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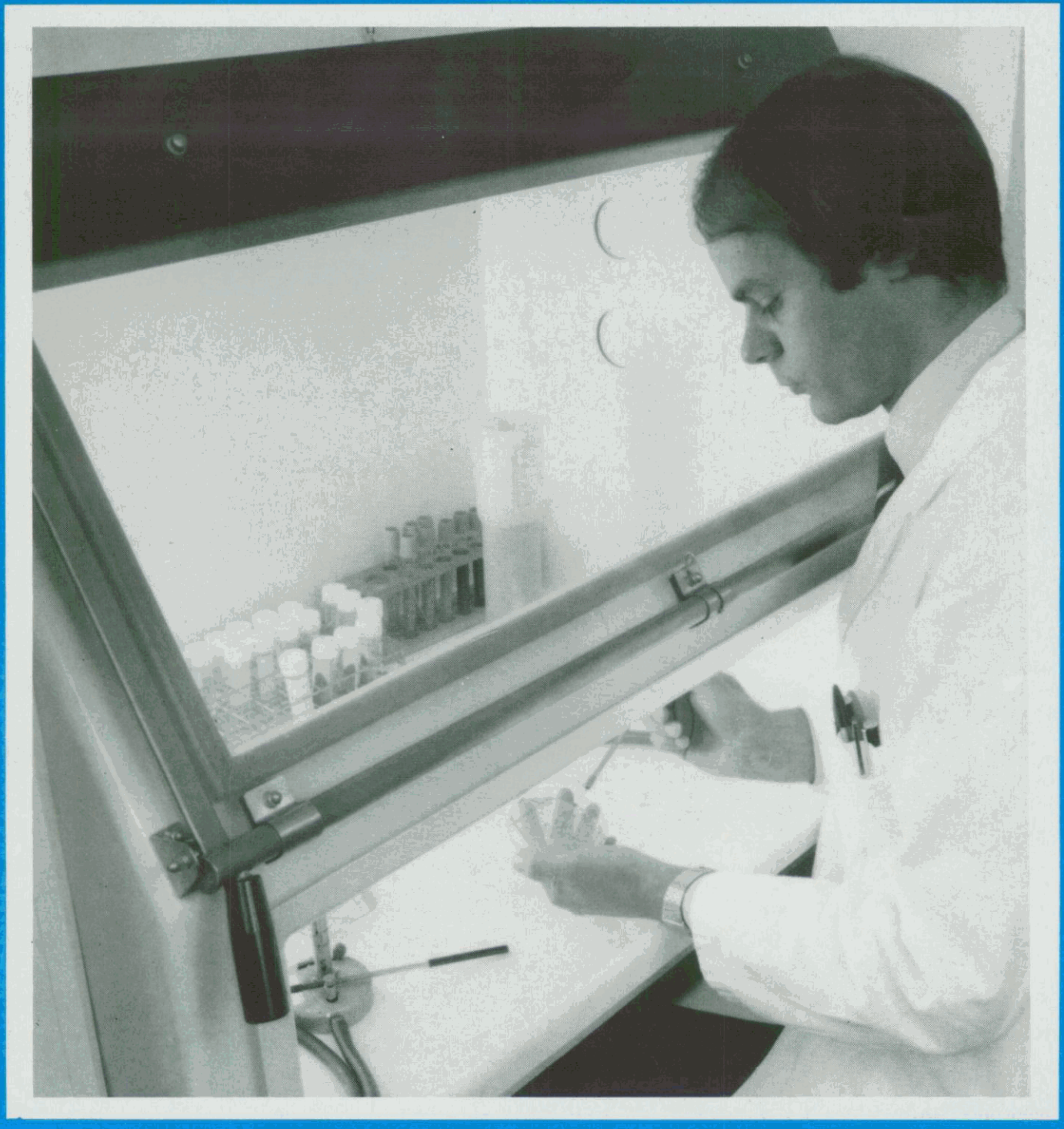

- Computerised information services in Japanese hospitals
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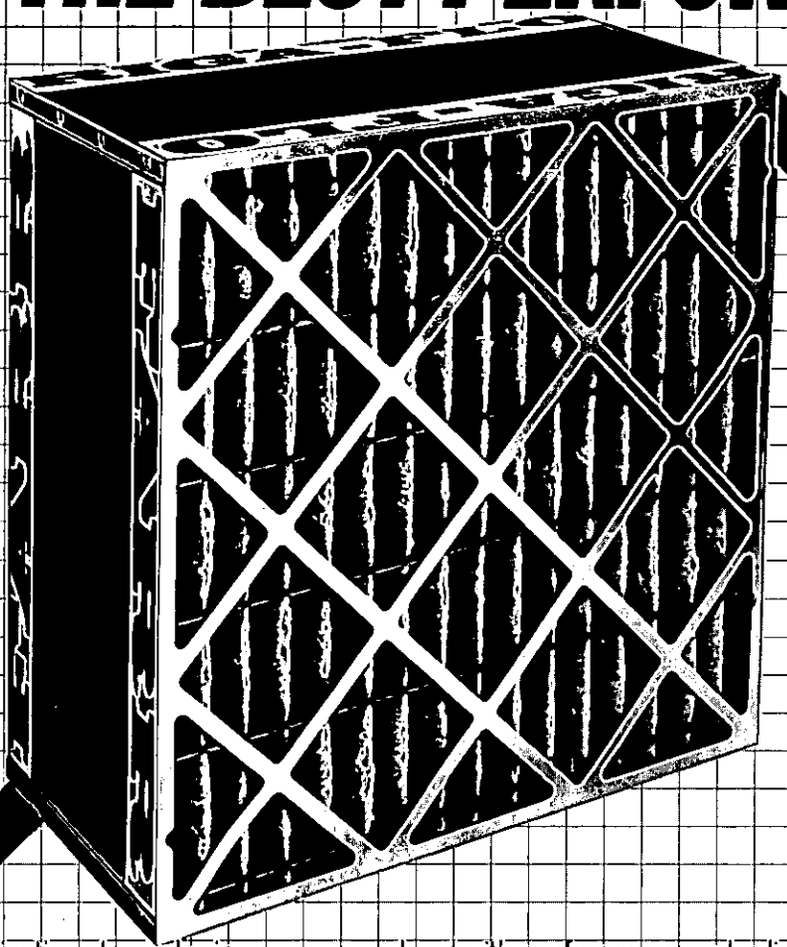

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Director
David B Goad MSIAD MIOP

Editor
Jenny Campbell

Advertisement Manager
Michael Birch

Southern Sales Office
Ron Banbrook (Sales)
Janet Warren (Administration)
IMR International 14 Bath Road
Swindon Wilts SN1 4AA
Telephone (0793) 45311/2

Nortnern Sales Office
David McGuire (Sales)
Pen-y-Wern Cottage Corwen Road
Trevddyn, Nr Mold Clwyd CH7 4LD
Telephone (0352) 770705

All correspondence relating to the Journal should be addressed to:
HOSPITAL ENGINEERING
TGV Publications, 41 Earl Street,
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The Institute of Hospital Engineering
20 Landport Terrace
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Telephone:
Portsmouth (STD 0705) 823186

HOSPITAL ENGINEERING

The Journal of The Institute of Hospital Engineering and of The International Federation of Hospital Engineering

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Front cover picture: Research continues unabated to monitor and control the source of legionnaires' disease in cooling water systems — see feature on page 8.

Talking Point

Where will future hospital engineers come from?

S. RATCLIFFE CEng MICE MIMechE FIHospE

History is littered with the bones of animals and plants which failed to adapt to changing circumstances. Dinosaurs are the example which springs to the attention immediately and very little thought will serve to bring others to mind. So it is with organisations and even whole industries.

In the last thirty years we have seen huge segments of the economy shrivel and fade. There is no reason why Health Care should be exempt from radical change and again a little thought will easily produce past examples. Further reflection will indicate likely engineering and building developments whilst study of the work on the Low Energy Hospital being built at Newport, I.o.W. further shows the probable shape of things to come.

As engineers we all naturally tend to think immediately of plant, equipment and buildings which is fine as far as it goes. Real Estate is only one of the assets of the NHS: the other one is, simply, 'people'. As trained staff have a longer lead time than buildings it is even more essential to plan for future staffing.

A look backwards to the hospitals being built say 20 years ago shows buildings which were fairly simple in engineering and managerial terms and the National Health Service could recruit highly suitable engineering staffs at all levels from other industries. Railway works, shipyards, the Navy and other heavy engineering enterprisesd produced a steady flow of people with technical, professional and managerial skills for our Health Service.

A look at the hospitals being built now shows a different picture. They contain a very small element of heavy engineering, a very large element of light electrical engineering and are technically much more demanding to run successfully as well as requiring considerable financial and management skill. In fact a specialised, clearly discernable profession is emerging quite different from other branches of engineering. This trend seems well set and likely to continue.

How will we staff these hospitals in future? The traditional sources used in the past no longer exist. Heavy engineering has almost faded away and in any case the skills learnt in this type of industry are no longer so relevant. Other industries are now extensively automated so produce little or no people the Service could recruit in future and in the case of electronics particularly, do not produce enough for the industries own needs.

The inescapable solution seems to lie in the Health Service planning for future staffing levels then running a training programme specifically to meet foresable needs. The programme would clearly need to be uniforms across the country, in complete conformity with the Engineering Council requirements and capable of easily absorbing engineers from other branches of the profession at all levels. Most importantly of all it must enable a brand new apprentice to be able to see a clear path right to the very top — and be able to attain it.

Où trouver le futur personnel des services techniques des hôpitaux?

L'aptitude à s'adapter à l'évolution est d'importance vitale pour survivre et le Service national de santé du Royaume-Uni n'est pas exempt en la matière. Les hôpitaux modernes ont de plus en plus besoin de personnel spécialisé dans leurs branches techniques et ne sont plus en mesure de le recruter dans les autres secteurs. Pour le Service national de santé, la solution doit consister dans la mise en place de ses propres programmes de formation sur l'ensemble du pays. Il lui faut aussi pouvoir offrir une structure d'organisation des carrières bien définie.

IFHE News

12th International Hospital Symposium

New ideas in building and running the hospital

To be held from February 19th to 22nd, 1986 in the Auditorium Maximum of the Technical University of Berlin (West). It is organised by the Institut für Krankenhausbau der Technischen Universität Berlin, in cooperation with Deutsches Krankenhausinstitute — Institut in Zusammenarbeit mit der Universität Düsseldorf.

Lectures, seminars and discussions from Wednesday, February 19th, 2.00 p.m. to Friday, Feburary 21st, 4.00 p.m. Hospital visits Saturday, February 22nd, morning.

Spain

The 7th Annual General Meeting of AEDIAH was held on May 9, 10, 11, in Zaragoza. The main subjects were 'The nursing care unit' and 'The haemodialisis unit'. An 120 page booklet of the proceedings has been published, in Spanish. A 56 page monograph, 'Las redes de gases medicinales como focos infeciosos' has also been published. Enquiries about these two publications should be sent to AEDIAH, Diagonal 647, 08028, Barcelona, Spain.

Reports from overseas

The Overseas Technical Information Unit have published a report 'Aspects of Japanese commercial innovation' by Rodney Clark of The Technical Change Centre. It is a brief account of commercial innovation in Japan. The 105 page report, price £7.00 may be obtained from the Centre, 114 Cromwell Road, London SW7 4ES, quoting reference number TCCR-84-010 (ISBN 0 946890 50).

Call for papers

The organisers of the 9th International Congress, to be held in Barcelona in May, 1986, are most dissapointed by the lack of any papers being offered from Britain. They hope very much that the UK will be contributing to the International Federation's Congress. Anyone interested should contact the organisers at Congress Secretariat, AEDIAH — Diagonal, 647 - 08028, Barcelona, Spain.

8th Congress IFHE Melbourne Australia. November 1984

Copies of The Directory of Proceedings are still available at A$10.00 posted surface mail anywhere in the world. Available from:

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Australia.

This paper was originally presented at the 8th Congress of the IFHE, in Melbourne.

Computerised information services in Japanese hospitals

HISASHI OHMICHI of Nihon University School of Medicine, Tokyo, Japan.

1. Introduction

Remarkable progress of information processing technology has influenced health service systems and various computer systems have been introduced into hospitals in Japan since the middle of the 1960's. At the beginning, statistical processing on clinical data, ECG analyses etc. were tried in university hospitals intended to construct the total hospital information system which covered almost all departments in the hospital.

They achieved success to some extent supported by enormous efforts, but they had caused financial problems in the hospital management. In the latter half of the decade, shared-typed hospitals information systems were developed and have been managed on commercial basis using a large scale computer. Client hospitals have shared mainly the function of accounting and billing for health insurance. But the merits of shared-type systems are rapidly being lost by recent remarkable cost-down of hardwares.

Stepping into the 1980's, the financial environment in the health care has become more severe, and the computer system is being reviewed not only as the useful tool to supply the health care services, but also as the methodology for optimum decision making to allocate medical resources. In this paper, a recent outline of the computerisation in Japanese medical facilities is reported and several problems in the management of hospital information systems are discussed.

2. The spread of computer systems in hospitals and clinics

It is relatively difficult to grasp the comprehensive situation on computerisation in hospitals and clinics. The General survey on Medical Facilities by the Ministry of Health and Welfare every three years is the only one that investigates overall facilities.

The latest survey was done at the end of December in 1981. According to the results, 40% of hospitals and 11% of clinics have introduced computer sysems in some work. Approximately half of the middle-sized hospitals with 200-500 beds use computer systems and more than 70% of large-scale hospitals and "universal" hospitals are computerised. (Table 1)

The most popular information system in the hospital is that relating to the accounting and the billing for the health insurance. The survey in 1981 says that it has shared more than 70% in the hospitals information system. Particularly, the billing system, that is, to make a bill for the insurance fund which requires to describe every medical examination and treatment for each patient, is suitable for computer application. Micro-computers integrated only for this purpose have been spread among small hospitals and clinics these several years.

Table 1 Numbers and percentages of medical facilities with computer systems in Japan (The General Survey on Medical Facilities, Dec., 1981 Ministry of Health and Welfare)

	Facilities with computers	Total facilities
Hospitals*	3,699 (40.1%)	9,224
General hosp.	3,406 (41.7%)	8,167
'Universal' hosp.***	666 (70.3%)	947
Psychiatry hosp.	283 (28.6%)	988
Other hosp.	10 (14.5%)	69
Clinics**	8,727 (11.2%)	77,909

* Medical facilities with more than 20 beds
** Medical facilities with no beds or less than 19 beds
*** General hospitals with more than 100 beds including departments of internal medicine, surgery, obstetrics and gynaecology, otorhinolaryngology and ophthalmology

The pharmaceutical inventory system and the clinical laboratory system are the next popular ones. In Japan, more than ten thousand drugs are in circulation and a great number of new products are developed every year. Clinical laboratory tests, especially blood analyses and chemical examinations have increased remarkably accompanied by the spread of multi-channel auto-analysers. Both applications have brought great merits in each department.

The medical record administration is far backward in Japan. Medical record administrators or technicians have not yet been authorised institutionally and only advanced hospitals have introduced computers into the discharge abstracts management, the registration of specified diagnoses like malignant diseases, and so on. The medical record information system is expected to function as a system for optimum allocation of medical resources connected for financial data.

A system for dietary control and nutrition management is an effective example of computerisation. The payroll calculation system for the personnel is very popular but it is not a patient information system. Numbers and percentages of these systems in the survey above mentioned are shown in Table 2.

After the general survey in 1981, hospital computer systems have continued to increase rapidly reflecting the cost-down of the hardware. According to the survey done by the Japanese Hospital Association in August 1983, the percentage of hospitals

Table 2 Departmental utilisation of computer systems (The General Survey on Medical Facilities, Dec., 1981 Ministry of Health and Welfare)

	Hospitals (total: 9,224)	Universal Hospitals total: 947)	Clinics (total: 77,909)
Accounting and Billing for Health Insurance	2,552 (27.7%)	344 36.3%)	6,796 (8.7%)
Pharmaceutical Inventory Management	644 (7.0%)	192 (20.3%)	757 (1.0%)
Clinical Laboratory*	369 (4.0%)	127 (13.4%)	685 (0.9%)
Dietary Management	194 (2.1%)	54 (5.7%)	36 (0.05%)
Medical Record Management	138 (1.5%)	62 (6.5%)	239 (0.3%)
Payroll Calculations	1,910 (20.7%	488 (51.5%)	2,354 (3.0%)
Others	323 (3.5%)	127 (13.4%)	566 (0.7%)

* excluding integrated processors like C.T. etc.

Table 3 Increases of billing systems for health insurance

	1979	1980	1981	1982	1983
Hospitals	1,095	1,695	2,149	2,624	3,232
Clinics	2,034	3,237	4,257	5,283	6,625
% of computerised bills	6%	10%	15%	19%	24%

L'informatique dans les hôpitaux japonais

Depuis le début des années 1980 a riguer s'accentue dans la gestion financière des soins de santé. Dans ce contexte, l'informatique est considérée non seulement comme un instrument utile pour fournir les prestations inéressant la santé mais aussi comme la méthodologie à la base des décisions optimales touchant à l'affectation des ressources médicales. Cet article est consacré à un tour d'horizon sur l'actualité recente concernant l'emploi de l'informatique dans les services médicaux au Japon et à l'analyse de plusieurs problèmes dans le domaine de la gestion de l'informatique médicale.

which are computerised in some departments is 52.8% and the billing system forms 95% among them.

Increases of the billing system in hospitals and clinics, and the percentages of the bill which is printed out by the computer are reported by the insurance fund as in Table 3. The bill is to be sent to the fund every month for each patient, and the number of the total bills in 1981 has exceeded 8 hundred million. It is anticipated that computerised bills will reach 30% in this year.

Comprehensive health insurance system has been established since 1961 in Japan and the whole population is covered by some public insurance. A project to construct a nationwide insurance payment system by the machine-readable bill of magnetic tapes is now planned.

Introduction of this system would accelerate the spread of the billing system, and give a great impact on hospital computerisations. Especially, standardisation of the codes or the thesaurus on diagnoses, drugs, medical treatments, etc. is expected to be established.

3. Computer sizes in Hospitals

Advanced large hospitals have introduced the all-purpose computers according to their scale and shared the processing function in each department. But the most popular type is to utlise minicomputers including so called super-minicomputers. They are in relatively independent use for the accounting and the billing, the clinical laboratory management, etc.

It is a recent tendency that the high performance micro-computers have increased. They have been spread as the office computer at first, and then applied to hospital businesses. The greater part of computers used in small hospitals and clinics are those of this type. Figure 1 shows the constitution of computers for size in hospitals investigated by the Japanese Hospital Association in December 1981.

In the lastest situation, there happens an explosive pervasion of what is called the personal computer. It is said that more than a million personal computers have been produced in Japan last year, and a good many of them are spread in hospitals or clinics. Almost all of them are used for individual data management, but some high performance 16 bits machines are utilised for the routine works like the medical record or dietary control.

The computer system is becoming essential for the hospital management in Japan in spite of difficult conditions of complex organisational communications, redundancies of the medical information and non-alphabetical characters of Japanese. The General Survey on Medical Facilities in this year will reveal new aspects of Japanese hospital computerisation.

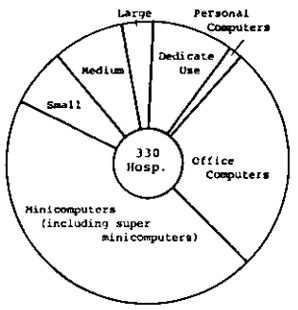


Fig. 1 Classification of computers in hospitals (Dec. 1981, Japanese Hospital Association)

Waste management practices

JOHN R BLECKMAN and V JAMES McLARNEY

Overview

The American Hospital Association (AHA) has initiated a comprehensive investigaton by the American Society for Hospital Engineering (ASHE) of hospital waste management practices. The immediate objectives of this effort are:

- to reduce hazards found in the hospital waste stream by increasing the familiarity of technical staff with their obligations in this field;
- to identify waste management strategies which represent environmental enhancement and cost containment opportunities;
- to better define design and operational criteria for hospital incineration systems.

Programme goals

It is anticipated that by the end of this century most communities will cease to use landfills because of the potential threat leachate will present to sources of drinking water. When alternatives are considered, incineration probably will be the most attractive disposal option because of its ability to drastically reduce waste volumes. However, unless communities can identify large energy loads to make use of heat generated during the combustion process, incineration represents a potentially costly disposal strategy from an operational as well as capital investment viewpoint.

One of the few common denominators found in America are community hospitals. By virtue of their many process loads (laundry, kitchen, etc) and intensive use of energy to temper and circulate air to control the indoor environment, hospitals characteristically have large continuous energy requirements.

By locating incinerators at hospitals, energy generated by the combustion of wastes can be recovered to minimise hospital fossil fuel requirements. At the same time, the risks associated with the movement of hazardous and potentially hazardous wastes from hospitals through their surrounding communities can be largely eliminated.

It also is anticipated that this programme will address programmatic and technical needs that, by virtue of their resolution, will help curtail hospital costs, enhance the quality of life in communities by reducing hazards posed by their wastes, and permit better use of limited natural resources.

Etude américaine sur les pratiques d'élimination des déchets dans les hôpitaux

A l'initiative de l'American Hospital Association, l'American Society for Hospital Engineering entrepend une enquête complète sur les pratiques en usage pour l'élimination des déchets dans les hôpitaux et dont les objectifs immédiats sont les suivants:

☐ réduire le taux des risques constatés dans ce domaine au moyen de la familiarisation accrue du personnel technique vis-à-vis de ses obligations à ce sujet;

☐ définir les méthodes d'élimination des déchets qui représentent un progrès en matière d'environment et sont de nature à réduire les coûts;

☐ perfectionner la définition des critères de conception et d'application des systèmes d'incinération des déchets dans les hôpitaux.

Pour réaliser les objectifs ci-dessus énoncés, sept tâches primodiales ont été retenues dans l'ordre prioritaire de cette enquête, qui sont décrites dans cet article.

Scope of work

To realise the objectives of this research initiative, seven major tasks have been selected for emphasis.

Principal project tasks	
Task One	Integrity of Programme
Task Two	Waste Stream Assessment
Task Three	Waste Stream Sampling Guidelines
Task Four	Incinerator Guidelines
Task Five	Effectiveness of Incineration
Task Six	Economic Assessment
Task Seven	Educational/Technology Transfer Programme

Collectively these seven tasks constitute the approved PHASE ONE development effort. A follow-up PHASE TWO validation effort for the test methodologies and procedures developed as guidelines in PHASE ONE also will be considered.

Task One: *Integrity of Programme*

The desire to obtain outside input to ensure the quality of this endeavour has led to the formation of advisory groups to

oversee the technical and health policy content of projected activities.

A Steering Committee has been given the responsibility of technically reviewing the scope, direction and anticipated tasks of this project. Key staff from governmental agencies will serve on this body along with technical experts from major universities and professional societies.

While the Steering Committee has been organised to provide in-depth technical expertise, a Public Sector Advisory Committee has been formed to address health care policy issues. Its responsibilities are to ensure prior consultation and coordination with regard to required state approvals for experimentation and to secure state specific technical, medical and institutional expertise and counsel on project activities.

Given alternative — but equally valid — waste management perspectives in other countries, efforts to communicate with experts through organisations such as the World Health Organisation and the International Federation of Hospital Engineering also have been given a high priority.

Task Two: *Waste Stream Assessment*

As a prerequisite to efforts intended to improve hospital waste management practices, an initial characterisation of the hospital waste stream is required. This effort will include identification of hazardous and potentially hazardous substances in hospital wastes while special emphasis is being placed on the portion of the waste stream deemed infectious.

For the various categories of wastes that are defined as a result of this characterisation effort, on-site segregation and handling practices will be identified for the following activities:

Waste segregation and handling
Onsite management strategies covering:
Isolation of Wastes
Waste Collection Alternatives
Waste Transport
Interim Storage of Wastes

Since on-site segregation and handling strategies must be consistent with established disposal practices, the proper treatment and/or disposal of wastes (especially those which are hazardous) is of paramount importance to the safety of both hospital workers and the public. Treatment and disposal options which are viable for use by hospitals will be investigated as follows:

Waste Treatment alternatives
Steam Sterilisation on the Premises
Incineration on the Premises
Treatment Off-Site under Contract

Task Three: *Waste Stream Sampling Guidelines:*

During the 1983 Bergen Conference of the World Health Organisation (WHO) on hospital waste management, difficulties were encountered when hospital waste stream research data from different countries was compared. (The constraints responsible for these difficulties can be largely removed to the extent that waste density data is acquired at the time traditional weight or volu-metric measurements are made). This American effort will attempt to develop information from which these inhibiting factors have been removed for consideration by other countries.

In this AHA research initiative, emphasis will be placed on the development of sampling guidelines for use in the characterisation of a hospital's waste output and the assessment of an institution's treatment/disposal options. Sampling parameters tentatively identified as candidates for inclusion in this effort have been broken down into two groups as indicated in the following:

Standard waste stream sampling parameters	
For Frequent Utilisation	**For Selective Application**
Volumetric/Weight Measurement	Biological Contents
Material Components	Halogen Contents
Combustible Fraction	Heavy/Toxic Metal Sampling
Energy Content	Bomb Calorimeter Testing
Moisture Content	Proximate/Ultimate Analysis

Application of sampling guidelines for these parameters and surveys for existing data from hospitals will be conducted for the purpose of determining the degree to which waste streams vary from hospital to hospital. Generally agreed upon differences among hospitals which are likely to alter the characteristics of the waste output include the following:

Waste stream variables
Facility Size and Type
Facility Location
Occupancy Rate
Level of Research and/or Teaching
Time fo Week
Season of Year

All Task Three activities will be reflective of and consistent with Task Two hazardous substance characterisation efforts. This will ensure consistency within this research initiative and contribute to the safety of hospital workers and the community.

Task Four: *Incinerator Guidelines:*

In order to realise the long term programme goals of this research initiative, it is important that guidelines on the procurement and operation of incinerators be developed for hospitals. Although the ideal goal of developing standardized performance specifications for the procurement of modular incinerators for any hospital will be pursued with interested organisations in the United States and abroad, a number of guidelines which lack universal applicability are nevertheless needed. They will be developed in this AHA undertaking and will include:

Incineration Guideline development priorities
Selection and Sizing of Hospital Incinerators
Identification of Wastes Not Suitable for Incineration
Hospital Incinerator Performance Testing

Some interim performance guidelines proposed by the advisory groups formed in Task One are intended to address issues which are unique to hospitals. Among those scheduled for consideration are the possible merits of an infectious waste trial burn methodology, the development of operating procedures for the destruction of cytotoxic wastes from chemotherapy programmes, and the evaluation of trade-offs (such as incinerator capacity and operating period) between interactive incinerator design parameters.

Task Five: *Effectiveness of Incineration:*

Extensive studies on the environmental usefulness and impact of modular controlled combustion incinerators already have been conducted, as have exhaustive investigations on their energy requirements and benefits. However, integrated investigations of both the environmental and energy impacts of incineration, especially as they pertain to hospitals, have been minimal. One of the principal unresolved needs for hospitals considering incineration as a cost containment technology is for a clearer understanding of the changes in the supplementary fossil fuel input requirements and heat recovery system efficiencies when the normal operating mode for a hospital incinerator is altered to facilitate the destruction of special portions of the waste stream which have been segregated because of their potentially hazardous characteristics.

Until recently, it has been necessary to evaluate the impact on air quality of incinerator emissions based on the performance of systems handling waste streams similar to those hospitals. However, 15% of the hospitals responding to a 1983 AHA survey indicated they now have modular incinerators capable of handling their general wastes. Therefore, given the significant number of installations now in operation, a major effort will be made in this project to utilize a number of the performance guidelines developed in Task Four to actually measure the emissions from hospital incinerators. Environmental parameters which will receive particular attention during these efforts to obtain field test data will include:

Priority hospital waste emissions tests
Particulates
Nitrogen Compounds
Sulfur Emissions
Chloride Emissions
Hazardous Chemical Trial Burns
Infectious Waste Trial Burns

Finally, detailed inspections of a select number of modular controlled combustion general waste incinerators, all of which

shall have been in use at hospitals for a number of years, will be physically inspected to obtain a clearer understanding of the precise impact hospital wastes have on incinerators over extended periods of time. These durability examinations will place particular emphasis on:

- The incinerator on-line operational dependability;
- The condition of the primary chamber surfaces as a function of the input waste stream;
- The condition of the heat exchanger surfaces as a function of the input waste stream and the temperature of the incoming gases; and
- Redundancy aspects of the system

For any incineration system encountered which have had pronounced operational difficulties, special examinations of the waste stream being fed into the incinerator will be made to ascertain whether the cause of the problem is in the incinerator itself or in the improper use of the system.

Task Six: *Economic Assessment:*

Methodologies which will allow the development of comparative cost information for various waste management strategies will be developed. Particular emphasis will be given to the detailed evaluation of cost data on incineration; incineration cost factors liable to receive particularly thorough scrutiny are scheduled to include:

Incineration cost assessment factors
Waste Handling Cost Differentials Energy Costs and Savings Maintenance Costs Staffing Costs

In support of the overall goal of this program initiative, detailed assessments of the economics of incineration will be supplemented by a survey of the future potential market for modular controlled combustion incinerators in hospitals.

Task Seven: *Education and Technology Transfer Programmes*

Reflective of the results of all tasks previously described, written interim educational material will be developed by ASHE in support of and to supplement AHA workshops for hospital staff. Planned documents will address:

- Management guidelines for the procurement and operation of hospital incinerators with heat recovery systems;
- A draft standard waste sampling protocol and sample contrast specification for reference by a hospital wishing to have its waste stream sampled by a consultant or local testing laboratory.
- Standard operating procedure proposals to test the solid residue in the primary chamber of the incinerator and meet trial burn requirements for secondary chamber emissions from units used for the combustion of infectious wastes; and
- The proper management of hazardous wastes encountered in and removed from hospitals in the course of their operations.

Additional documents will be developed to interpret codes and standards by organisations which pertain to the proper management of hospital wastes.

The American Society for Hospital Engineering maintaining an ongoing liaison with organisations seeking to transfer technology on the appropriate role for on-site waste treatment and/or disposal systems in hospitals. This includes ASHE participation in the 1984 Melbourne Congress of the International Federation of Hospital Engineers and a willingness to cooperate in the development of specific plans for the IFHE Madrid Congress in 1986.

Timetable

A twenty four month period has been established to allow for the timely completion of all of the tasks outlined in the scope of work. Although a final report will not be completed until after the 1986 IFHE Madrid Congress, it is contemplated that tentative results from most planned activities will be available for presentation and discussion at that conference.

The authors are employed by the Ministry of Health of Catalonia.

Val d'Aran Hospital

LLUIS BOHIGAS, ENRIC MAYOLAS

The Hospital of Val d'Aran a first line hospital for a comprehensive health care programme in a valley of the Pyrenees.

The Val d'Aran is an area located in the northern part of the central Pyrenees. Communications with the rest of Catalania are very poor. The only means of communication is a difficult road which is snow-covered all winter. The permanent population is 5,800, but the tourist population is much higher. Tourists are attracted in winter by skiing and in summer by the mountain landscape, and their numbers can rise to as many as 35,000 in summer.

There are great difficulties in meeting health needs. The nearest hosital is 170Km away in Lleida, and it is a very busy one. Specialist and most diagnostic care formerly was provided in Lleida. The Aranese used to seek care in France where services were located closer, but without public coverage.

By the end of 1981 it was decided that the Health Care Programme Val D'Aran would be a pilot project of the Generalitat de Catalunya (Catalan government). Its aim was to improve the health care situation of the Val d'Aran and at the same time to establish an area of study in health planning, building design and implementation of policies for rural areas, that could be of use in the future in other areas of the country.

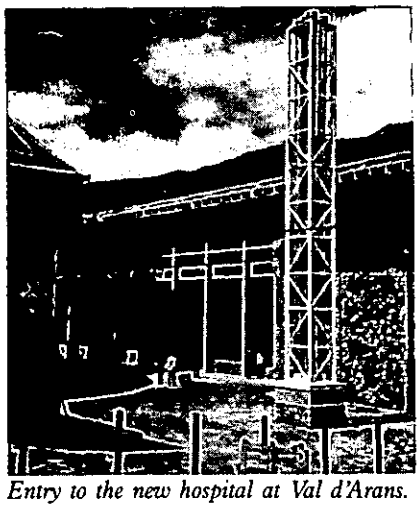
The Health Care Programme Val d'Aran has a comprehensive approach and has the aim to care through one single structure for all health and social services. Within the health services, the Programme deals with health promotion, prevention, primary care, specialist care and hospital care.

The Programme began in 1982 by writing a health care plan. This plan covered a geographical and sociodemographic study of the area, the identification of health problems, the utilisation of health services by the community, the availability of human and technical resources, and the opinions of the health personnel regarding the performance of the health services.

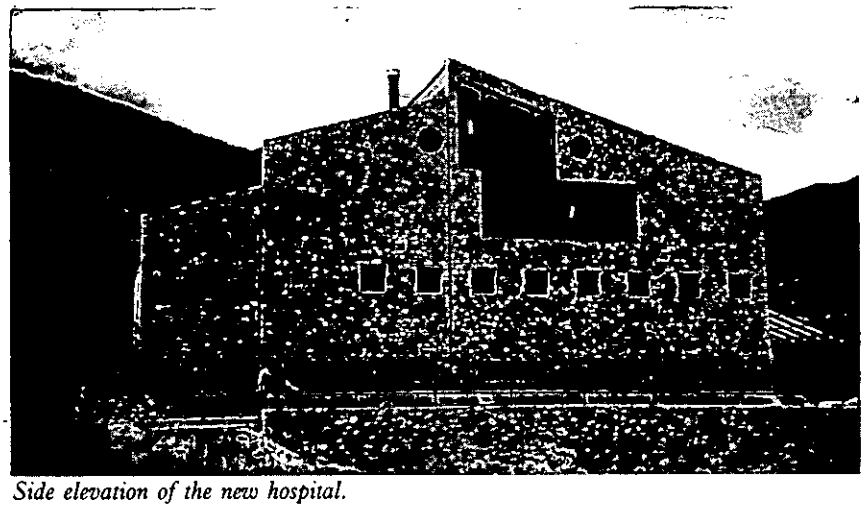
One of the proposals of the plan was to bring together all the services that the programme was going to provide. This centralisation was proposed on two different grounds, firstly the number of people served is small and so are the services, centralisation would bring economies of scale to the initial investment and to the running of the services; secondly, centralisation of health and social services would allow a better collaboration between these services as well as among the different health services, primary and hospital care. The centralisation of the services, to be effective, should mean a physical integration in one building or a complex. An old hospital built 50 years ago existed in the Val d'Aran. The analysis of this building showed that it would not be suitable for the needs of the Programme, but could be reutilised as a part of it, namely the social services.

Starting from the conclusions of the plan a functional programme was written for the new building. This building was to meet the standards of the Hospital Accreditation Programme of Catonia, that had been created a little earlier.

The translation of the conclusions of the plan to a functional programme required some decisions — for instance, the planned demand for serveral services such as surgical procedures, or obstetrical care — were very low and required only a part of an operating room or a few hours a week of the delivery room. This is not a significant problem in a big centre but it becomes so in a small one. One surgical room and one delivery room were included in the functional programme, as well as one nursing unit, health centre, and an emergency care room. Other central services included: laboratory, X-ray, laundry, kitchen, etc. All the hotel services should be included in an area close to the old hospital, that would be converted on a social centre, including an old peoples'



Entry to the new hospital at Val d'Arans.



Side elevation of the new hospital.

home. Personnel and running costs would be optimised in this way, by connecting the buildings.

The design of the building was to be adapted to the requirements of the urban norms of the Val d'Aran. These norms reproduce the Aranese style, typical of most areas of high mountain. The climate had to be taken into account, and so protection against low temperatures and iced surfaces were included.

An important factor to the development of the Programme was to hire a Director, to be a medical doctor with training in critical care. The first task of the director was to implement several urgent measures to improve the quality of the services, and therefore to begin to build a good relationship with the community. The second task of the Director was seen to be participation during the construction in decision-making concerning the details of the building and the functionality. This collaboration has proved to be very positive and has had an immediate consequence of reducing the changes and reforms required to locate the medical equipment. There has also been a very fruitful exchange of ideas.

Construction started in July 1983 and ended in May 1985. The time elapsing from start to finish of the building has been a short one. The health care team have had to work in the new environment and have been hired progressively and incorporated into the activities of the old centre.

Description of the centre

The building has a basement, a ground-floor and two upper floors. The basic distribution is as follows:

- ☐ basement: general and industrial services
- ☐ ground floor: health centre, emergency unit and X-ray
- ☐ 1st floor: surgical bloc, laboratory, rehabilitation and administration
- ☐ 2nd floor: nursing unit

Summary of areas

Land	4.083m²
Built area	4.120m²
— industrial services	1.227m²
— health centre	2.196m²
— hospital	1.297m²

Summary of services

Health care services

1. Health centre — doctors, dentists, nurse, public health
— social worker
2. Hospital — individual rooms, double rooms, four-bed rooms
3. Emergency — Box

Central services

Operating room, delivery room, sterile unit, laboratory, X-ray, physical therapy, morgue

Technical services

Kitchen, pharmacy, laundry, boiler room, maintenance, incinerator, refrigeration, stores, medical gases, bar, power plant, staff changing room, sewage works

Administrative services

Reception, records, offices

Summary of engineering data

Electricity

— power	435Kw
— light	90,3Kw
— power plant	200 KVA

Heating

Three oil boilers

— heat power	540.00 Kcal/h.

Medical gases

Oxygen, nitrogen protoxid, suction, compressed air

Elevating mechanisms

Stretcher lift, elevator, radiography lift

Resumen Espanola

Esptian Val d'Aran

La Val d'Aran es una comarca ubicada en los Pirineos de Catalunya, que sufre grandes problemas de aislamiento debido a las dificultades de acceso, especialmente en invierno por la nieve.

El Programa Sanitario Val d'Aran, se creó para planificar soluciones a los problemas de estas comarcas. Una de sus propuestas que describe el artículo, fué construir un centro sanitario que albergara todas las actividades de promoción de la salud, asistencia primaria y hospitalaria y que estuviera vinculado físicamente con el centro de servicios sociales.

Sommaire Francais

Hôpital Val d'Aran

La Val d'Aran est un endroit situé dans les Pirenées de la Catalogne, que subisse des grands problèmes d'isolement à cause des accés difficiles, spécialement en hiver à cause de la neige.

Le Programe Sanitaire Val d'Aran fût creé pour trouver des solutions à ces problemes. Une des propositions est décrite dans cet article, était de construir un centre sanitaire pour loger toutes les activités de promotion de la santé, soins primaires et soins hôpitalaires, et qu'il était rallié physiquement au-centre de services sociales.

Final considerations

It is worth mentioning that in creating a building that is at the same time a health centre and a hospital, and is connected to a social services centre, is a new idea in our environment. This physical integration goes along with an integrated organisation of the health and social services. Team work is assisted as well as a more comprehensive approach to health promotion and prevention. The doctor can follow a patient from the time that a problem is detected by the nurse or the social worker until the patient is hospitalised. Earlier the general practitioner carried out emergency work at home and the patient was then sent to the hospital if necessary. In future emergency care will be undertaken in the hospital.

The community is becoming accustomed to having their own local services instead of travelling abroad. They are now receiving care that is social, preventive as well as curative, with everything located at the Centre.

The local authorities and the health administration share activities since the complex integrates functions that were previously split between the different organisations. In conclusion, the building has been created to be compatible with the landscape and climatic conditions as well as organising health care in a new way. This is a vital step forward for the people in this mountainous district with its poor communications.

The author in Product Support Manager of Houseman (Burnham) Ltd. He is responsible for external communications. He has recently presented a series of lectures to Environmental Health officers and interested industrial parties on Legionnaires' Disease.

Monitoring and controlling the source of Legionnaires' Disease in cooling water systems

KEITH McGLONE BSc

The recent outbreak of Legionnaires' Disease in Glasgow and the similar occurrences in Reading last year highlight the difficulties encountered by locating the precise source of the infection. *Legionella penumophila*, the previously unknown bacterium causing the disease was only discovered in 1977 after a long and complex investigation.

Since then, sporadic cases of Legionnaires' Disease have been reported in most European countries, North and South America, Africa, Asia and Australasia. They have been a number of well documented cases in the United Kingdom where it is estimated that perhaps one in six adults admitted to hospital with pneumonia has the disease.*

Continued investigation has shown Legionnaires' Disease not to be a rare illness but a relatively common one which, before the first identifiable outbreak in 1976, was mistaken for pneumonia.

The difficulty in tracing the source of any outbreak of Legionnaires' Disease is that the bacterium is a ubiquitous organism that is present in rivers, mud, puddles and other natural collections of water. In these natural environments, concentrations of *Legionella pneumophila* are generally low and contact with the bacterium for example when swallowed whilst swimming in a river, has never been known to result in infection.

It is when Legionella is left to develop in man-made water systems, however, that the concentrations can become dangerous. Industrial cooling systems, humidifiers, domestic water supplies and shower heads have all been found to contain traces of Legionella. The evidence to date suggests that Legionella pneumophila exists in conjunction with other micro-organisms such as algae which may supply some of the bacterium's nutritional requirements. Even with this assistance the bacterium still requires iron and nitrogen based compounds; within industrial cooling systems corrosion products provide the necessary iron and biofouling the necessary organic material.

Research has shown that the only means of infection is by inhalation of fine water spray containing the bacterium; there are no convincing reports of the disease being transmitted from person to person or any other way.

It is for this reason that untreated industrial cooling systems are potential sources of infection; contaminated water spray from cooling towers can be inhaled by anybody in the immediate vicinity. Since most large towns and city centres contain buildings with just this type of cooling system it is obvious that a considerable number of people are potentially at risk.

Several contributory risk factors have been identified including smoking, alcohol consumption and pre-existing disease, particularly of the lower respiratory tract. Men are affected more commonly than women (2:1) and age appears to be an important factor with an increasing risk of Legionella infection during the first six decades of life. All age groups have been affected although few cases have been reported in children.

The source of the recent outbreak of Legionnaires' Disease in Glasgow will not be established immediately, if at all, owing to the complexity of current test methods. It is highly likely, however, that, as in Reading four months ago, a number of sites tested will be found to contain *Legionella pneumophila*.

Experience in dealing with the problems of biofouling over a number of years led to discussions with the Public Health Laboratory Service in 1979 on possible means of controlling *Legionella pneumophila* in cooling systems. An investigation group comprising members of Houseman's Technical Division, the Communicable Disease Surveillance Centre and the Virology Laboratory, John Radcliffe Hospital, Oxford was formed and laboratory work carried out to improve and modify the techniques and media used for the isolation and culture of *Legionella pneumophila*.

Following this a number of possible biocides were formulated and tested in a series of field trials during the summer of 1981.

The principle conclusion of this work was that one specific biocide, Hatacide LP5, had performed satisfactorily and further field trials conducted the following year, with the continued co-operation of the CDSC and John Radcliffe Hospital, provided sufficient additional data to suggest Hatacide LP5 might be effective in controlling *Legionella pneumophila* in contaminated cooling water systems.

Practical experience has highlighted a number of points. The emphasis placed on good housekeeping is undoubtably the correct approach when dealing with domestic/potable water, humidifiers and cooling towers.

Sterilisation of domestic supplies, coupled with chemical cleaning if heavy corrosion or scaling is evident, will eliminate *Legionella pneumophila* although great care must be taken to ensure proper circulation of cleaning and sterilising agents. Subsequent running of systems at storage temperatures of 60°C and distribution at 50°C will discourage re-colonisation. Regular maintenance of showers and the like and use of approved fittings is also to be recommended.

Cooling towers should made use of a complete water treatment programme including corrosion inhibitors, deposit control agents and biocides. Deposits provide roughened surfaces for bacteria to colonise, corrosion can lead to ferric iron in solution, one of the nutrients required by *Legionella pneumophila* and biofouling can provide a wide range of nutrients. It is essential that all aspects of the problem are covered and if necessary a biocide, proven in the field to be effective, should be encorporated in the programme.

Spray washer-type humidifiers should also be approached with a view to minimising corrosion deposition and biofouling through a complete water treatment programme.

In summary the application of the correct waterside chemicals, i.e. those most appropriate to that system, can help in both the elimination and prevention of *Legionella pneumophila*. If this then is coupled with correct engineering practise then the possibility of a Legionnaires' Disease outbreak is greatly reduced.

Comment surveiller et maîtriser la cause de la maladie du légionnaire dans les systèmes d'eaux de refroidissement

La maladie dite du légionnaire, apparentèe à la pneumonie, continue de se manifester à travers le monde, à la fois sous forme épidémique et sporadique, les cas les plus récents s'éetant produits en Angleterre dans la région du Staffordshire.

Depuis 1980, Houseman travaille en collaboration avec les Services de laboratoires de la Santée publique et le Centre de surveillance sur les maladies contagieuses en vue d'une solution pratique pur enrayer la legionella pneumophila dans les systèmes d'eaux derefroidissement.

L'application à proximité des eaux de produits chimiques correctement choisis allant de pair avec des pratique techniques adéquates peut contribuer à la fois à l'élimination et à la prévention de cet organisme.

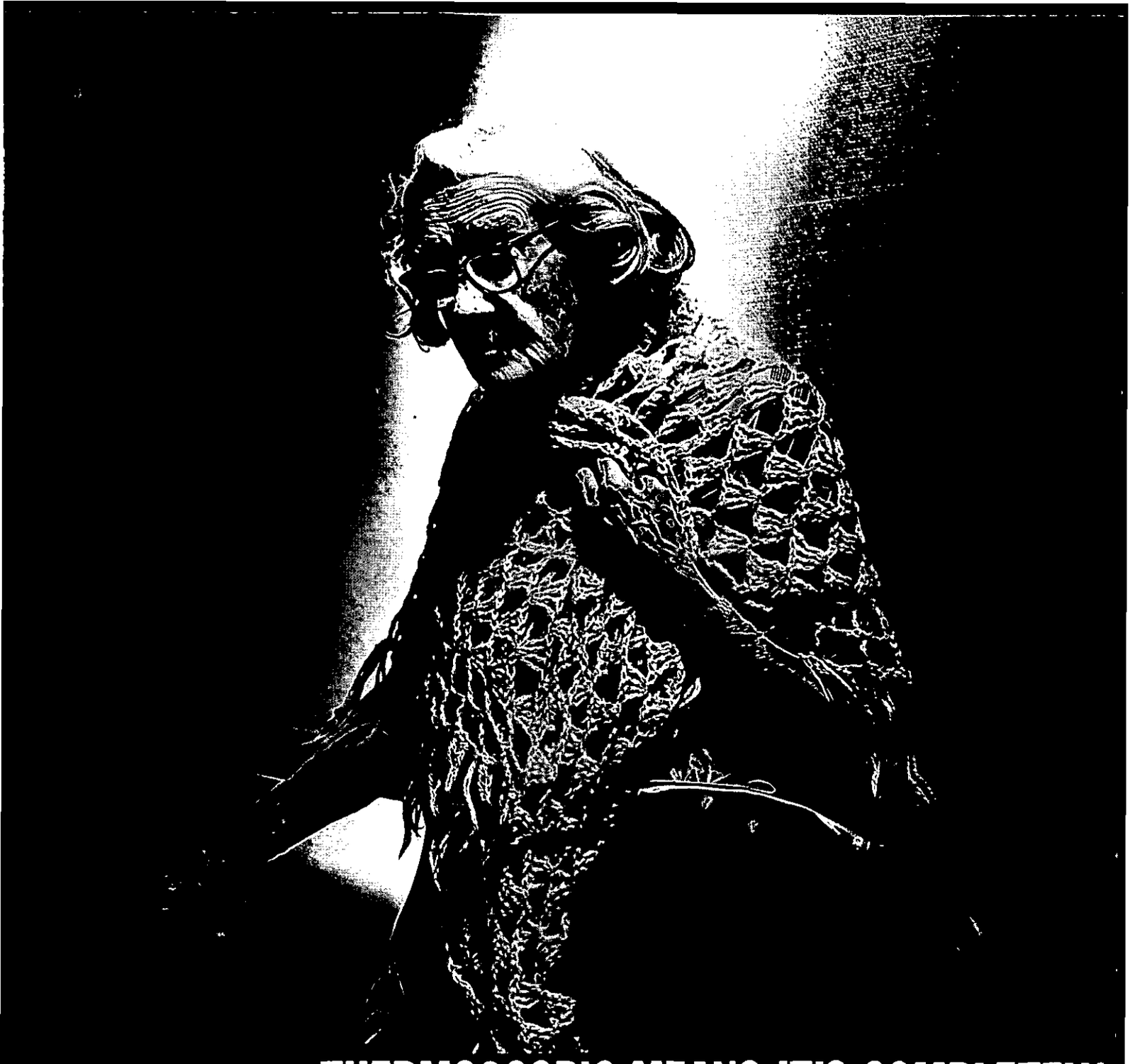
Further information

Legionnaires Disease — its cause and effect. Armstrong J 1982. Building Services Research and Information Association Report 7344.

Minimising the spread of Legionnaires' Disease — A programme designed to prevent incubation of Lp in hospital water and air conditioning sytems. Harper D (1984). Hospital Engineering March 1984 International Federation Issue 49 5-9.

Legionnaires' Disease — An Authoritative UPdate. The Industrial Water Society. One Tolsens Mill, Lichfield St, Fazeley, Tamworth, Staffs.

* *The Practitioner November 1983 Dr J. MacFarlane.*



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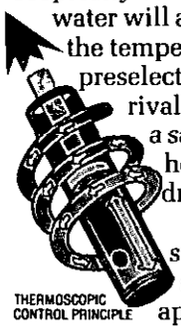
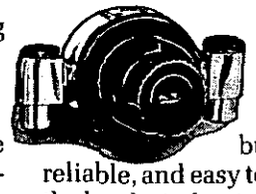


THERMOSCOPIC CONTROL PRINCIPLE



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EESA Computer Appreciation Course

The Electrical and Engineering Staff Association (EESA) is the staff section of the Electrical Electronic Telecommunication Plumbing Union (EETPU). Over the last three years, the Union's Health Service members have highlighted a growing need for works staff to undertake training in the fields of electronics and also the information technologies relevant to the works function. EESA accordingly undertook to organise a Computer Appreciation Course which included a WIMS content to compliment the various electronics courses already on offer.

The computer Appreciation Course took place at the union's Technical Training College at Cudham in Kent during the first week in July. Twelve EESA Representatives undertook this week's training, including PTB Works Officers and Planner Estimators.

On the Wednesday of the course, EESA invited District Works Officers and Unit Works Officers to visit the college both to see the course in progress and to look at the equipment and facilities on offer.

After lunch, the Works Officers were invited to a short seminar led by Robin Cornell, Secretary of EESA's Health Service NAC, Anne Powter, Head of EESA's Administration, and Brian Littlechild, Electronics Lecturer. Training topics discussed were wide ranging. Consideration was given to the developing interface between works and medical psychics resulting from the growth of electronics and the urgent need to develop precise criteria and specifications for tendering in anticipation of legislation requiring Health Authorities to extend the tendering process to include aspects of the works function currently undertaken by contract labourf.

The dramatic growth of the College in the last three years clearly indicates that the value of the specialist technical training offered by the union is recognised by companies, both in the public and private sectors, and by EESA/EETPU members themselves. Following the recent further extension of the college, the Union is now in the position to offer technical training relevant to the needs of Health Service Works Staff.

Further details: Robin Cornell, EESA, Hayes Court, West Common Road, Bromley, Kent BR2 7AU. Telephone: 01-462 7755.

Course in progress with Bill Reid, EESA representative from Somerset RA, operating equipment. Left to right: Robin Cornell, Secretary Health Service NAC, Mr D Birch, DWO from East Herts HA, Mr A Brown, UWO from Barking, Havering and Brentwood HA, Mr A Johnson, DWO, Greenwich HA.

Product News

Legionnaires' Disease

BDH Chemicals Limited has issued a publication, 'Legionnaires Disease — In Perspective' which outlines preventative and remedial treatment of industrial water systems using the BDH biocide 'Panacide' applying dosage levels based on tests carried out at the PHLS Centre for Applied Microbiology and Research at Porton Down. The report from PHLS CAMR confirms that, in vitro, Panacide inhibits 16 strains of Legionella representing the 3 most common serogroups of L.Pneumophila and 13 other species.

Further details: BDH Chemicals Ltd, Broom Road, Poole, Dorset. Telephone (0202) 745520.

New digital image processor

The FP-2C is a new digital image processing system that has been designed specifically for medical X-ray fluoroscopy. The FP-2C is offered in the form of a complete system that can be either used with C-Arm devices or fitted in X-ray fluoroscopy rooms. Two FP-2C systems are being installed at notable hospitals in the UK for evaluation purposes.

Further details: Prostab International Ltd, 36 Longshot Lane Industrial Estate, Bracknell, Berks. RG12 1RL. Telephone: 0344 485951.

Safety for autopsy rooms

Howorth Air Engineering have investigated the aeromicrobiological hazards and odour problems arising at the autopsy table and trimming (cut-up) bench. Their studies of the air flow requirement necessary to remove the hazards and odours have led to the development of a safety autopsy table with controllable exhaust and removable trimming/cut-up bench so that *all* work is carried out within a microbiological safety zone where a positively controlled air flow carries particles and odours away from the user.

Further details: Howorth Air Engineering Limited, Lorne Street, Farnworth, Bolton BL4 7LZ, England. Telephone: Farnworth (0204) 71131.

Hose couplings

New Dyna-Quip Series DH 'Double Shut-Off' Quick Release Hose Couplings is made in 316 grade stainless steel with high resistance Viton seals. Sized G¼ to G1, coil springs in socket and plug shut the valve in each component on disconnection, to seal the line at both ends. The socket sleeve is simply pushed back to engage or release the plug and operating temperatures and pressures are up to 200°C and 300 bar (depending on size). Optional dust caps can be fitted to protect each end when disconnected. The new couplings can be used widely on hydraulic systems and in corrosive environments.

Further details: IMI Norgren Enots Ltd, Norgren Works, Shipston-on-Stour, Warwicks. CV36 4PX. Telephone: 0608 61676.

Decorative window film

SunGard 10 window film more closely meets architectural and client specifications for lighter, more energy efficient films. It comes in natural looking shades of bronze and smoke, with much softer appearance than traditional window films, and allows 100% greater light transmission whilst still offering high performance in solar heat and glare control.

Further details: Bonwyke Ltd, Bonwyke House, 41 Redlands Lane, Fareham, Hants. PO14 1HL. Telephone: (0329) 289621.

Filter for clean room users

A new, factory sealed, HEPA filter ceiling hood launched in the UK by Northumberland based AAF-Ltd, is especially suitable for the health care industry offering clean room users fast, easy installation and cost effective operation. The Astrocel II (type T-M) is disposable so that the time consuming task of removing and re-sealing a conventional cartridge is eliminated.

Further information: AAF-Ltd, Bassington Lane, Cramlington, Northumberland. Telephone 0670 713477.

Institute News

Elected to Council

Andrew Peters, CEng MIMechE FIHospE

After serving his apprenticeship in Mechanical Engineering in his home town of Perth, followed by his National Service in the Royal Air Force and a period in general engineering, Mr Peters joined the NHS in 1956 as Assistant Engineer with the Board of Management for Perthshire General Hospitals.

During the early part of his career he studied engineering at Dundee College of Technology subsequently attaining Membership of the Institution of Mechanical Engineering. He has served at Senior Engineer and Group Engineer level with first East Fife then Greenock Hospitals Boards of Management and then the large Teaching Group of Glasgow Western and Gartnavel Hospitals.

Following re-organisation in 1975 he was appointed to his present post of Area Maintenance Manager for Argyll and Clyde Health Board. He joined the Institute in 1964 and has served as Chairman of the West of Scotland Branch for two periods 1976-77 and 1979-80. His other interests include motoring, badminton, wine making and occasional golf.

C Astley CEng MIMechE MCIBSE FIHospE

C Astley, who is 41 years old, started his career as an apprentice with a mechanical services contracting and equipment firm. From there he joined the West Midlands Regional Health Authority as an Engineering Assistant being subsequently promoted through the ranks to the post of Assistant Regional Engineer in charge of a very large Design Office. In February 1982 he took up his present appointment as Regional Engineer with Oxford Regional Health Authority.

He is particularly concerned with Energy conservation and in 1982 he was invited by the DHSS to be Chairman of AGEM's Working Group 7 — Energy Conservation in Existing Buildings — and he and Working Group 7 are actively involved in producing a strategy for the promotion of energy management throughout the NHS. Mr Astley also serves with the Regional Engineers' Association on a Group looking at training matters.

He has been a member of the Institute since 1971, and 1982 was Chairman of the 5 Branch Meeting.

Colin is married and lives with his wife and two daughters in a small village some twenty miles outside Oxford. His hobbies include rambling, fly-fishing, making his own wine and cooking — particularly chinese meals.

New Publications Committee Chairman

W J Smith BSc (Hons) CEng FIMechE FCIBSE FIHospE MBIM

After obtaining his degree at the University of London, Mr Smith was training in industry as a mechanical engineer. However, fortune smiled and he was diverted at an early age into building services engineering. Through the National College route, he was awarded the Institution of Heating and Ventilating Engineers' First Prize in the examinations of 1956.

Following periods in contracting and consulting, he became a 'poacher turned greemkeeper' when he joined the NHS in London during the expansion in the early 1960's. Considering the NHS the most fascinating and rewarding career for an engineer, he progressed to his present appointment as Regional Engineer, NWRHA in 1974.

Mr Smith has been very active in the Institute's affairs. During his six years as Chairman from 1974 to 1980, the North West Branch blossomed into the largest provincial Branch. The introduction of consulting engineers on to the Committee and manifold increase in average attendance at Branch meetings were features of the period. At the same time, since Mr Smith hates people to take themselves too seriously, he re-established a lively programme of social events.

Without being able to play a note, he still regards classical music as his favourite relaxation followed by caravanning and gardening in ascending order of degrees of backache!

Thank you

Eddie Feasey has moved from Park Prewett Hospital, Basingstoke, to The Mendip Hospitals, Somerset. His thanks to the Southern Branch for so many interesting and friendly meetings, and best wishes for good health for everyone.

Eighteenth Annual General Meeting

Mr L G Hadley, President, presided over the Institute's AGM, held at the Hotel Majestic, Harrogate, on Friday 24th May. Some 60 members were present. After the usual business, the President referred to specific aspects within the Report of Council. He suggested that membership was not increasing at the rate that was hoped for. He also referred to the developing links with the Engineering Council and the Institute of Civil Engineers and the main events of 1984 — the Annual Conference held in Bristol and the four One-day Symposia. The President also spoke of the good relations enjoyed with the Institute's new Publishers, who, nonetheless, felt some concern about the viability of the Journal. In reply to a question from Richard Harrison (Past President) the President clarified the link established with the Institution of Civil Engineers. The President then took the meeting through the Audited Accounts for the financial year ended 31st December 1984. A vote on the proposition to Receive and Approve the Report of Council and Audited Accounts was carried unanimously.

Next on the Agenda was the elections to Council. The President reported that the following would retire from Council:

W N Bewick Nominated Member

K J Eatwell General Member

L R F House Area Member — Southern and South West branches

R J Sear Area Member — West Midlands Branch

H Waugh Area Member — Scotland.

The President referred to the substantial

FORTHCOMING BRANCH MEETINGS

West Midlands Branch: *Hon Sec: W. Turnbull, 3 Rowallan Road, Four Oaks, Sutton Coldfield, West Midlands. TN 021-378 2211 ext 3590.*

11th September 'Laundry Plant Technology' Dudley Road Hospital, Birmingham

Southern Branch: *Hon Sec. A. J. Styles, 11 Rufford Close, Boyatt Wood, Eastleigh, Hants. SO5 4RU. TN Southampton (0703) 777222 ext 4109*

18th September 'Energy Management System', Mr K. Andrews, Queen Alexandra Hospital, Portsmouth.

East Midlands Branch: *Hon Sec: E. A. Hall, E. G. Phillips Son and Partners, 26 Annesley Grove, Nottingham. TN Nottingham (0602) 475783*

21st September Visit to TBF Nottingham Evening Post

Should you wish to attend any of the above meetings, kindly notify the Honorary Branch Secretary by completing the slip below.

ATTENDANCE AT BRANCH MEETINGS

Members who intend attending any particular branch meetings are urged to complete this return slip and send it in to the relevant Branch Honorary Secretary so that anticipated numbers for each meeting are known in advance.

To: The Hon. Secretary,_____Branch

I would like to attend the meeting on _____

Name: _____

Tel. No:_____

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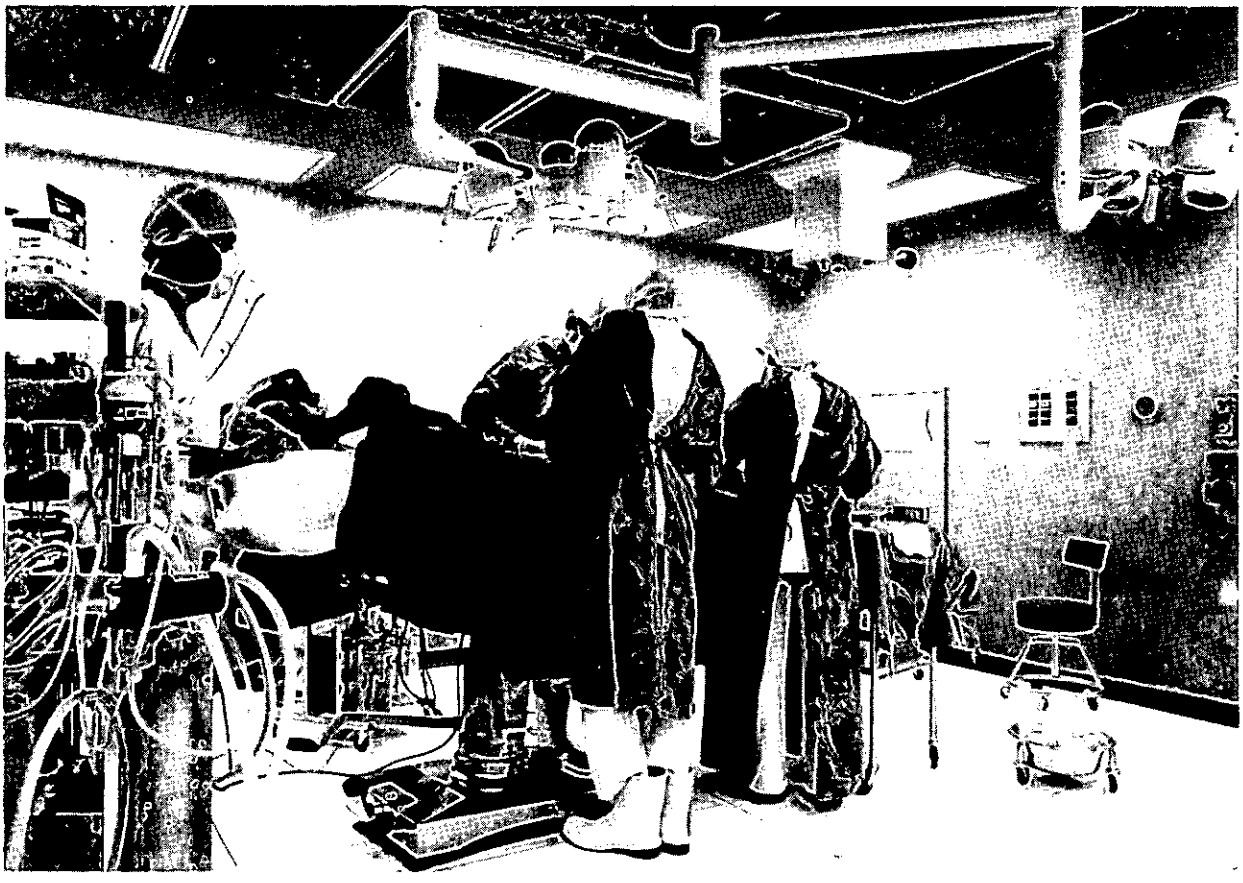

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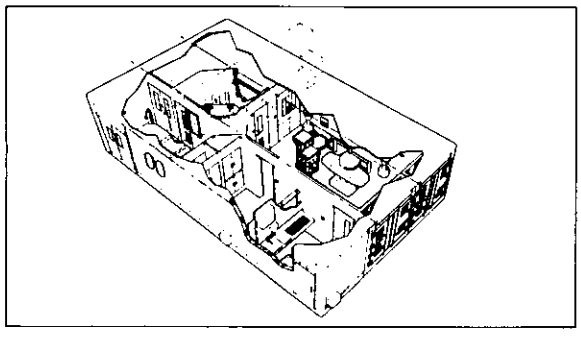

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contributions of W N Bewick, K J Eatwell (18 consecutive years on Council), R J Sear (particularly for all that he had done as Chairman of Council's Publications Committee and Editorial Board) and L R F House and H Waugh, during their six years' service on Council.

He then went on to say that the following were elected unopposed:

B T Rose Nominated Member

R J Chatwin Area Member — West Midlands Branch

A Peters Area Member — Scotland

J H Walker Area Member — Southern and South West Branches

The Secretary, Mr Furness, announced that the successful candidate in the ballot for the vacant General Member on Council was C Astley.

Messrs. Moore, Stephens & Co. were reappointed as Auditors to the Institute.

There being no other ordinary business, the President asked for the meeting's forbearance in allowing him to offer certain remarks. He suggested that conditions, generally, became more onerous each year and as a corollary, the role of the Institute became increasingly vital. He felt that every effort must be made to increase membership both within and without the Health Service.

He also spoke of discussions and negotiations with ICE when, clearly, the Institution had been surprised and impressed with the width of engineering covered by 'hospital engineers'. Turning to the vital role of the Institute's branches, he spoke of their activities. It was disappointing that there were no members of the local branch present at the AGM.

Mr Hadley applauded the success of IHEX '85, organised by Tom Jarvis, his wife and firm, to such a high standard. As an augur of its success, bookings had been made already for IHEX '86 in Portsmouth. The President mentioned the coming retirement of the Institute Secretary, Mr John Furness. He also spoke of Rosemary Flewitt's work, and, in particular the preparations for the Annual Conference and this drew general applause.

Finally, Mr Hadley came to the introduction of his successor, Mr John Bolton. No one involved in the National Health Service was better known to members. Mr Hadley spoke of Mr Bolton's post within the Department of Health. He had been one of the earliest 'engineers' appointed to such a senior office. The President turned to Mr Bolton's 'extra curricula' activities as a School Governor, a Freeman of the City of London, a Liveryman of the Worshipful Company of Fanmakers and his appointment as a Companion of the Bath earlier in the year. Mr Hadley referred, also, to Mr Bolton's Degree in Law and his many engineering qualifications. He then invested Mr Bolton with the Jewel and Chain of Office of the President of the Institute.

Mr Bolton, in reply, said that he viewed his invitation to become President of the Institute as a very great honour and reminded the meeting that he had enjoyed most of his career within the National Health Service, having joined it as a Group Engineer in 1954. He would be retiring at the end of this year, and so the invitation to become President had appeared at an opportune time.

Mr Bolton spoke then of the gratitude owed to Mr Hadley for his contribution to the Institute and of the tremendous and continual support of the Past Presidents. He also paid tribute to the particular contributions to the Institute over the years of Ken Eatwell and Basil Hermon. Mr Bolton then invested Mr Hadley with the Past Presidents' Jewel of Office.

Finally, Mr Bolton said that he could not conclude without making reference to the impending retirement of the Institute Secretary, John Furness, and his contribution over the years. Particularly, he was delighted that the Secretary's wife, Beryl, had made the considerable effort to travel to the Conference Hotel. Regrettably, she had not been well enough to attend the Annual Dinner but numerous delegates and their ladies and, indeed, the Mayor and Mayor's Consort had visited Beryl in her room and all had found her in the most splendid spirits.

The President then concluded this Annual General Meeting.

Job switch

Norman Blezard & Partners are pleased to announce that William Atkinson and Peter Clarke have accepted their invitation to join the Partnership with effect from April 1st 1985. Both Mr Atkinson and Mr Clarke will be based at the Preston Office, but Mr Clarke will have additional responsibility for the Kendal Office.

Legionnaires' Disease

The Industrial Water Society has been overwhelmed with enquiries and orders for their publications on Legionnaires' Disease since the recent Stafford outbreak. This has highlighted the lack of practical information available to engineers from other authoritative sources. The DHSS said that hospital engineers have been advised on precautions to take but the constant flow of demands for IWS guidance from hospitals all over the UK and Ireland indicated that the guidelines had not reached the right people.

The booklet from the IWS — price £5.00 inc. postage — tells you all you need to know about Legionella pneumophila, in particular how to treat and defend your water systems against it. Although the Stafford outbreak may be over, it will inevitably be identified again somewhere else. The intelligent plant engineer in any industry will arm himself with a copy of the ISW 'Legionnaires' Disease — An Authoritative Update'.

All enquiries to: The Industrial Water Society, One Tolson's Mill, Lichfield Street, Fazeley, Tamworth, Staffs. B78 3QB. Tel: 0827 289558.

NEXT MONTH
Special issue on
FIRE PREVENTION
will include papers from the Institute's Symposium in June this year

The Engineering Council

Members elected to the first Engineering Assembly are as follows:

Region 1 Scotland West
CEng RH King, J Lewis, DG McKinlay, AH Stobbs
TEng/Eng Tech DW Fulton, J Strang

Region 2 Scotland East
CEng SC Agnew, RPF Lauder, CA MacArthur, B Malcolm
TEng/Eng Tech RA Laird, J McCann

Region 3 Northern Ireland
CEng GP Blair, WTE Cousins, BW Hogg, PH Reid
TEng/Eng Tech GS Aitken, WR Gordon

Region 4 Northern
CEng BW Atkinson, KH Best, EP Crowdy, DG Gregg
TEng/Eng Tech JG Allison, M Burn

Region 5 North West
CEng CB Cooper, DS Large, LM Maynard, RW Snudden
TEng/Eng Tech S Andrews, DTD Cooper

Region 6 Yorkshire
CEng BFN Briggs, R Corrigan, PG Cranston, DA Taylor
TEng/Eng Tech KC Cousins, G Firth

Region 7 Merseyside & N Wales
CEng B Bernard, GM Crosbie, RA Hughes, EC James
TEng/Eng Tech CJ Elson, J O'Shea

Region 8 South Wales
CEng J Ayles, HA Barker, AW Davies, R Stewartson
TEng/Eng Tech
GD Thomas, WT Wyatt

Region 9 Midlands
TEng/Eng Tech C Crane, R Smith

Region 10 East Midlands
CEng ER Brealey, DH Brown, FI Glen, JB Guy
TEng/Eng Tech G Burke, GS Christie

Region 11 Eastern
CEng H Banham, JL Dumbrell, A Longmuir, ZJ Szembek
TEng/Eng Tech HM Coker, CM Wright

Region 12 Thames Valley
CEng JM Backhouse, CE Blackwell, RM Hand, BME Hill
TEng/Eng Tech M Brian, RJ Ellis

Region 13 Bedford/Oxford
CEng AW Durley, TE James, DR Samson, EH Shaw
TEng/Eng Tech R Burn, ID Dunsby

Region 14 Kent & Sussex
CEng DO Ash, J Heighway, BW Staynes, DJ Wood
TEng/Eng Tech TJ Maskell, WJ Wickham

Region 15 Surrey
TEng/Eng Tech GA Martin *(One vacancy)*

Region 16 Southern
CEng RGW Hathaway, JM Kretschmer, ME Lawrence, JD Sampson
TEng/Eng Tech CH Goom, RA Symons

Region 17 South West
CEng DW James, E Naylor, JJD Richardson, RWE Rowsell
TEng/Eng Tech AGH Batt, JKH Warren

Region 18 Devon & Cornwall
CEng P Carr, JR Corless, CK Kennedy, F Tomlinson
DR Mills, GA Woodford

Region 19 London Central
CEng EP Booth, RC Killick, AMF Palmer, GMJ Williams
TEng/Eng Tech MH Fox, CH Simmons

Young Engineers' Clubs

The Standing Conference on Schools' Science and Technology is sponsoring a network of Young Engineers' Clubs where girls and boys can tackle real projects in a club atmosphere with the help and guidance of practising engineers. The clubs generally meet out-of-school hours and the accent is on young people doing things not simply attending talks. Design and make projects provide a vehicle for learning how engineers work and think. They show how engineering principles and judgement are applied in the design of products and processes. The clubs are predominantly using school or college premises and find these provide adequate workshop, laboratory and meeting room facilities. Many have access to computers. Young Engineers' Clubs should give youngsters a feel for the excitement, challenge and satisfaction of good engineering and help them to discover and assess their own abilities and aptitudes.

SCSST is keen to increase the number of clubs and is prepared to support the creation of new clubs. One factor which may limit the rate of growth is how quickly professional engineers can be identified who will help form and run such clubs. Interested engineers should contact theirlocal SATRO (Science and Technology Regional Organisation) who have close links withe the Engineering Council Regional Organisation.

Contact Stuart Whitefoot, SCSST Development Manager 1 Birdcage Walk, London. Tel: 01-222 7899, Extn. 248.

London Branch news

A paper 'Developments in local handling and combustion equiment' was given at the January meeting of the Institute's London Branch. The author Dr D M Willis, is Chief Industrial Technologist at the Coal Research Establishment of the National Coal Board.

The lecture, which was illustrated by slides, gave details of the various methods employed in transporting, storing and handling solid fuels and ash. Great stress was put upon the need for careful handling to minimise degradation of fuel size, some of the equipment involved being highly sophisticated and therefore costly. Rapid

The one day symposium 'Hospital Water Supplies and Legionnaires' Disease' will be repeated at The Institute of Mechanical Engineers, Birdcage Walk, Westminster SW1 on Wednesday 30th October 1985. Programme exactly as below.

ONE DAY SYMPOSIUM

HOSPITAL WATER SUPPLIES AND LEGIONNNAIRES' DISEASE

Thursday 26 September 1985

The Institute of Marine Engineers, Mark Lane, London EC3

The recent serious outbreak of Legionnaires' Disease has brought the whole subject of Hospital Water Supplies into prominence. This Symposium brings together experts from different aspects of water supplies and together they present a composite picture. Legionnaires' Disease can then be seen against this background.

PROGRAMME

10.00	Coffee
10.30	CHAIRMAN FOR THE DAY and Offical Opening by: JOHN BOLTON ESQ CB, LLB(Hons) Lond, CEng, FICE, FIMechE, Hon FCIBSE (Past President), FInstE, FCIArb, Hon FIPHE, Hon FIHospE FRSA Chief Works Officer and Director General of Works, Department of Health and Social Security
10.40	MICROBIOLOGICAL QUALITY OF WATER IN PLUMBING SYSTEMS Speaker: M. J. GREEN ESQ BSc(Hon), CBiol, MIBiol, MIWES. Thames Water Authority
11.20	INTRODUCTION TO THE ORGANISM Speaker: Dr R. B. FITZGEORGE PhD. Centre of Applied Microbiology and Research Public Health Laboratory Service.
12.00	ENGINEERING SERVICES AND LEGIONNAIRES' DISEASE Speakers: K. G. RUSSELL ESQ MSc, MCIBSE, FIHospE. Principal Professional and Technological Officer. Department of Health and Social Security. B. C. OLIVER ESQ CEng, MIMechE, MInstR, FIHospE. Superintending Engineer. Department of Health and Social Security.
12.40	Lunch
14.00	HOSPITAL EMERGENCY WATER SUPPLIES Speakers: J. M. REAY ESQ CEng, MIMechE, FIHospE. Oxford Regional Health Authority. J. D. MELBOURNE ESQ BE(Chem)(Aust), PhD(Cantab). MELCON Water International.
14.40	HIGH PURITY WATER SUPPLIES FOR SPECIALIST AREAS Speaker: D. J. G McBAIN ESQ BSc, CEng. Elga Ltd.
15.20	FUTURE OF POTABLE WATER SUPPLIES Speaker: F. JONES ESQ. North West Water Authority.
16.00	OPEN FORUM
16.30	Close

NB: Please note that tickets are available ONLY from The Institute of Hospital Engineering (Tel: Portsmouth (0705) 823186).
To: The Secretary, The Institute of Hospital Engineering, 20 Landport Terrace, Southsea, PO1 2RG.

Please send me.....ticket(s) for the ONE DAY SYMPOSIUM entitled 'Hospital Water Supplies and Legionnaires' Disease', to be held on Thursday 26th September 1985.
I enclose £.....to cover the cost.

Ticket to include morning coffee, lunch and VAT.
Member: £46.00. Non Member: £51.75.
No fees will be returned for cancellations (in writing please) received after midday on Thursday 19th September 1985.
VAT Registration No. 339 3963 20

NAME (in capitals please) .....

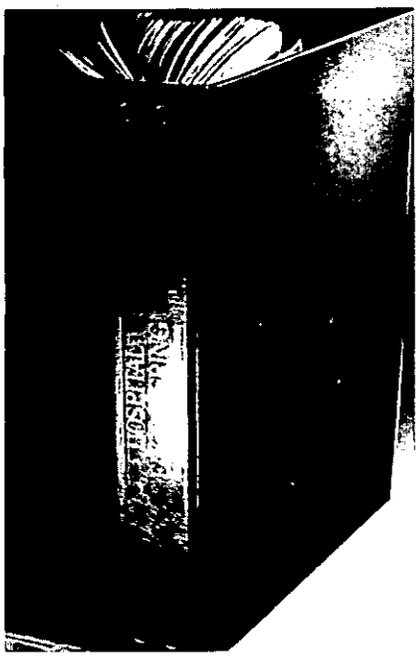
ADDRESS.....

.....

Position .....Non member (please tick).....

increases in land value has brought silo storage to the fore.

There being no British Standard or other guide available on the construction and operation of these units, the NCB has found it necessary to compile a publication detailing construction in either steel or concrete with vitreous lining. This document draws attention to the various stresses to which such structures will be subjected, and the need for care in manufacture. Ash, being a saleable commodity provides a useful contribution to reductions in overall fuel costs. Changes in boiler design, some using vertical firing and dump grates to permit continuous running over long periods, provide a choice to the customer, whilst automatic ignition devices using electricity or gas are now readily available.



Mr W. G. Fuell (DHSS) being introduced to the Mayoress of Harrogate — Cllr Mrs Brenda Tower, by the President, at the Civic Reception given by the Borough at the Institute's recent Conference in Harrogate. (A. H. Singarayer).

Prince of Wales Award

Two scientists working in the field of clinical research have won the 1985 Prince of Wales Award for Industrial Innovation and Production, organised by The Engineering Council, for developing a new technique for measuring blood hormone levels.

Dr John Midgley and Dr Terence Wilkins both work for Amersham International plc, the biological research and health care company. Dr Midgley is responsible for co-ordinating trials in hospitals to test new clinical diagnostic techniques. Dr Wilkins works in the research and development department, leading teams working on the development of blood test kits and carrying out research.

They received the overall winners' trophy from His Royal Highness, The Prince of Wales, at Highgrove House, Gloucestershire, the country home of The Prince and Princes of Wales.

The competition lasts two years. The best new industrial ideas for future wealth creation became the finalists in the first year, and the outright winner is selected in the second year on the basis of progress made with actual production.

Details and application forms for next year's Award will be available in September from the Prince of Wales Award for Industrial Innovation and Production, The Engineering Council, 10 Maltravers Street, London WC2R 3ER.

Association of Consulting Engineers — election of Officers

The following have been elected as officers of the Association of Consulting Engineers for the year 1985-86:
Chairman: Kenneth Wesley Whimster, MA(Cantab) FICE, FIStructE FIWES FIPHE FICArb. *Vice Chairman:* Geoffrey Milson John Williams, MA FEng FICE FIStructE FASCE. *Honorary Treasurer:* Keith Howard Best, OBE BEng FEng FICE FIStructE FIHT FASCE.

Branch Officers 1985/86

Welsh Branch:
Chairman: R. G. Kensett
Hon Treasurer: P. Jackson
Hon Sec: M. J. Back Esq. MIHospE, 10 Nant-y-Felin, Efail Isaf, Nr Pontypridd. CF38 1YY. Assistant Secretary: K. Hopkins

London Branch:
Chairman: W. A. Askew
Hon Treasurer: W. P. Lawrence
Hon Secretary: P. C. Vedast Esq. CIHospE, 59 Oakfield Gardens, Edmonton, London. N18 1NY

West Midlands Branch:
Will members of this Branch please note that the Honorary Secretary is: W. Turnbull Esq., MIHospE, 3 Rowallen Road, Four Oaks, Sutton Coldfield, West Midlands and *not* Mr J. M. Hinckes.

HRH The Prince of Wales presents the trophy to Dr Wilkins (left) and Dr Midgley at Highgate House.

HOSPITAL ENGINEERING INDEX

Volume 38 1984

Bold figures in the reference shows the month (eg '10' is October), the other figure after the stroke shows the page number.

TALKING POINT

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Experience in electrical installations and maintenance of electrical controls air conditioning and refrigeration plants.

SENIOR TECHNICAL OFFICERS
Salary: £17,414 p.a. *Ref. No: VIS/DW/73*
To be responsible for the supervision, installation and maintenance of electrical equipment and institutions and hospitals. Ability to write technical specifications.

FORMAN — STATIC PLANT
Salary: £14,146 p.a. *Ref. No: VIS/DW/75*
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FORMAN — ELECTRICAL CONTROLS
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Experience of operation and maintenance of electronic and electrical hospital and medical equipment essential.

BENEFITS
Three year contract, renewable in most cases. Free married/single accommodation. Six weeks annual leave. Return leave fares once per contract. Generous Education Subsidies.

SALARIES
Salaries are payable in Papua New Guinea Kina. The rate of exchange on 9th September, 1985 was £0.80 = K1.00.

For full details & application forms please write to or telephone Recruitment Department, Papua New Guinea High Commission, 14 Waterloo Place, London SW1R 4AR, quoting the appropriate reference number.
Telephone 01-930 0922. Telex Kundu 2527.

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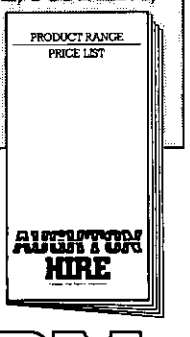

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