrave Square, London SW1X 8EH.

Attendance is free of charge and light refreshments will be served. Space will be limited, so to reserve a place please contact Public Relations Department, Arab-British Chamber of Commerce, PO Box 4BL, 42 Berkeley Square, London W1A 4BL. Tel: 01-629 1249 Ext 201.

WISE switches spotlight on to employers

A major conference on the future needs of industry relating to women engineers and scientists is to be held in London on October 26/27, at the Kensington Palace Hotel.

The conference is part of WISE '84 (Women Into Science and Engineering), which was launched by The Engineering Council and the Equal Opportunities Commission to encourage more girls and women to take up careers in science and engineering.

Copies of the conference programme and application forms can be obtained from Professor Daphne Jackson, The University of Surrey, Guildford GU2 5XH.

PEMEC '84 Factory Efficiency Show and Conference

25-28 September 1984. National Exhibition Centre, Birmingham.

Free tickets available from The Secretary, The Institute of Hospital Engineering, 20 Landport Terrace, Southsea PO1 2RG.

EURA offers solution to energy managers problems

Energy Users Research Association (EURA) is an association which provides an information and research service specifically geared to the needs of energy managers and senior executives in industry, commerce and the public sector. EURA collects, organises and appraises all of the information generated on efficient energy use for energy managers to access as and when they need it.

The service includes a telephone enquiry facility for answering day-to-day problems, a monthly Bulletin for coverage of key topical issues, a quarterly update of current fuel prices and a Catalogue Library. The annual cost of subscription is £145 (+ VAT).

Further details from: EURA, PO Box 97, Altrincham, Cheshire WA14 5HT. Tel: 061-928 3539.

Watkins Gray International (UK) partnership additions

Two new additions to the partnership are Richard Blair DipArch ARIBA, and Grahame Underwood DipArch ARIBA.

Publication of Watt Committee report

Is there an acid rain problem? If so, what is the cause of the problem? How can this problem be solved? These, writes Professor Kenneth Mellanby, CBE, chairman of the Watt Committee working group on Acid Rain, in his forward to this Report, were the questions that he and his group set out to answer.

Watt Committee report on acid rain. Illustrated. vi + 58 pages. £14.80 net.

Orders with remittance to: The Watt Committee on Energy Ltd, 18 Adam Street, London WC2N 6AH.

Overseas customers please remit in sterling on a London Bank, and add for overseas airspeeded delivery: Europe £1.80 per copy; rest of the world £4.00 per copy. For surface mail, all destinations £1.80 per copy.

ISH '85 world trade fair

The ISH '85 - World Trade Fair for Sanitation Heating Air-Conditioning - will be held in Frankfurt in 1985, from 19th to 23rd March.

There will be in the extensive programme of fringe events a special show on energy-saving technology.

Further details from Messe Frankfurt GmbH, Ludwig-Erhard-Anlage 1, POB 970126, D-6000 Frankfurt am Main. Tel: (06 11) (0 69) 7575-320/357.

British Standard Institution

Electro medical testing expansion - there is a growing demand for safety testing of medical electric equipment and in order to meet this demand a new electro medical laboratory has been added to the BSI Test house. An article on the work of this section appears in *BSI News June 1984, p 14*.

You may well ask what is terotechnology? All is revealed in a revised edition of BS3811 Glossary of maintenance management terms in terotechnology published in April this year. This revision is discussed in *BSI News May 1984, p 10*.

General principles of construction drawing - BS1192 has been completely rewritten and is to be issued in a four-part document. Parts 1 and 4 were published in March and the complete standard is discussed in *BSI News July 1984, p 9*.

Recently published standards of interest to hospital engineers: BS2769 Hand held electric motor-operated tools. Pt 2 Particular requirements (prices on application to BSI) BS5155 Butterfly valves (price £11.50 - £6.50 to BSI members)

Copies may be obtained from the Sales Department, British Standards Institution, Linford Wood, Milton Keynes MK14 6LE

The President's mid-term report



Mr. L. G. Hadley, the Institute's President responding to the welcome by Mr. J. Barnes, principal of the Hospital Estate Management & Engineering Centre, Falfield on the occasion of the Institute's visit during this year's annual conference.

I am glad of this opportunity suggested by the Publications Committee to offer a mid-term message. When the proposal was first put to me, it sounded like a 'half-term report' and I had visions of someone marking it like six out of ten (or worse) – could do better!

But, of course, my Presidential term of office in the Institute is for a two-year period and it is surprising how quickly the time passes. I clearly remember when John Constable first approached me with the invitation to accept his nomination, I felt some twangs of apprehension at the thought of a two-year stint, though, on reflection, it certainly charges the President with seeing through some of the problem issues without passing them on to the next man. One such matter has been the publishing arrangements for our own journal and I am very pleased at the way that our new publishers have pressed ahead with many new ideas and creative thinking. This augurs well for the future and I have every hope and expectation that the journal will continue to be our principal means of communication between Council, the Committees and the Membership at large, both with a capital 'M' and a small 'm'. The Publications Committee work very hard in the collection of suitable editorial material though the rate of consumption of suitable papers is high

– ten issues of the journal per year reflect a great deal of written contributions and a good healthy build-up of material in the pipeline is essential.

This is where the one-day symposia of the Institute help. Held four times a year on subject matter of topical importance, they have proved to be an enormous success and have attracted a very high percentage of delegates from outside the Institute's membership. After all, these symposia, together with the journal and the papers presented at the annual conference, is but one way by which the Institute can achieve its role in promoting the science of hospital engineering.

Future membership

Our membership total is now about 2,100 though, I must confess, I am disappointed at the relatively small number of graduates and students. These are the very people who, in future year, will become the members of the Institute and I have asked our Membership Committee to see if we are doing enough to bring some of these younger people into the orbit of the Institute.

I am, of course, conscious of the ever-increasing costs of membership fees of professional institutions. To many, the Institute is a second professional qualification covering, as it does, a very specialised but important field of hospital engineering. However, whether as student or graduate, there is equally great benefit for those in middle management and in senior positions to belong to the Institute and I hope that the Membership Committee will seek every way of expanding our numbers – not for numbers' sake, but to ensure that the benefits which the Institute can bring to all those engaged in health service engineering can be effectively gathered under the Institute's banner.

I have also been impressed over the last twelve months by the work and effort made by the International

SOMMAIRE FRANÇAIS

Le rapport du Président en milieu de mandat

A mi-chemin de son mandat de président, Lawrence Hardley retrace les réalisations et activités de l'Institut. Il approuve tout d'abord le travail du nouveau rédacteur dans le Journal et souligne l'importance du Journal d'une part et des symposium d'un jour d'autre part pour la promotion des techniques du génie hospitalier. Il espère en outre que le nombre des adhérents ira en augmentant, en particulier parmi les diplômés et les étudiants. Ils commente le travail réalisé

par le International Affairs Committee et le rôle important joué par le R.U. dans le IFHE. Sur le plan national, une grande partie du temps est dévolu au travail de l'Institut en tant que corps désigné du Conseil du Génie Hospitalier. Enfin, le président aborde le problème très controversé de la possibilité d'adhérer à l'Institut pour les professionnels autres que les ingénieurs et conclut en déclarant que le moment n'est pas encore venu.

Affairs Committee through the International Federation of Hospital Engineering. There is no doubt that the UK takes a very important role in the affairs of the International Federation. The Institute was one of the founder members and is a Member of Council of the IFHE and there are now something like 34 countries forming the membership of the IFHE. The Institute's journal, which is circulated to all those countries comprising the IFHE, is the means by which member countries can keep in touch for the mutual benefit of international health care in the widest sense. The next IFHE meeting takes place in Australia next November and I am delighted that the Institute will be represented by past President Laurence Turner and Basil Hermon, among others.

But, on the home front, a great deal of our Council's time is, at present,

devoted to our role as a nominated body of the Engineering Council. Our representative on the Engineering Council Board for Engineers' Registration and on the Executive Committee of Group 2 of the Engineering Council is Malcolm Brook, and we all owe him a debt of gratitude for the work he is doing.

My role as President has also made me more aware of the many problems facing engineers in the Health Service with its many changes in re-organisation and structure. This is not a matter of direct concern to the Institute in its role as a learned society and its authority to act as a qualifying body if it so wishes. It has, however, brought home to me the problems that many engineers face when confronted with changes in an organisation which can effect their professional position and responsibilities in post. But one thing is clear. The role and position of Engineers in Hospital Engineering is as great now as ever and that will not diminish. The engineering requirements of a modern hospital and this includes health care over a broad front makes greater demands on the standards of technical excellence and service than ever and this is one area where the Institute can play an important role.

For many years, there has been a rumbling within the Institute that people other than engineers should be permitted into full membership of the Institute. Shortly after I took office, the Council decided the issue was worth a fresh airing and a plan was laid whereby views would be invited from Council members and put in the journal as short topical notes in the hope that our non-engineer colleagues would take up the challenge and express their views.

This was done and we did get a number of not unexpected criticisms. These came primarily from architects who felt that they were entitled to full voting corporate membership of the Institute in common with anyone else who had similar interest. However, this does not appear to be shared by the membership at large. On a personal note, I could certainly see a great deal of benefit by having a body which includes all the disciplines involved in hospital and health care engineering. This would embrace not

only engineers and architects, but also medical specialists and research workers in health care work, but this would mean a radical change to the Institute's Articles of Association. The Institute is an institute of Hospital Engineering and, as such, is now within the framework structure of the Engineering Council. We are the means by which suitably qualified people can become Chartered Engineers in their own right through our Institute. But there is nothing second-class about non-corporate membership for those who are not engineers. The Institute welcomes architects, surveyors, medical specialists and others who have an interest in hospital engineering but who are professionally qualified through other Institutes of their own discipline.

If we changed our rules into a learned society role then the situation would be different and we could then become the Society, or Association, for Hospital Engineering and Architecture (or perhaps, Health Care and Estate Management) but that is for another day. Not now.

And so now, let me look ahead for the next few months to our Annual Conference in Harrogate. Already the programme is beginning to take shape and our publishers are busy working out some ideas on their parallel Hospital Engineering Exhibition. Learning from experience at the Bristol Conference early this year, the next event should be a big step forward.

As I write this note, certain Council members, together with the Secretariat and I are getting ready to meet the Working Party of the Institution of Civil Engineers, set up to advise the ICE Education and Training Committee on the question of affiliates. The Working Party will be at our Southsea offices late August and I will be reporting progress at our Council meeting the following month. By then the summer holidays will be behind us. My wife, Doris, and I hope you have all had a happy and enjoyable break, and we look forward to seeing you in Yorkshire, May 1985.

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General guidance on the specification of BMS is contained in the Proceedings of the BRE/CIBS Symposium 'Specification of building management systems', held last year and now published at £5.50. A BRE Digest will be published shortly.

CIB-W79 International Symposium Performance of HVAC Systems and Controls in Buildings, June 18-19, 1984. Proceedings in preparation.

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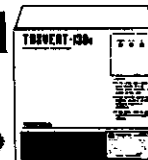
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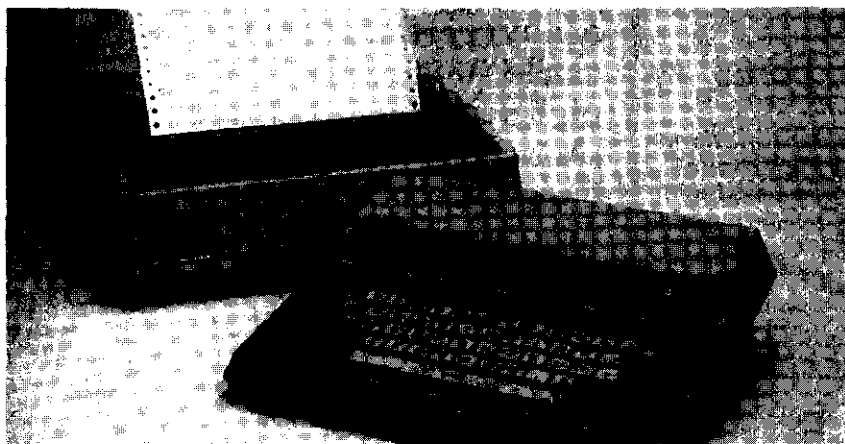
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Product News



Keyboard encoder with printer

Improved safety and reliability with Thermoscopic valves

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Developed by Walker Crossweller & Co in Cheltenham, the valves incorporate a unique 'thermoscopic' control designed to maintain the hot and cold blend temperature to within $\pm 1^\circ\text{C}$ of the selected temperature, even with severe changes in supply/demand pressures. They also provide an automatic shut-down in under 2 seconds should either supply fail, and incorporate a maximum temperature stop.

Further details from: Walker Crossweller & Co Ltd, Whaddon Works, Cromwell Road, Cheltenham. Tel: 0242 (Cheltenham) 527953



Picture shows a thermal probe being used to check the performance of a Mira 20 3/4 inch 'thermoscopic' mixing valve supplying water at controlled safe temperatures to baths used by patients at Stoke Park Hospital.

New printer attachment for paging system

A new printer attachment has just been introduced for the Datacall radio paging system, which is a fully alpha-numeric radio paging system capable of receiving, memorising and displaying messages of up to 40 characters. The attachment of this new printer to the encoder means that a complete printout is available of all calls transmitted.

For further information: Blick International Systems Ltd, Blick House, Bramble Road, Swindon SN2 6ER. Tel: (0793) 692401.

Pipe identification system

The ability to identify pipework and its contents is of considerable importance to most plant engineers - of interest to them is a new low-cost identification system which consists of four types of fixing plate, transparent covers, and also designation plates which can be supplied either as blanks or printed to suit individual requirements.

Further details from: Technical Fluid Components Limited, 20 Albury Gardens, Calcot, Reading, Berks RG3 5ZY. Tel: (0734) 413525.

15th edition cable sizing program

Amazing Micro Systems who produce the 'TECPAC' Building Services Programs for micro computers have just released their new Cable Sizing Program, which is claimed to be the most comprehensive and flexible program on the market. This 15th Edition program standardises the calculation procedure and presentation of results, to ensure compliance with the regulations for a majority of electrical installations within buildings.

Further details from: Amazon Micro Systems, Linford Wood Business Centre, Sunrise Parkway, Milton Keynes MK 14 6LQ. Tel: (0908) 664123.

Degreasing development

Recently developed by Deb Limited, the Remoovabooth, a completely new item of equipment for use with their newly developed, powerful and instant drying, Moovasol cold cleaning solvent. Operated by air the system offers an alternative to vapour degreasing for manual small parts cleaning, giving quick, efficient removal of fats, greases, waxes and tars. The system is ideal for electrical and electronic equipment and is safe on all metals where a clean dry finish is needed in a matter of seconds.

Further details from: DEB Limited, Spencer Road, Derbyshire DE5 1JX. Tel: (077 382) 2712. Telex: 377209.

Maintenance free energy recovery system for tunnel washers

This system for tunnel washers is called the Dynatherm, and the unit can recover up to 85 percent of the energy that would normally be lost down the drain.

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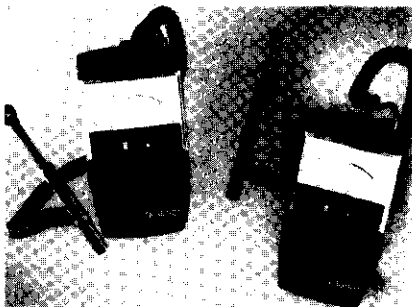
The unit is available in five sizes which can handle flows of up to 6000 gallons per hour. Payback on a Dynatherm can normally be expected within 12 months.

Further details from: Future Laundry Systems, The Manor House, Bishops Itchington, Leamington Spa. CV33 0QG. Tel: (0926) 612121.

Thermal anemometers

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Further details from: Airflow Developments Limited, Lancaster Road, High Wycombe, Buckinghamshire HP12 3QP, England. Tel: (0494) 25252/443821 Telex: 83288



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Informal enquiries would be welcomed by:

Mr. D. Gray, District Works Officer ext 204 or Mr. G. Sharp, District Engineer ext 205.

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