Monash University is playing a leading part in Australia's search for knowledge and understanding of its neighbours in South-East Asia. More than 30 graduate students and members of the academic staffs of eight Departments are currently studying aspects of Indonesian, Malaysian, and Indochinese civilizations, ranging from history, art, and language to modern economics, politics, and administration.

Researchers in the various Departments are co-ordinated by the Centre of South-East Asian Studies, an interdisciplinary unit created in 1964 to stimulate and guide studies of that region within the University. Mr. J. A. C. Mackie, Research Director of the Centre, is responsible to a 10-member academic committee, at present chaired by Professor J. D. Legge. Regular seminars attended by researchers from the Departments involved are designed to break down barriers between disciplines and provide the broadest possible base for specialist studies. In other Australian universities such studies are generally planned on a more or less autonomous basis by the individual departments.

Nine of the 27 graduate students currently working on South-East Asian projects are from countries in that region. Most of the projects involve on-site studies which bring the research workers into close contact with the practical realities of life in the developing countries to our north.

Most attention at present is being given to Indonesia. Many current development problems in that country can be traced to sociological, religious, and regional differences based on past events. Thus historical research often helps to explain current administrative, political, and economic problems.

The first thesis to be completed in the Centre concerned the rise and decline of the clove-cigarette industry developed by the Muslim community in the city of Kudus. The project was undertaken by Mr. L. Castles, then a graduate student of the Department of History. He considered that the main reason for the failure of secondary industry to develop in Indonesia has been the absence of a produc-

The research director of the Centre for South-East Asian Studies, Mr. J. A. C. Mackie (left) and Professor J. D. Legge (right) show Dr. Sudjarwo Tjondronegoro, a former Deputy Prime Minister of Indonesia, around the Monash campus.
tion-oriented middle-class lying between the poor, ill-educated, custom-bound peasantry and an upper-class bureaucracy basically satisfied with the existing two-class society and lacking any urgent motivation to seek new economic roles.

The Islamic characteristics of industry, thrift, self-reliance, and acceptance of the sanctity of property, together with the indigenous group's tolerance of commercial activities, could have provided a basis for the rise of a successful, economically-oriented middle class. Indeed, for a brief moment in history there was a strong possibility that such a class would emerge and that Indonesian government might be dominated by Islamic reformist leaders.

The reasons for the decline of the relatively large Kudus cigarette industry are thus significant in explaining why a productive middle class has not emerged in Indonesia. This study has been followed by others including an investigation of the political activities of Indonesian Chinese, and a doctoral thesis on the ideology of the Indonesian Communist Party.

Published works

Major contributions by senior academic staff include a documentary volume, *Indonesian Political Thinking*, by Professor H. Feith and Mr. L. Castles; a biography of Sukarno by Professor J. D. Legge to be published shortly; a study of Indonesia's confrontation of Malaysia by Mr. J. A. C. Mackie; a study of movements of rebellion in South-East Asia, entitled *Region of Revolt*, by Associate Professor M. E. Osborne; and a symposium on the political and economic position of the Indonesian Chinese.

Studies already completed in the Centre demonstrate in no uncertain manner the complex interplay of religion, politics, and economic behaviour in Indonesia. Most of the current projects continue to explore aspects of that nation's highly complex culture which will be of increasing concern to Australia, both strategically and economically, in the years ahead.

While much of the knowledge gained through the Centre's activities will be immediately useful in our current political and commercial relations with the countries of South-East Asia, possibly even more important in the long term is the creation of a nucleus of professional people in Australia who can inform and advise on future policies and business relations in the region.

NOISE AND THE FOETUS

The human foetus develops in a noisy world. Researchers in the Monash Department of Obstetrics and Gynaecology have found that the level of sound in the uterus may reach the equivalent of that from a train or tram.

Sharp increases in the level of sound in the uterus were associated with rises in the foetal heart rate and with increased foetal movement. These and related effects suggest a possible mechanism for the imprinting of external events on the foetus and provide a rationale for the discredited "old wives' tale" that maternal experiences during pregnancy can influence the nature of an unborn child.

A recent study by Japanese scientists of the response to noise of infants living near Osaka International Airport showed that offspring of mothers who had lived in the vicinity during pregnancy were only about one-fifth as sensitive to aircraft noise, as measured by waking and crying, as were infants whose mothers had spent their pregnancy in a quiet environment.

Desiccant beds store heat

Particules of silica gel, the desiccant that stores some 16 times as much heat energy, pound for pound, as that stored by the gravel used in current experimental solar energy installations.

The prospect of using heat from the sun and is closely linked with current research on heat storage and solar energy in that Organization's Division of Mechanical Engineering.

The concepts have been developed by Mr. D. J. Close and Mr. I. L. Macaline-Cross, of the Monash group, and Dr.
by louder internal noises by the time it reached the foetal ear. Only in exceptional circumstances, such for example, as proximity of the mother to aircraft engines, would external sounds become dominant. Nevertheless, outside sound of lower intensity may affect the heart-beat and circulation of the mother and so indirectly raise the sound level within the uterus.

The observations were technically complex and involved a range of sound measurements. In general, both internal and external sounds within the uterus were of low frequency; the foetus was more sensitive to them than to artificially produced high-frequency sounds.

Changes in the foetal heart-rate and the foetal movement occurred in response to stimulation by sound and/or vibration. It was evident that the nervous system of the foetus can be affected by external stimuli, either indirectly through changes induced in the mother's circulatory system or directly.

The effect of the noise environment on the sensory development of the foetus and its resultant lifetime effect on child and adult remain a matter of speculation. Neuro-psychological “imprinting” before birth would bring a new dimension to developmental psychology and possibly explain some of the basic differences in behaviour observed between individuals. The effect of airport noise during pregnancy on post-natal reaction to noise suggest that such imprinting could have very significant practical effects.

The Monash team, comprising Dr. J. C. Grimwade, Mr. D. W. Walker, Professor C. Wood, Miss M. Bartlett, and Miss S. Gordon, carried out their research at the Queen Victoria Hospital, Melbourne. The project was greatly facilitated by the co-operation of sound engineers in the PMG Research Laboratories, who advised on physical aspects and lent complex electronic measuring equipment.

Implications of the team's observations on the level of sound in the uterus and its effect on the foetus have prompted Professor Wood to consider other aspects of life in the womb, especially weightlessness. For here the foetus is suspended in a fluid and thus virtually unaffected by gravity. In this respect, it is comparable to an astronaut in space. Although knowledge of the effect of weightlessness on adults has increased rapidly in recent years, the importance of weightlessness in moulding Man's development prior to birth has largely been ignored. Professor Wood has commented "Man's entry into the world should demand attention at least equal to that given Man's journey into space".

Foetal heart rate

Time (mins)  5 15

A comparison of the sound level in the vicinity of the foetus with levels experienced in the adult environment demonstrates the high level of sound to which the unborn child is exposed.

Below: A tracing of a foetal heart-beat, showing an immediate increase in rate following occurrence of a loud sound outside the mother's body.

The storage of solar heat but also to a wide range of practical situations involving the drying and heating of moist gases, including air, and to dependent industrial operations such as aerating stored wheat and drying various agricultural products.

CSIRO researchers have trapped solar energy and stored it successfully for later use in rock-pile heat sinks. However, these storages are cumbersome and the heat they produce generally costs more than that from conventional energy sources.

Calculation of the transfer of heat to or from air flowing through piles of broken rocks and similar so-called porous media is relatively straightforward. However, moisture is also transferred between the moving air and the storage bed. The two types of transfer interact and their effects sometimes conflict.

Mr. Close discovered that the latent heat of a gravel heat-storage bed increased significantly when moisture was absorbed from the air flowing through it. He and his colleagues then analysed the coupled transfer of heat and moisture and established a general solution based on known heat transfer equations. They later applied the equations to more complex processes.

As no appropriate data were available for gravel, Mr. Close used a silica gel bed as his model. Silica gel, a desiccant, can absorb large quantities of moisture and release it when the temperature and humidity of the surrounding medium reach appropriate levels.

It was soon apparent that silica gel or cheaper desiccant materials may provide a less bulky and more flexible alternative to rock or gravel beds for storing heat. In a typical model system, a dry silica gel bed weighing 5,500 lb had the same heat storage capacity as a gravel bed weighing 90,000 lb.

Such desiccant beds can store solar heat for later use to heat and dehumidify air. A desiccant offers less advantage when heating installations are operated under dry, cold atmospheric conditions which generally prevail during winter in temperate regions. However, such beds could have important applications for drying air in humid, tropical climates where the far higher absorption of atmospheric moisture allows more heat energy to be stored.

An interesting characteristic of desiccant beds is their potential capacity to store heat energy for long periods, with little insulation. They could hold heat for months rather than days and thus offer the theoretical possibility of storing summer heat for winter use. This would, of course, be uneconomic under present conditions. At a cost of $1 a pound (dry), silica gel is obviously too expensive. However, the Monash team is seeking cheaper desiccant media based on hygroscopic salts and common materials. For example, crushed gravel or coke in solutions of lithium chloride have proved effective and are substantially cheaper than silica gel.
Robert Blackwood Hall

Thanks to the generosity of some 2,000 friends of the University and to matching grants from the Victorian and Commonwealth governments, Monash now has a “Great Hall”.

The hall serves as a focal point for academic, teaching and cultural activities within the University and provides for the first time a concert and public hall for communities in the south-eastern suburbs of Melbourne.

The 1,345-seat auditorium is a magnificent setting for activities ranging from academic ceremonies, such as the conferring of degrees, to performances by symphony orchestras. The varying acoustic needs of a wide range of uses are catered for by a specially designed system of movable curtains. An elevated ramp provides access to the stage from the rear of the auditorium.

Associated facilities, which include the adjoining foyer, have a number of potential uses, such as examinations, receptions and exhibitions. The decor of the hall is dominated by a 24ft. diameter stained glass window created by the renowned Victorian artist, Leonard French. Likened to a huge sun, it represents the ceaseless momentum of creation.

The hall was designed by Sir Roy Grounds. His goal was a multi-purpose providing, on the one hand, ideal conditions for speech and, on the other, for orchestral music. At the same time, it had to provide an appropriate atmosphere for ceremonial occasions such as academic processions. Sir Roy achieved these objectives and created a building that must rank among the great university halls of the world.

The hall was opened officially on June 19, by Sir Robert Blackwood after whom it was named. Introducing Sir Robert, the Chancellor, Sir Douglas Menzies, said that the naming of the hall was a worthy recognition of Sir Robert Blackwood’s contribution to the university as Chairman of the Interim Council and first Chancellor of Monash. Under his vigorous leadership, Monash had been developed from a barren site in an impressively short time. From a staff of 57 and a student body of 363 at its opening in 1961, the University had grown to a staff of 2,300 and 11,000 students today.

In opening the Hall, Sir Robert Blackwood stressed the need for a university centre—a meeting place where formal ceremonies could be held, where speakers could expound their scholarship in public, where music, drama and other cultural activities could be indulged in. Such a centre would serve to remind participants of the objects and ideals for which a University existed and of the achievements of those who had gone before.

Furthermore, said Sir Robert, the hall was required to satisfy the intellectual needs of the surrounding community. It would provide a forum for lectures of public interest and to bring music, drama and other cultural activities to the community at large.

After thanking Sir Robert for opening the Hall, the Vice-Chancellor, Dr. J. A. L. Matheson, reviewed some current policies and described the rapid progress of Monash from its beginnings to a world-recognized centre of learning within ten years.

For the future, Dr. Matheson said he expected that further inter-disciplinary centres, similar to the South-East Asian centre described in this issue of Monash, would be developed. Subjects in mind included the neurosciences, environmental studies, and business research.

Dr. Matheson also saw Monash developing as a cultural and intellectual centre for the fast-growing south-eastern sector of Melbourne. “I have a vision of a time when . . . people have formed the habit of coming here regularly, for education, for enlightenment, for interest, and for sheer entertainment.”