

University
Bulletin

November
1970

University in the 1970s

by the Minister for Education, Taita Towett

Electronics and
the journalist

by J. E. Petersen

page 5

A big future
for tilapia ?

An interview with
Prof. M. Hyder

page 21

Vacation factory

by Prof. W. B. Palmer

page 9

UNIVERSITY BULLETIN

is published by the University of Nairobi. It is intended to serve as a link between our various departments and between the university and the people of Kenya. We further hope that our many friends overseas through the Bulletin may find it more easy to keep track of our development plans and our aspirations.

No. 1378

19.4.71

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The University Bulletin is published three times a year by the University of Nairobi, P.O. Box 30197, Nairobi, Kenya.

Phone 27441 ext. 244. Cables: "Bulletin, Varsity, Nairobi."

Price: KShs. 3.50 or KShs. 10.00 yearly plus postage.

THE UNIVERSITY IN THE 1970s

by **Hon. TAITA TOWETT**

Minister for Education

The topic "The University in the 1970's is wide; it is just as wide as the decade — 1970 to 1979 — itself, but this does not stop me from contributing to your quarterly bulletin about the affairs of the University; it, in fact, encourages me.

One cannot write on the University in the 1970's in isolation; one can only write effectively on this topic when one reflects on the University in the 1960's. Was there a University in the 1960's? What a vague question! Of course there was, and if one is thinking in terms of East Africa, there was the University of East Africa with three constituent Colleges: Makerere University College, University College Nairobi, and University College Dar es Salaam. Thus in the 1960's a topic of this nature would have meant someone writing on the University of East Africa, and intimately associating this University with the East African Community.

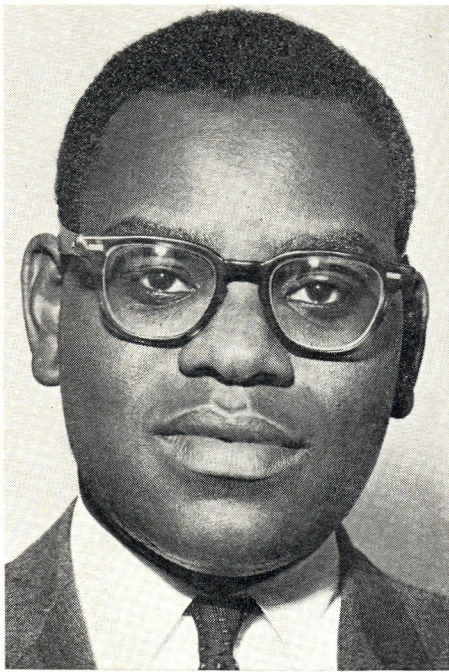
The University in the 1970's is different from the University in the 1960's for as we know a National University — the University of Nairobi — has been born. This means, in the 1970's, the University of East Africa will disintegrate to give room to National Universities, one in each of the three East African countries.

For us in Kenya the 1970's would see Nairobi having grown, and developed, from the Royal Technical College of the late 1950's through the Royal College Nairobi/Nairobi University College of the 1960's. This in itself is gratifying.

With the above introductory remarks, I may now write something about the University in 1970's. I view the University of the 1970's as



*The Chancellor of the
University of Nairobi,
Mzee Jomo Kenyatta.*



The Vice-Chancellor, Dr. J. N. Karanja

THE UNIVERSITY IN THE 1970s

indeed a National University capable of accomplishing among other things, the following:

- 1) producing properly trained personnel to help develop this nation;
- 2) developing and preserving a national culture;
- 3) giving a new image to Kenya in the world of higher learning;
- 4) associating itself fully with developments in other Universities in the world;
- 5) enjoying, increasingly, academic freedom.

This University will be a much expanded institution of indeed higher learning. It will be expanded both faculty-wise and student enrolment-wise. In our 1970-74 Development Plan it is projected that in 1973/74 the University of Nairobi will enrol well over 3,400 students. This will almost be double the enrolment in 1968/69. Assuming that the enrolment doubles itself during the subsequent five years, there will be almost 6,000-7,000 students at the University by the turn of the decade. What a large population concentrated on one spot. This reminds me of the moderate American Universities.

That the student enrolment will number 6,000 to 7,000 is important to note. These are many good brains and mouths in an institution. The total of thinking will be increased and perhaps better, and they will speak wisdom. As such, I feel, they will contribute largely to the smooth running of the University. The students will play an increasing role in the administration of their own affairs, and assist the University administrators in the overall administration of the University. Recognizing that the 1970's equate themselves with the establishment of the local University the students will be charged with the responsibility of assisting



President Kenyatta conferring degrees at the graduation ceremony at Nairobi University College in September last year. On his left is Dr. A. T. Porter, who was then college principal.

the University administration in creating a tradition for the University. Of course, a University without a tradition is like a tree without roots — if such a tree existed.

Presently I see the University of the 1970's as consisting of active students pressing for more and more students power, but being less rebellious. I see the students as being more co-operative with the Government and assisting in developing a National culture. The 1970's will see students evolve a national spirit coupled with initiative. Students will travel to rural areas and help organise the populace there; they will voluntarily run evening and night classes

and thereby give proper education to students attending Harambee Schools; they will also run literacy classes. I can see students of the 1970's spending less time in night clubs, but spending more time in doing goodwill jobs and creating a national culture. The University of the 70's will graduate nationals — national scientists, national philosophers, national engineers, national historians, and national of everything.

I should not be understood as saying that these graduates will be narrow-minded; no, in fact, they will be broad minded. Such are the people who will lead this country — as politicians, educators, scientists,

THE UNIVERSITY IN THE 1970s

administrators. To produce these highly educated nationals, — the leaders of the future — the teaching curricula at the University will have to be modified and build on a Kenyan foundation.

I have this to mention in connection with women students. There will be more women enrolled in the 1970's. More women will be forthcoming for science-based courses. I believe there will be several (perhaps many) women enrolled in the faculty of engineering by the end of this decade.

Mathematics and science will increasingly become key-subjects in the University of the 70's. All students will want to acquire a working knowledge of maths and science. Coupled with these two subjects computer education will be desirable in the 1970's.

So far the University has played little role in national sports. I believe in the 70's the local Univer-

sity will contribute immensely in this field. The Kenya national teams to commonwealth Games and Olympics will include a large section of students from our University. This is what I term progress. Thus students will descend from their apparent present ivory tower and face the realities of life by competing, in the spirit of the games, against the unsophisticated ones.

Just before I make a summary of the University of the 1970's, as I see it, I should point out that what I have written above sounds like a dream — the sort of writing one meets in George Orwell's books. But, I believe, judging from the current developments in the world at large, there is some substance in it.

To summarise, the University (of Kenya/Nairobi) of the 1970's will:

Continued on page 36



Dr. Waldheim, former Austrian Minister of Foreign Affairs, who visited Kenya as his country's roving Ambassador, hands over to Dr. Karanja a letter from the Chancellor of the University of Vienna congratulating the new-born University of Nairobi. Looking on is Austria's Ambassador to Kenya, Dr. F. Kudernatsch, and the Austrian Press Attaché (partly hidden), Mr. K. Hampe.

E: L. E.: C.: T: R.: O. N: I.: C. S

On April 24th the Honourable Kenyan Ministers for Education and Information, Mr. Taita Arap Towett and Mr. Jeremiah Nyagah, inaugurated Kenya's new School of Journalism at the University. The School offers a two-year diploma course to nationals from the three East African countries, Zambia, Malawi, Botswana, Lesotho, Swaziland, Sudan, Ethiopia and Somalia. At the moment the School has 29 students from eight countries. The Vice-Chancellor of the University is chairman ex officio of the School's board. Other members are from the staff of the University, from the governments of the three East African countries and from the Press and the VOK.

by
J. E. PETERSEN

and the journalist

The profession is divided on the question of schools of journalism, especially within the British Press. Many reporters and editors feel training is done best on the job. Most professionals of this opinion were themselves trained this way.

But in a number of countries like the Scandinavian nations, Germany, France, the Soviet Union, India and the United States it has been realised that most journalists need the general knowledge background only a university-based school can offer.

Some newspapers believe it to their advantage to run their own training programmes. And it is. The question is whether it is to the advantage of the trainees to be thoroughly indoctrinated with the views of one paper or one group of papers.

Journalists were once mainly concerned with writing for newspapers and magazines. Today this

is no longer true. Journalism has been extended to cover all fields of so-called mass communication. The world's best broadcasters, television producers and public relations officers — and some of its outstanding film-makers — all started with a journalistic background.

Today's philosopher is a specialist. He concentrates to a large extent on detail. His writings are for other philosophers. He has his own professional jargon, not easily understood by others whether they be ordinary men or scientists in other fields.

Up to the Middle Ages the philosopher was supposed to know all sciences. On the basis of his own knowledge he expressed ideas governing the making of states. Today we know he knew very little. The modern journalist has to some extent taken over his role.

The journalist must be able to communicate with and to all people. He must be able to translate the ideas of, for example, engineers, doctors, scientists and philosophers into a language understandable by all. Thirty years ago it was the aim of the European journalist, at least most of them, to communicate only to the ordinary man. Today he must communicate in such a way that professionals on the higher steps of the intellectual ladder do not get bored by his obvious concern for "the common man". For during the last thirty years "professional vernaculars" have developed to the extent of isolating various professional groups from each other.

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There are two outstanding signs of the technocratic development: the large rise in professional periodicals and the birth of large circulation weeklies like "Time Magazine", "Newsweek". "I Express" and "Der Spiegel". A circulation breakdown of the four magazines mentioned clearly shows them to be read by intellectuals generally — including of course a large number of people connected with institutions of higher learning — and a large number of "ordinary people"; the term understood to cover all "non-intellectuals" in the broadest sense. A few international newspapers, that is with readership across frontiers, achieve the same aims as the weeklies mentioned. They include "The Times". "The Guardian", "Le Monde", "New York Times", "Neue Zürcher Zeitung", "Frankfurter Allgemeine Zeitung" and, perhaps, "The Washington Post".

Readers of the publications mentioned above will have noted they are mostly written by specialists. In other words each group of subjects covered has its own editorial staff. But specialists are only valuable if they have an all-round background making it possible for them to evaluate the pieces of news,

their commentary in its overall context. And a balance may be struck only if the journalists in charge of the publications have the overall knowledge to weigh what is being published, that is, to give priority to the type of news which slowly attracts buyers to the publication's editorial and other policies.

The same balancing ability is demanded of broadcasters and television producers.

In some countries journalists are ordinary college graduates who join the media. Their field of communication tends, due to their purely academic training, to be restricted to the few. They may be first class in communicating to specialists within their own field. But they have difficulty in reaching the common man. Some publications employ rewriters to "translate" their copy.

The best results in the training of journalists are therefore achieved by schools where all-round journalistic professionals work hand in hand with academic professionals.

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When discussing a school of journalism in an African country, one may ask where does the more sophisticated experiences of the media in the industrialised part of the world enter the picture?

First of all the general pattern is to a certain extent the same. Groups of technocrats are forming, as opposed to "the common man". Enlightened African leaders have long realised this. The role of the African communicator is, therefore, essentially the same as his colleague in the industrialised country. He must communicate — both ways — between the specialist and the ordinary citizen. But "communication" alone is of course not the answer. Broadcasts must be listened to, television watched, newspapers sold and ministerial information handouts read. Journalistic success in all these fields is highly dependent on a talent for making

and the journalist

information in the broadest sense meaningful to the largest possible number of people.

It must also be kept in mind that African countries in many cases have inherited a media structure from an European source.

You cannot, in other words, base a school of journalism on a number of nice theories void of any connection whatsoever to the realities of the countries concerned.

Generally speaking, the smaller a media is the more it tends to a certain conservatism. The medium-sized papers of the industrialised countries, mentioned at the beginning of this article, are the most conservative in their professional approach. This does not mean they cannot, for example, editorially pursue labour policies.

All media between the Sahara and the Zambezi fall into the group of the "small media". It will take years before they can afford large specialised groups dealing with one specific subject, e.g. agriculture or foreign affairs.

This puts emphasis on the demand for an all-round training for journalists who are going to serve such media.

The future African journalist must know how to handle his language properly in order to make his communication attractive to the largest possible number of people. He (she) must know how to concentrate his information in competition with hundreds of other news items. He must have a general knowledge background enabling him to work on assign-

ments in various fields. His outlook must be sufficiently broad for him to detect errors in news sources. Recently "Newsweek" reported a British MP having been elected with a 91 per cent majority. It was untrue. "Newsweek's" correspondent was referring to the percentage of the poll. Actually the person in question was elected with a 53 per cent majority. If "Newsweek" on its desk that day had had somebody familiar with British election procedures his scepticism would have been aroused and he would have ordered a re-check.

African leaders often complain of "a bad Press overseas". But they don't have a worse Press — in most cases — than statesmen all over the world.

It is only that the correspondent reporting from here often has a scanty general knowledge background of Africa. But he cannot be replaced, because there is as yet nobody to replace him. The "bad Press" image may also be created because different groups in different societies react differently to the same story.

Further it is not sufficient for the African journalist to be well trained in any one mass media field. The market for his talents is limited and therefore he must be able to join other media. It must be part of his training to know about cameras and microphones, about the editing of tapes and films.

Our school at the University of Nairobi will neither make the journalist into a professional broadcaster nor an experienced film producer. But in the fields of African History, Government, Law, Agriculture, African Literature, Local Government, Adult Education, etc. — to mention very few of the fields touched by the new school — he must know what

ELECTRONICS and the journalist

the media are all about. He must have sufficient knowledge to carry on on his own — just like his well trained colleague from an industrialised country.

His technical production knowledge must be sufficient for him to start his own publication if he so wishes.

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Literacy slowly makes people more and more sophisticated. Citizens of countries with a long mass media tradition may be expected to accept a more sophisticated news coverage than citizens of countries where the ability to read and write is comparatively new and may not embrace the entire population.

Thus the African journalist faces a situation where his profession may become the single most important factor in adult education. By applying his skills to adult education he may spearhead a mass movement. He will be the only member of his society knowing exactly how to communicate in a lively way to most groups, as well as to specialised groups, provoking attention, fostering co-operation between politicians, technocrats and the public.

But in slowly changing the slightly conservative and provincial pattern of most existing media lies his greatest challenge. He must thoroughly understand the new possibilities in mass communication created by the electronic industry. Nobody would dream of suggesting that because the East African countries industrially are in a phase of development, East African Airways should not fly jets, but instead propeller planes from the thirties. Likewise there is no reason why Africa in the various fields of mass communication should not prepare itself for adopting the most modern and far reaching technical methods.

The journalist, of course, is not expected to be able to repair a cassette colour television set. But he must be able to evaluate its advantages compared to other technical possibilities, e.g. the television set with the built-in, fully computerised teleprinter.

Take, as an example, the discussion on how to make Kiswahili the national language of Kenya. The educationalists will be able to budget traditionally for a transformation of the language structure. The journalist must be able to evaluate the feasibility of such a budget. Then he must be prepared to submit his own suggestions.

He could, for example suggest the buying of 500-1,000 cassette colour television sets. All they need is electricity. They could run on generators, so they are not even dependent on electrical current being installed. You put your cassette into the set, switch it on — and you have "colour-television".

If the journalists and the educationalists were to work together, 30 to 50 films, say, could be made covering the basic needs for training in Kiswahili. Without the need for any skill other than the ability to turn a switch and a knob, instruction could begin. One Kiswahili teacher could, theoretically, cover the entire country. To build ordinary television transmitters would probably be far too costly.

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There are several advantages of using cassette television in education instead of the ordinary 16mm movie projector. In the evening the set may capture ordinary black and white television if within reach of a transmitter. It is also much more easy to handle. In the long run it will be cheaper. It does not require skilled operators. It is ready the moment the

Continued on page 36

VACATION FACTORY

by Prof. W. B. PALMER

Once again twenty students have been at work during this long vacation in the Department of Mechanical Engineering producing science equipment for schools, other departments, and steel furniture for the College. The first 'vacation factory' was operated in 1969. In this effort 18 students in 10 weeks produced about £10,000 worth (at catalogue prices) of science equipment for schools and some office equipment such as waste paper bins, stationery racks, and card index cabinets for the College stores.

This isn't a normal sort of activity for a University Department and it demands extra effort on the part of technical and academic staff. There must therefore



Prof. W.B. Palmer and some of the students responsible for the productive effort in 1969, with examples of the Boyle's Law apparatus which was produced.

be some good reason for doing it. The faculty policy is that students should obtain relevant employment during the vacation, but the number of places available in mechanical engineering has never kept pace with the number of students, and the worst feature of all is that it is just about impossible to obtain basic workshop training. The faculty has plans for the eventual solution of this problem, but in the meantime the Department of Mechanical Engineering decided to do what it could to fill the gap.

There are no funds to cover this activity and so the vacation factory had got to pay its way. The College Council provided a loan of £3500 to cover

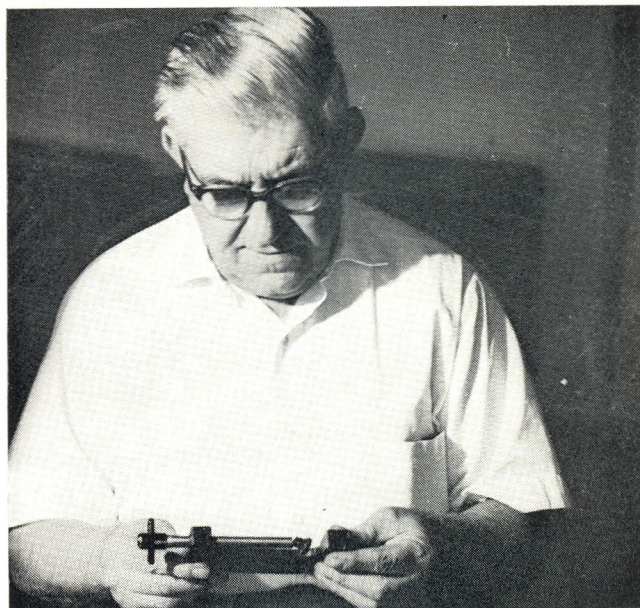
Vacation factory

expenditure on raw materials, components, and students salaries until such time as the products could be sold. The production programme for 1969 was drawn up in consultation with K.I.E., The Kenya Science Teachers College, the Ministry of Education and others and items that would be required for the new Nuffield physics syllabus were chosen for manufacture. Such things as a Ray Optics Kit, compact light source, Butchart balance, Boyle's low apparatus, and friction kit were redesigned for production in our own workshops.

The department is proud that in this first effort the basic production objectives were met, so that the prices, which had been set upon the products, would just cover the costs and provide schools with equipment at cut prices. This was to the credit of Dr. Hrabovec who led the planning team, the Chief Technician Mr. Glasspell, and all members of the technical staff who contributed day by day to this success as well as the students. It was satisfying to think of the equipment going out to schools to help in the education of the next generation of students, and a new confidence was born.

Then there was trouble. It is not easy to carry out a commercial operation with the scattered schools of Kenya, but worse still the major item of equipment was held up by the non-delivery of a small component from abroad, and this inhibited our commercial efforts. The months dragged by in spite of an order for airmail delivery and it wasn't until April of this year that the components arrived and commercial operations could start again. All this was worrying, but the prospect of clearing the stock and covering the costs of this first year of operation is now good.

Meanwhile plans had to go ahead for 1970 and we had learnt some commercial lessons. Some production had to be diverted to a market where the



Mr. M. Ardizio, Senior Technician, inspecting the work of some of the students.

turn over would be quicker, and consequently about half the production programme was based upon furniture and equipment for the College. The other half consisted of a new range of science equipment for schools, but this time we were careful to avoid items that depended heavily upon components. At the time of writing the 1970 factory had just opened and so it was too early to congratulate ourselves, but we aim to be able to look our creditors in the face by the end of the year.

It is not intended that the vacation factory should be a permanent feature of the department. The faculty plan envisages a proper training workshop associated with the faculty, capable of taking 60 students at a time, and working 12 months of the year. Without such intense financial pressure training needs should be given priority over production objectives, but we believe it is an important element of training to make useful things and it helps to cover the cost. We hope that the trade-mark "Made by Engineering Students in Training" will become common in East Africa, and that the College will be proud of it.

Highway and Traffic Engineering as a subject forms an integral part of the studies for the Bachelor of Science degree in Civil Engineering, at the University of Nairobi. The scope of the subject is related to the following aspects;

- (1) Traffic studies, data collection and analysis
- (2) Highway planning and design
- (3) Materials, pavement studies and construction
- (4) Highway maintenance

Some of the students during the final year at study, undertake detailed investigation of specific problems, in the form of Project Studies. These are related to local problems. These investigations yield useful results. A list of projects is shown in the Appendix. Some of these studies define the need for postgraduate research and form a basis for further work.

The emphasis has been put on research studies connected with the most pressing local problems. Short term studies carried out over a period of at least two years, lead to a higher degree in Civil Engineering. A list of the research projects is shown in the Appendix and some of the recent work is described below.

Swelling soils, i.e. the soils which exhibit volume changes due to the changes in the moisture regime, as a result of the environmental conditions, are known to present considerable problems in Civil Engineering construction. Moisture variations in such soils lead to swelling and shrinkage and result in differential heaving. Structures erected on these soils often suffer considerable damage. Unless suitable and often ex-

pensive measures are adopted as a precaution, roads built on these soils suffer distortion and loss of strength. The problem of identifying expansive soils and assessing the degree of expansion has been examined. The local Black Cotton Soil is known to be a highly expansive clay. Its swelling characteristics have been studied under controlled conditions of confinement.

It is recognized that the future development in the rural areas of Kenya would impose a heavier

traffic load on the network of roads. The various factors which affect the generation of traffic and the pattern of its distribution in the rural areas have been investigated. In a study of this nature, a comparison with the results of similar studies carried out in other countries shows that the local factors play an important role and the results of the other studies are not directly applicable.

Rapid growth of urban centres in the immediate future, e.g. City of Nairobi, is presenting special problems to Town Planners, Architects, Economists and Civil Engineers. The planning of a comprehensive transportation system for a growth urban complex, which would not only satisfy the present demands, but also meet the requirements of the private, public and industrial traffic of the future; is a complicated assignment. The relational parameters which govern the planning process are fixed in terms of the land-use format of the area of study. Any changes in the proposed future land-use pattern of the area, alter the various parameters, with consequent effects upon the planned future transportation network. In view of this the fundamental factors which relate land-use,

Research studies in highway and traffic engineering

by B. S. BHOGAL

Research studies in highway and traffic engineering

economic activity, and population intensity to the traffic growth and traffic mode, are now being investigated.

The ability of a road to adequately carry wheel loads and the anticipated repetitions of wheel loads during the design life of generally 20 to 25 years from the date of construction; is assessed in terms of the deformation which the road suffers under each passage of the wheel load. A part of this deformation is permanent and the rest is recoverable deformation which is called elastic deformation in the engineering terminology. For a wheel load of particular magnitude and configuration, the ratio of permanent to elastic deformation is a function of the strength of the road bed and engineering properties of the materials which make up the construction. Various other environmental factors such as moisture regime of the road bed, temperature variations, type of road shoulders and the closeness of the wheel load to the edge of the road come into the picture. One of the methods of studying a problem of such complexity is to carry out periodic measurements on a pre-selected section of a road, over a reasonably long period of time. Deflection measurements and ancillary studies of the engineering properties of local soils and other materials have now been in progress for the last eighteen months. For a complete analysis it would be essential to relate these to the composition and type of wheel loads imposed by vehicular traffic.

In order to realise full benefit of research studies, especially in a case where the environmental factors such as the local climate play an important role, it is

essential that the research programme should extend over a long period. One such project has been undertaken in conjunction with the Research Laboratory of United Kingdom, as a part of the studies throughout the Commonwealth.

Civil Engineers are generally aware of the effect of temperature variations on the strength characteristics of various materials. However the quantitative data for a particular case is often lacking and this hampers a rational evaluation of the loss in strength of the structure. In the case of a road bed the effects of temperature variations on the moisture movements create further complications.

An experimental road embankment has been constructed on a relatively flat, fully exposed open site, near the Wilson Aerodrome. It is proposed to construct sections of various types of pavements on the embankment. The sections will be instrumented to obtain a continuous record of temperature and moisture variations. To correlate these changes to the strength characteristics of materials, laboratory research work has been initiated to study the stress-strain properties of some of the East African soils and rocks. Most of these soils belong to the group "Tropical Lateritic Soils". The tropical soils have been receiving greater attention in recent years from research workers in other countries. "The problem soils of Africa" is the subject of a major research project which is currently being carried out in West Africa and has been sponsored by the United States Agency for International Development.

The resources of the Department of Civil Engineering are obviously limited in terms of involvement in many comprehensive research programmes. On account of this, it has been necessary to consider the subjects for research in some order of priority. The studies have been initiated with the approval of the Engineer-in-Chief, Ministry of Works, Kenya, Chief Materials Engineer, Materials Branch, Ministry of Works, Kenya, and the City Engineer, City Council of Nairobi. Some of the projects are being carried out in conjunction with the Road Research Laboratory of the United Kingdom.

Professional courses

The Tropical Section of the Road Research Laboratory of United Kingdom has been actively engaged in research work in various Commonwealth countries for a number of years. Short courses for Professional Engineers, covering recent developments in various aspects of road design, construction and maintenance have been organised by the Department in conjunction with the Road Research Laboratory. These courses have helped in defining the areas of immediate interest for further research.

The financial support received from the Ministry of Overseas Development of United Kingdom and the University of Nairobi is gratefully acknowledged. The co-operation given by the Road Research Laboratory of United Kingdom and the equipment provided for long-term research is very much appreciated.

1. Study of the pedestrian crossing on the Uhuru Highway at the University Way Roundabout and its influence on the traffic flow.
2. Capacity of roundabouts.
3. Study of the swelling characteristics of Black Cotton Soil.
4. Study of the effect of soil plasticity on the California Bearing Ratio for some of the local soils.

1966/67;

1. Study of the loss of stability of an expansive soil at various stages of expansion.
2. Investigation of the variation of strength with age for a local soil stabilized with lime.
3. Study of the requirements for bituminous mixes for airfields in East Africa and the design of a bituminous mix for airfield pavement for a large jet aircraft.
4. Parking survey of the campus of the University College Nairobi and the fringe areas, and the design recommendations to accommodate future developments.
5. Planning and design of Kenyatta Highway extensions in the Municipality of Thika.

1967/68;

1. Deflection studies on the Slip Road at the junction of the Uhuru Highway and University Way.

Research studies in highway and traffic engineering

2. Speed and traffic flow studies on a section of the Uhuru Highway and the investigation of the flow, capacity and delay relationships and recommendations for future improvements to traffic flow.
3. A study of the traffic flow in the Central Business District of Nairobi and the recommendations for the improvements to the flow of traffic and parking facilities.

1968/69:

1. A study of the temperature variations in pavement layers under the East African climatic conditions.
2. An investigation of the relationship between land-use and traffic generation in the City of Nairobi.
3. A study of the compaction characteristics of bituminous mixes with the aid of Asphalt paving meter.
4. An investigation of the use of Reynolds Soil Packer as a surface binder and stabilizer for roads.
5. A study of the skid resistance characteristics of the bituminous surfacing on the Uhuru Highway.

1969/70:

1. A study of the traffic flow, parking, land-use and employment in the Central Area of Nairobi.
2. Strength evaluation in relation to stress-strain characteristics of local soils.
3. A study of temperature and moisture variations in a road bed.

Research Projects

1965/66:

1. A study of the swelling characteristics of expansive soils under controlled conditions of lateral and vertical confinement.
2. Road traffic generation and distribution in the rural areas of Kenya.

1967/70

1. Land-use studies in relation to the transportation planning for a growing urban complex in East Africa.
2. Deflection studies of some of the road pavements in East Africa.
3. A study of the effects of temperature variations in pavement layers and the influence on the strength characteristics under local climatic conditions.
4. Pavement evaluation studies in relation to stress — strain characteristics.

Courses

1965:

Symposium on the Transport Planning in East Africa.

1966:

Course on road design, construction and maintenance.

1969:

Course on road design, construction and maintenance.

A START IS MADE ON UNIVERSITY'S POOL

Getting into the swim

by JOSEPH NDUNG'U

When the students resumed studies for the first term of 1970/71, they found the area below Halls 1 and 2 in a mess. This is where the swimming pool, donated to the University of Nairobi by His Highness the Aga Khan, and the new catering unit are under construction.

Our students in the past have depended on outside swimming pools, particularly the neighbouring one belonging to the Y.M.C.A. Recently we interviewed Mr. Finn Poulsen, the University's Resident Architect, who is designing the pool, and asked him what kind of a pool we are going to have.

He said, "His Highness the Aga Khan has donated the money for an international size pool i.e. 50m by 21m. It will enable the university to host full-sized international teams for swimming competitions."

He felt that the construction of the pool could be phased-out in more than one way. "We may either make a shallow basic swimming pool to which a diving pool could be added later or we may all at once develop all the necessary facilities," he said.

But Mr. Poulsen explained: "We are going ahead with the more detailed plan, but some financial problems are not yet solved, and it is not possible for me to finalise the drawing until we know exactly the amount of money available."

About the administration of the pool, Mr. Poulsen said that it was not his business, but he thought the university should make a sort of a club which could run the pool. "Anybody who wants to use the pool must then be a member. Of course, the students should not pay much, but on the other hand, it is only fair that they pay their share. After all, swimming will be perhaps the most expensive and difficult sport to administer."

He explained about the pool administration: "The water must be cleaned everyday, the pumps and filters maintained, it will be necessary to have an overseer all the time, changing rooms must be cleaned, and so forth."

The Resident Architect, who drafted the plan assisted by the games tutors, Mr. John Ndung'u and Mr. John Velzian, noted that it was very gratifying that one donor had been able to aid the sports facilities because most other donors would probably give something like an academic building.

Sports fans among the students have welcomed the new concern for their welfare. Mr. Kimani, a student in the Land Development Department, commented: "The proposed plan will contribute to the general welfare of the student, particularly in increasing recreational facilities as a whole. It is a lot of bother to have to go to outside pools."

Although some students feel that there has been unnecessary delay in getting the swimming pool project underway (the director of social affairs in the Students' Union, Mr. J. J. Ichoya, claimed that the pool seemed to have been caught up in red tape), the senior accountant at the university, Mr. E. Pereira, denied that the administration had been sitting on the funds.

"The Aga Khan undertook to pay £20,000, but this money has not yet been received, and negotiations are still going on," he said. "The plans were drawn by the Resident Architect, and the cost for

an average pool was found to be higher than the amount of money promised."

Mr. Ichoya also complained about delay over renovations to the track field, but Mr. Poulsen gave an assurance that the track field would be ready in September. "The delay was due to the heavy rains which made the field inaccessible to vehicles," he said.

Two other students, Mr. S. K. Kahiga and Mr. Patrick Kanyue, thought the new swimming pool would provide a great opportunity for beginners to learn to swim, "particularly when we understand this has been in the mind of the planners."

Mr. John Ndung'u, a games tutor, commented: "The location of the pool is ideal being just adjacent to Halls of Residence and near the sports fields.

"It seems we are now doing something which should have been done 15 years ago. These facilities should have been thought of alongside the development of the faculties. Sports is an essential part of a university life," he stressed.

University of Nairobi is right in the middle of the city and this poses an expansion problem. But Mr. Ndung'u said: "Despite the fact that the university was implanted in an already congested area, there is still a lot of need for expansion of the sports facilities, say tennis courts for girls and so forth. Problems exist, money, space, etc."

He also noted that the swimming pool will be an expensive undertaking and thought the University would have to find funds to meet recurrent expenditure, but "student and staff membership could help meet some of the expenses."

Conference on engineering in middle Africa

by P. M. GITHINJI

During the week of 6th-10th July 1970, the College played host to an international conference on engineering education, attended by 35 engineering educators, practitioners and other specialists from Congo (Kinshasa), Ethiopia, Ghana, Kenya, Ivory Coast, Mauritius, Nigeria, Sierra Leone, Tanzania, United States, and France. Representatives of USAID and NORAD also attended the conference as observers. The conference was supported by the American Council on Education through a USAID grant.

The conference participants and observers were welcomed to University College by the Principal, Dr. J. N. Karanja followed by the opening address by an Assistant Minister for Education, Mr. P. N. Mbai, and a vote of thanks from the Dean of the Faculty of Engineering, Professor W. B. Palmer. The Head of Science and Technology Section of the U.N. Economic Commission for Africa, Dr. Ademola Banjo, delivered the keynote speech urging a re-assessment of the purpose and methods of training professional engineers in Middle Africa.

The purpose of the Conference was to bring together, for the second time, people who are directly concerned with the training of technical personnel in both Francophone and Anglophone Africa, for discussions and exchange of ideas on the important problem of making engineering education and practice more relevant to local and regional needs. Papers on the special responsibilities and opportunities for the African engineer, education for design and manufacture, training of technicians, means of communication, and co-operative programmes within

Africa were presented and discussed fully. Dr. F. Harbison, Professor of Economics and Public Affairs at Princeton University delivered a lecture on problems of rural development, stressing the importance of greater involvement of technical personnel in these areas in order to improve productivity.

A committee consisting of one representative each from an educational institution in Middle Africa with a faculty of engineering was formed and charged with the responsibility of implementing the conference recommendations.

One such recommendation was the production of a technical journal for Africa, in which relevant research reports, abstracts, and teaching methods would be published and circulated widely.

The committee will also foster close co-operation between engineering faculties in Africa, and between these faculties and industry in various countries. A Steering Sub-Committee formed by the representatives of Lovanium University (Chairman), Fourah Bay College and the University of Nairobi will co-ordinate the Committee activities. The three members will represent, respectively, French-speaking Africa, English-speaking West Africa, and English-speaking East and Central Africa.

International centre of insect physiology and ecology

by Prof. T. Odhiambo

Over the last few years, biologists have been growing increasingly anxious about the traditional chemical materials and methods that are currently being used for the control of insect pest species.

The anxiety stems from the fact that more and more species of insects are becoming resistant to these chemicals, and at the same time our own environment is progressively becoming polluted with DDT and related compounds which do not break

down to harmless constituents fast enough. As a consequence, some countries have already banned the use of such chemicals; and a world-wide momentum for such a step might well gather speed in the near future.

A number of senior scientists have been discussing alternative means for controlling insect populations. The most far-reaching step so far taken has been the convening of an international planning conference in Nairobi on October 6-13 last year, at which the whole problem was discussed by scientists and policy-makers from 11 countries (4 African, 5 European, 1 Asian, and the U.S.A.). The most important decision taken was the establishment, with the utmost speed, of an International Centre of Insect physiology and Ecology at Nairobi, as an advanced centre of research.

The ICIPE will be a truly international research institute, with a consortium of academies of sciences watching over the quality of its research work. Its main objective will be to explore the most fundamental questions in insect biology, with the ultimate hope that new mechanisms for insect population control might emerge from such discoveries. At the same time, it is the conscious hope of the sponsors that the ICIPE will contribute a major facility for African research workers, and thus help to nurture the growing scientific community in this part of the world. In this respect, it is planned that the Centre will co-operate closely with the University of Nairobi in specific areas of organisation, research, and teaching; but it will, in fact, be an independent legal entity — so registered in Kenya and probably in some other countries.

A significant feature of this novel institutional development is that the initiative for the project emanated from Africa. Nevertheless, during the next few months, it will need a great deal of goodwill and assistance from the Kenya Government, the East African Community, University institutions in Africa and abroad, philanthropic organisations, international bodies, and government agencies, before it can really lift off from the launching pad.

CORRESPONDENCE COURSE UNIT

When I visited the unit recently, I met Mr. Carl J. Vanderlin. Mr. Vanderlin is one of the three American members of staff who were seconded from the University of Wisconsin by the United States Agency for International Development to help start the unit in 1967.

Mr. Vanderlin told me that the unit conducts a series of radio and correspondence courses designed to help P3 teachers and other students who have completed primary school to prepare for the Kenya Junior Secondary Examination. Teachers who gain the KJSE Certificate are eligible for promotion to P2.

Courses in six subjects at Form I and Form II subjects are available: English, Kiswahili, Mathematics, Geography, History and Biology, while a course in Physical Science may be introduced very soon. To qualify for a KJSE Certificate a student must receive passes in five subjects. P3 teachers in this programme are not required, however, to sit all five subjects in the same year.

Mr. Vanderlin said that next year the unit would start courses for the new East African Certificate of Education, which will enable P2 teachers to qualify for promotion to P1. He added that, in future, the unit might offer courses for the East African Higher School Certificate.

Besides preparing students for the KJSE, the unit, in co-operation with the Kenya Institute of Education, conducts one-year courses for teachers who have already completed the first year of their two-year training programme.

In all subjects there are 36 lessons per year; 18 of these are known as "soft tests", in that students are given correspondence study materials to read with problems to answer, while the correct answers are given at the back of the study materials. The other 18 lessons are in the form of written assignments.

A schedule of radio broadcasts is included with each set of study materials. At present the unit gives

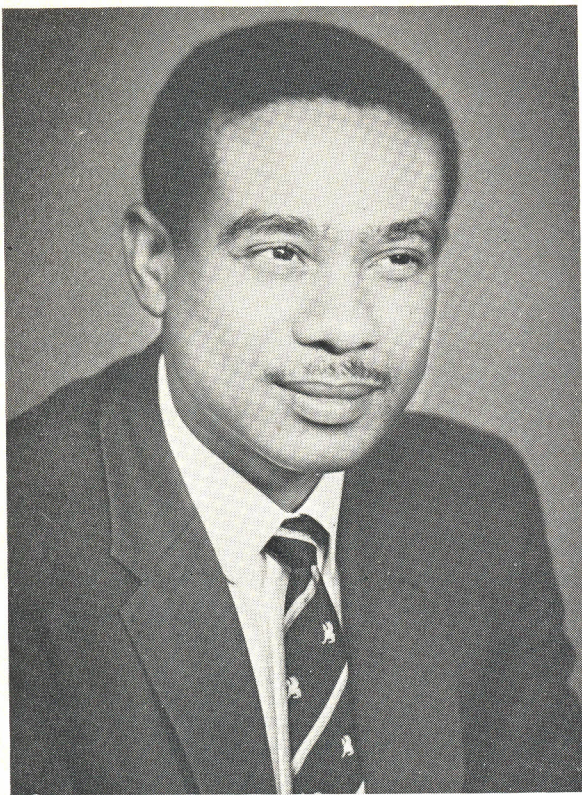
15-minute programmes, totalling 2 hours and 45 minutes every week on the Voice of Kenya. The unit's radio technician, Mr. Norman Michie, said that whereas during the last three years the V.O.K. had prepared all programmes for the unit, now these were all prepared at the unit's new studio.

The fees charged for the courses vary according to the number of subjects taken. For example, a student who enrolls for three subjects in Form I or Form II level pays only Shs. 130 if paid in full on enrolment, or Shs. 145 if paid by instalments.

Naturally most of the students who are studying with the Correspondence Course Unit come from Kenya, but a few come from Tanzania and Uganda. I was told that anybody who wants to prepare for the KJSE through the unit can do so, and they do not need to be teachers. The unit is to take 90 residential students for one-week courses; the first batch begin the course at Kikuyu next August. I was also told that from next April all members of staff of the unit would, it was hoped, be Kenyans.

Apart from the Correspondence Course Unit, the Institute of Adult Studies has two other branches: the Extra Mural Division, which operates night classes and seminars at Nairobi, Nakuru, Mombasa, and Kisumu, and the Adult Studies Centre, which gives courses for trade unionists, teachers, and rural workers.

The director of the Institute of Adult Studies, Mr. David Macharia, told me that the Correspondence Course Unit had made a significant contribution to education in Kenya in its three years' existence. The number of students studying for the KJSE through the unit has grown from about 700 in 1968 to 1,911 this year, while the number of teachers from the Kenya Institute of Education who also study with the unit has grown from 1,700 last year to 2,000 this year.



PROF. HYDER SPEAKS TO JOURNALISM STUDENTS

A big future for tilapia?

Tilapia — Kenya's best known fresh-water fish — could become an important additional "crop" for Kenya farmers if current research into pond-breeding problems is successful. This was stated by Prof. Mohamed Hyder, of the Department of Zoology, when he spoke to students of the university's School of Journalism recently.

Dr. Hyder told the students that investigations were going on into why Tilapia failed to grow to full size in pond conditions. He forecast a revolution in the country's rural economy once this problem had been solved.

He stressed the importance of Tilapia, and fish generally, as a source of protein (although discounting the popular belief that fish makes brains). Kenya, he said, had sufficient stocks of fish, in the sense that

anyone wanting to buy fish could do so. However, if some tribes overcame their prejudices about fish-eating present supplies would have to be increased.

Dr. Hyder, who became Professor of Zoology in May, had agreed to an unrestricted Press conference at the School of Journalism; as a result he found himself answering questions ranging from his views on academic freedom to the prospects of Swahili as a national language. Only occasionally, however, did he resort to an adroit verbal parry.

Dr. Hyder, who comes from Mombasa, took a First Class Honours degree in Zoology at the University of St Andrews, Scotland — the first African in the history of the university to obtain this degree. It was later, while studying for his Ph.D. that he and Tilapia became acquainted. A Nuffield Fellowship brought

PROF. HYDER SPEAKS TO STUDENTS

him back to East Africa to investigate those aspects of the fish most likely to contribute to its successful pond culture.

Although this research problem — on which he started work at the East African Freshwater Fisheries Organisation station at Jinja — was far removed from his earlier investigations, he was undaunted by the technical problems. He is now one of the world's foremost authorities on Tilapia's reproductive biology. The Tilapia Research Unit that he directs has so far attracted over £25,000 in various grants.

Dr. Hyder joined the then Royal College Nairobi as a lecturer in Zoology in 1963, was promoted to Senior Lecturer in 1966 and Professor of Zoology in May this year.

His appointment as Professor is historic, in that he is the first East African scholar of his academic merit to be appointed to a Chair where no vacancy existed. There are now two East African professors (the other is Prof. David Wasawo) in the same department.

A statement issued by the College commented: "In the case of Professor Hyder's appointment, there was no doubt about his eminent suitability for elevation to a Professional status. His local and (more significant) international reputation as a Zoologist is unquestionable and University College is proud to honour him."

Questioned by the students about his appointment, Prof. Hyder disclosed that it was Prof. Wasawo himself who initiated the proposal that resulted in his becoming an additional professor in Prof. Wasawo's department. At 37, Prof. Hyder is one of the youngest professors in the university.

Outside his scientific studies and teaching, one of Prof. Hyder's main interests is Swahili. Although he refuses to acknowledge that he is a Swahili authority. — " . . . but I do know more Swahili than the average man" — Prof. Hyder is a founder-member and secre-

tary of the Kenya Swahili Academy and has written several books and papers on the role of Swahili.

Not surprisingly, he supports the promotion of Swahili as a national language, not only in Kenya but elsewhere in East Africa, and he derides the argument that it is not sufficiently developed as a language to take over from English.

He told the Journalism students that he could teach them Zoology in Swahili just as easily as in English, because such subjects had developed an international jargon of their own which must be used whatever the language of instruction.

He agreed that the introduction of Swahili could break down tribal barriers in Kenya, but suggested that if Swahili was to make rapid headway, incentives — particularly economic incentives — should be introduced to encourage people to speak it.

He felt, too, that the use of Swahili as a medium of instruction in Kenya's schools would liberalise Kenyans' attitudes to other languages in a way that English had not so far been able to do.

But the professor insisted that English would still have an important place in Kenya because of its wide international currency. If Kenya rejected English, it would not be the English language that would suffer, he pointed out.

Asked to comment on Kenya's educational system, Prof. Hyder, who was a member and secondary panel chairman of the Kenya Education Commission (1964-65), said: "Our education must be geared towards post-independence Kenya and tailor-made to our needs."

He forecast that university involvement in local research, student participation in rural development programmes and in adult literacy fields would bring about a better understanding between the country's intellectuals and the mass of the people.

On the break-up of the University of East Africa, Dr. Hyder said he thought this had been inevitable, because of the difficulty of running a federal university

without a political federation. He said he had no fear about the standards in future at the three new universities.

Dr. Hyder said he thought it likely that the Kenya Government would exert more control over the university of Nairobi than it had exerted over the University College. He said, however, that he would hate to see the Government applying pressure on university appointments, unless the university's right to make such appointments on merit was being abused.

A university should be autonomous to generate its own ideas, free to appoint its staff on merit although he insisted that a university should produce manpower directly relevant to the problems of the country. A university, too, had to be aware and take note of political sensitives.

Dr. Hyder expressed concern at Nairobi University's dependance on outside grants, because of the effect on many worthy projects if these grants were suddenly withdrawn.

He felt there was no permanent loss to the university from academic staff leaving their jobs to go into politics, because those of significant merit would come back one day.

Prof. Hyder rejected allegations that student selection at the university was made on a tribal basis. It was common knowledge, he said, that the major tribes in the country outnumbered smaller tribes in many fields, including Government, but the university was one of the institutions where tribal dominance was felt least.

Dr. Hyder has served and continues to serve Kenya in many ways. He was chairman of the Board of Trustees of the Kenya National Parks during its first three post-independence years, when the fear outside Africa was that the whole conservation clock would be put back.

He is a founder-member and former office-bearer of the East African Academy.

Somo la Elimu ya Lugha na Lugha za Ki-Afrika, Chuo Kikuu cha Nairobi

Kutoka Septemba 1969 Chuo Kikuu cha Nairobi kimeanzisha somo la Elimu ya Lugha (Linguistics) na Lugha za Ki-Afrika katika mipango yake ya shahada ya B.A.

Elimu ya Lugha ni somo muhimu sana linalochungua isimu ya lugha yaani misingi na jinsi ya lugha zote, na namna lugha zinavyofanya kazi katika jamii za watu. Kwa mfano huchungua zile sauti ambazo wanadamu wanazitumia wanapoongea. Huchungua sauti hizi zinatatikwa na sehemu za viungo gani katika vile viungo vinavyotumika katika kuunda sauti kama ulimi, midomo, pua, koo; na vipi sauti hizo zinavyoundwa. Vile vile hujadili juu ya misingi ya sarufi za lugha, yaani namna maneno yanavyotungwa na kuwekwa pamoja ili kuleta maana yanayotakiwa. Kwa ufupi ni sayansi ya lugha. Mtaalam wa elimu ya lugha huwa ana ujuzi wa kuweza kuchungua na kueleza sarufi na matumizi ya lugha yoyote ile. Somo hili hasa huwa lenye faida sana kwa watu wanaotaka kuwa walimu wa lugha, maana huwapo ujuzi wa mbinu za lugha, ujuzi ambao huwasaidia katika kufundisha lugha kwa mitindo ya kisasa, hasa zile za kigeni, kama Kiingereza na Kifaransa. Mwalimu mwenye ujuzi huo huweza kukisi ni shida gani msemaji wa lugha fulani atazipata akiwa anajifunza lugha nyingine, katika kutamka sauti za lugha hiyo, na katika miundo yake ya sarufi. Kutambua kwake shida hizo humfanya aweze kujua njia bora na za rahisi kufundishia lugha mpya. Vile vile somo hili linaweza kuwapa faida wale watu ambao wanafanya kazi za kueneza habari, waandishi wa magazeti na vitabu, watangazaji wa radio, wale wanaotafsiri lugha mbali mbali, wanaoshughulika na elimu za utamaduni wa watu, na wataalam wa historia. Somo hilo vile vile hujadili historia za lugha ili kujua ni lugha gani ambazo zinahusiana, vipi na asili yao iliotoka katika tawi gani la lugha za ulimwengu; na hutafuta vipi lugha

inadumisha utamaduni wa jamii. Kwa hivyo ni somo ambalo ni muhimu katika kuyafahamu mazingira ya mwanaadamu.

Lugha ya Kiafrika itakayofundishwa kwanza kwa shahada ya B.A. itakuwa ni Kiswahili. Sababu ya kuifundisha lugha hiyo kwanza ni kuwa wapo wataalamu na vifaa vya kuweza kufundisha lugha hii katika kiwango hiki cha juu cha Chuo Kikuu. Katika mafunzo ya Kiswahili kutakuwa na masomo mbali mbali: somo linalohusu muundo wa Kiswahili, yaani sarufi na matamshi; matumizi ya Kiswahili, misemo na miandiko mbali mbali na tofauti yao; maandishi na fasihi ya Kiswahili ya kisasa na ya kizamani; historia ya lugha ya Kiswahili. Vile vile wanafunzi wa somo hili watajifunza miundo ya lugha nyingine za Kiafrika za Kenya kama Kiluhya, Kiluo, Kikikuyu, Kikamba na nyinginezo. Mafunzo kamili ya Lugha hizi yataanzishwa watakapopatikana wataalamu na vitakapokuwepo vifaa kamili vya kufundishia. Lakini uchunguzi katika lugha hizi utaanza karibuni iwezekanavyo ili kutayarisha vifaa hivyo kwa haraka.

Kama tunavyojua Kenya ina lugha nyingi za kienyeji ambazo zina misingi mbali mbali ya utamaduni, na miundo ya sarufi tofauti. Ni muhimu sana kuhifadhi urithi huu wa taifa ili mambo yanayohusu historia na utamaduni wa nchi hii yasipotee. Vile vile ni muhimu kukiendeleza mbele Kiswahili kwa kuelimisha watu ambao wataweza kukisomesha vizuri na kukifanyisha kazi ili kiendeleo kuwa lugha ya kisasa inayoweza kujieleza katika mazingira yote ya maisha ya kisasa; hasa kwa vile kinatazamiwa kukuwa kuwa lugha kamili ya taifa katika miaka michache inayokuja.

Mpaka sasa somo la Elimu ya Lugha na Lugha za Kiafrika linafundishwa katika Idara ya Lugha ya Kiingereza. Lakini huenda ikaundwa idara mpya karibuni ambayo itashughulika na somo hili peke yake.

Somo hili liko katika ule mpango wa B.A. wa 3:2:2, yaani katika mwaka wa kwanza wa Chuo

Kikuu litakuwa ni somo moja katika masomo matatu katika mwaka wa pili na watatu litakuwa ni somo moja katika masomo mawili.

Vile vile kuna mafunzo ya Elimu ya Lugha yana-yoendelea kwa muda wa mwaka wa Chuo mmoja, (yaani kutoka Septemba mpaka Julai), na ambayo yanampatia mwanafunzi shahada ya B.Phil. (Bachelor of Philosophy). Mwanafunzi anayetaka kuchukua shahada hii ya B.Phil. inambidi kwanza awe na shahada ya kwanza ya Chuo yaani B.A., na awe amechukua somo la elimu ya lugha katika masomo yake ya B.A. Ikiwa hakuchukua somo la elimu ya lugha katika B.A. yake basi itambidi ajifunze somo hilo kwa muda kama wa mwaka mmoja na akimaliza achukue mtihamu na apite mtihamu huo kabla yakukubaliwa kufanya B.Phil.

Kwa ufupi Muhtasari (syllabus) wa somo hili katika shahada ya B.A., ni huu ufuatao:-

Mwaka wa kwanza:

1. Kitangulizi juu ya Elimu ya Lugha (Linguistics),
2. Mafunzo ya Lugha — Kiswahili
 - (a) Historia ya Kiswahili
 - (b) Matumizi ya Kiswahili.

Mwaka wa Pili

1. **Elimu ya Lugha:**
 - (a) Somo juu ya miundo ya sauti na sarufi
 - (b) Muundo wa lugha nyingine ya ki-Bantu
2. Muundo wa Lugha ya Kiswahili.
3. Maandishi ya kisasa ya Kiswahili.
4. Moja katika masomo fulani yanayohusu lugha (Options).

Mwaka wa Tatu

1. Elimu ya Lugha
 - (a) Miundo mbali mbali
 - (b) Elimu ya maana (semantics)
 - (c) Muundo wa Lugha ya Kenya isiyokuwa ya Ki-Bantu.

What's going on in the departments

In this and the following pages some of the recent and current activities of various departments of the university are described.

FACULTY OF AGRICULTURE

In 1967 the Government of Kenya accepted the recommendation of the (Weir) Agricultural Education Commission that a Faculty of Agriculture should be established in University College, Nairobi. In 1968 the College (now the University of Nairobi) began to implement the recommendation and it accepted the first undergraduates, 40 in number, into a three-year course leading to the Degree of Bachelor of Science in Agriculture in July 1970.

The new Faculty has been planned by a Planning Committee set up by the Academic Board and chaired by the Principal. It included representatives of interested faculties and departments within the College; the Faculty of Agriculture, Makerere University College; the Ministries of Agriculture, Economic Planning and Development, Education and Finance; the East African Agricultural and Forestry Research Organization; and Egerton College. The Planning Committee was advised by Curriculum and Staff Sub-Committees. Professor A. H. Bunting (Dean of the Faculty of Agriculture in the University of Reading), who was member of the Weir Commission, has given part of his time to the Faculty as Development Co-ordinator. Dr. J. A. Fewster (Univer-

Off to Cambridge

One of the better-known names among the lists of this year's graduates is that of Arthur Kemoli. The only student to graduate from the Arts Faculty with first-class honours, he has already won distinction as a musician, composer, choirmaster and actor. In September he left for King's College, Cambridge, where he is the first British Council scholar taking a postgraduate course in literature. He intends to work chiefly on drama, with emphasis on the background to modern African drama and hopes to return to Kenya to help in the development of drama here.

sity of Aberdeen), formerly Dean of the Faculty of Agriculture in the University of West Indies and Professor H. J. Schmutterer (Head of the Section of phytopathology and Applied Entomology in the Tropical Institute of Giessen University) are also assisting in the development of the Faculty. Professor T. R. Odhiambo (head of the Department of Entomology and formerly chairman of the Curriculum Sub-Committee) has been appointed the first Dean of the Faculty.

The International Bank for Reconstruction and Development has approved an application from the Government of Kenya which

What's going on in the departments

included a request for capital aid for the Faculty. A number of other inter-national agencies and several governments are giving or will be giving aid to the Faculty. The University would enterprise, and it hopes that the identity of the staff in the individual Departments will whenever possible reflect a wide range of international experience.

The Faculty comprises the Departments of Crop Production, Applied Plant Sciences, Entomology, Soil Science and Agricultural Economics, and a Sub-Department of Agricultural Engineering. The following constituent departments of other faculties are associated with the Faculty of Agriculture: Botany, Chemistry, Physics, Zoology, Veterinary Physiology, Veterinary Biochemistry, Animal Production and Mechanical Engineering.

Buildings needed in which to teach the basic first-year course will be at Chiromo, near to the biology building of the Faculty of Science and the pre-clinical departments of the Faculties of Veterinary Science and Medicine. Buildings required for the later years will be adjacent to the clinical departments of the Faculty of Veterinary Science at Kabete, where a 300-acre coffee estate has been acquired and will serve as the nucleus of the Faculty Field Station.

The curriculum for a single general-purpose Degree of Bachelor of Science in Agriculture has been settled in outline. The three-year course is unspecialized and is designed to provide graduates who can be useful in all aspects of crop and animal production. The best of them should be suitable for specialist postgraduate training in particular branches of agricultural technology or for research training. In

addition to scientific technical and economic content which is usual in a first degree course in agriculture, the curriculum includes material in rural economy and sociology, in the processes and technique of rural development (including agricultural extension) and in national agricultural policy and administration. These components reflect the view held in the University that in a developing country which is largely agricultural the education and training of graduates in agriculture must fit them to play a leading part in planning and promoting rural development and must not be restricted, as in some other countries, to the study of farming technology and its scientific and economic bases. The entrance requirements, curriculum and examination regulations for the first degree have been approved by Senate.

DEPARTMENT OF ANIMAL PRODUCTION

Cattle is the most important species for animal production in Kenya and grass is the most important feed for cattle. There are many species of grasses in Kenya. A very common one in the Central Province is Kikuyu grass. This plant is naturally occurring only within East and Central Africa between the altitudes of 1900 — 3000m where rainfall is not less than 1000mm per annum. In Kenya, the potential Kikuyu grass country has been estimated as 18000 — 20000 sq. kilometers. The majority of the small farmers in these areas are often entirely dependent on this grass for their grazing animals.

This plant is well liked by the various grass eating domestic animals. Investigation by chemical methods shows that an average plant contains approximately 84% moisture. The 16% of dry matter has about

29% fibre, 19% crude protein, 36% soluble carbohydrates, 4% fat and 12% ash (minerals). This information obtained by purely chemical methods gives us some idea of its value as an animal feed. But chemistry is one thing, the animal organism another. The estimated values obtained by chemical methods alone cannot give the true picture as regards the actual value of the grass to the animal. What do we do then ?

To obtain further information we must test the grass on the animal itself, and the first step is digestibility experiments. This is done by feeding the grass to experimental animals in known amounts and with known composition and then determining the amount and composition of the waste products resulting e.g. faeces. This provides us with information as to what the sheep has absorbed of the various nutrients. With this method of experimentation the same grass, fed at different stages of growth and maturity, can be evaluated thus providing more precise information about the true nutritive value.

This is an example of one type of research project which has been going on in our Department and which is now near completion. The results go far to show that Kikuyu grass is more nutritious than many common grasses used in livestock production. But there are other grasses and plants which are also very important in animal nutrition. Several of these, for example Rhodes grass and star grass are being investigated in the same way as has been done for Kikuyu grass. Other important local feeds being examined are cotton seed cakes and groundnut cakes, particularly as they are protein rich.

These various research projects which are performed in the Nutrition Section of our Department all aim at obtaining the basic knowledge of the value of various animal feeds available in East Africa. This information is vital when we wish to feed our domestic

animals correctly and provide the most suitable supplementation to the natural pastures. This is often necessary, especially during the dry seasons. Supplementation may be used to increase the production of potentially high producing animals or may be simply to provide a balanced diet in times of deficiency.

Other fields of nutritional research are attempts at finding the cheapest possible and adequate feed mixtures for pigs and poultry, the usefulness of indigenous cotton seed cakes for these animals, nutritive value of Lake Rudolf fish meal, testing of mouldy maize and the effect of high flourine drinking water on sheep.

But to ensure that the animals are correctly fed is not enough. They must be well cared for. This is the responsibility of another section of our Department, Ecology and Management. Management involves all the stages of the care and handling of the animal from the day it is born until it leaves the farm and is marketed. Management therefore includes, methods of feeding, housing and milking, to mention some of the more important ones.

One of our research projects in the Management Section deals with reproduction in Masai cattle in co-operation with the Range Management Division of the Ministry of Agriculture. Most reports on reproduction in these cattle would indicate that conception rates are low, this usually having been based on the fact that the number of weaners produced per herd is low. The aim of this study is to determine the true conception rates in these herds and to establish whether the weaning percentage recorded are in fact due to poor conception or from losses after conception. Many aspects of management in relation to nutrition and diseases could contribute to losses from

What's going on in the departments

the time of conception to weaning and our aim is therefore to find what is the actual explanation.

The projects mentioned are primarily applied research which means that we aim at results which are directly and immediately applicable and useful for the farmer. In the third section of our Department, Genetics and Animal Breeding, we also have similar aims. These involve the study of the animal itself as judged by its genetic potential for production. There are various methods of arriving at programmes to increase the genetic value of livestock. The most important one is to test the animals by the performance of the off-spring and to select those with the best results for further breeding. Research projects along this line are generally long lasting. They depend on facilities which at present are not available in our Department to the extent we would like. But we have started one experiment in this field. The aim for this project is to compare the progeny of Norwegian bulls in Norway and Kenya respectively.

These bulls have been progeny tested in Norway and have accordingly known breeding value. Semen from these are imported and used on Kenya cattle. Their off-spring in Kenya will in due time show us if the progeny testing done on Norwegian cows holds true when tested on cattle in Kenya. The result from this study will have importance in evaluating the value of imported semen. If the results of progeny tests carried out in other countries which have efficient testing programmes, can be used directly under East African conditions, valuable time would be saved, and a faster rate of genetic improvement can be achieved in the local stock. This experiment will also give an answer to the magnitude of interaction one can expect between the animals genotype and the environmental conditions.

Another research project in the Genetics and Animal Breeding Section deals with those biochemical characteristics of blood which show genetic variation. There are a great number of these traits which are also called blood types. They can therefore be used as identification and in the parentage control. In cattle there are so many different blood types that no two animals have the same type. Research in this field is primarily of a fundamental nature, but may show results which in the future could be of direct value in animal production. Thus several such characteristics in man and animals are reported to be directly involved in the cause of diseases.

They may also be used in the studies of evolution and relationships of breeds. As an example haemoglobin in cattle can be mentioned. This molecule appears with one form only in Northern European cattle whereas Asian and African cattle have several. The molecules differ in one or more amino acids out of the 572 amino acids which make up the protein part of the molecule. These molecules are controlled by genes and determination of distribution of molecules in populations thereby show the distribution of genes.

Through such studies it has been shown that cattle of Southern Europe have haemoglobin genes in common with Asian and African cattle which are lacking in Northern European cattle. This has been taken as an indication of influence by Asian cattle on cattle of Southern Europe. Another study, here in Kenya showed that as much as 20% of the genes in a grade population apparently derived from local Zebu type cattle.

DEPARTMENT OF VETERINARY PATHOLOGY AND MICROBIOLOGY

The following projects are being carried out by the Department of Veterinary Pathology and Micro-

biology: Research into the pathogenesis and development stages of the casual organism in East Coast Fever, a highly fatal disease of cattle caused by protozoan organisms known as *Theileria Parva*. The disease is transmitted from one animal to the other by ticks.

This disease is the most killing of all cattle diseases in East Africa. It is estimated that economic loss due to this disease to livestock industries in East Africa is about 6,000,000 dollars a year.

There is no drug or vaccine currently known for treatment and control of the disease. The life cycle of the causal organism and the development of the disease stage by stage is not very well known and without this fact it has been difficult to develop a vaccine for the control of the disease.

It is felt that the present research will probably lead to an effective measure of control against this disease. There are many plants in East Africa which are claimed to be poisonous to livestock and humans and there are also a good number which are known by indigenous people for their curative properties in certain humane ailments and livestock diseases.

Extensive research is being carried out in the Department of Veterinary Pathology and Microbiology into the indentification of the plants, the clinical and pathological effects they have on several domestic animals after administration of the whole or extract of the plant and the curative effects on specific diseases.

Good progress has been achieved in this project.

The pathogenesis of Fasciolasis — an important disease of cattle and sheep throughout the African Continent — is being carried out in the Department of Veterinary Pathology and Microbiology with the hope of developing effective control measures.

Research is in progress into the Aetiology Pathology of Pneumonia in different economic farm livestock with the hope of developing vaccine for control of different types of pneumonias of domestic animals.

A study of the water quality in different parts of rural areas of Kenya is being carried out to determine the sanitary standard of water in different parts of Kenya, with the intention of constructing a simple bacterial water filter for use in rural homes. The introduction of a cheap but efficient filter will be a tremendous public health contribution to the rural community.

Studies are being made in comparative medicine into the possible relationships of toxins to liver and urinary bladder cancers, as well as studies into zoology of cysticerci in domestic and wild bovine.

DEPARTMENT OF VET. ANATOMY & HISTOLOGY

The Department of Veterinary Anatomy and Histology at Chiromo has developed, over the past six years, a research programme concentrating on the comparative functional morphology of East African game ruminants.

This has centred on detailed comparisons between the stomachs of over 25 antelope species, giraffe and buffalo and those of the three domesticated ruminants, cattle, sheep and goat.

The result has been a wide range of new information about this most advanced stomach system in the entire animal kingdom and about feeding habits and structural adaptations to the food available during dry and rainy seasons (Two monographs by Prof. R. R. Hofmann). Similarly, extensive comparative work was and is going on about the cyclic changes of the female and male reproductive system, especially of the impala and Guenther's dik-dik. The impala female reproductive system, its estrous cycle and the breeding periods of this common and economically important species have been comprehensively

What's going on in the departments

studied (Ph. D. Thesis by Dr. Kayanja). The male reproductive system is the object of intense studies with historical, histochemical and electronmicroscopic techniques (Dr. Neaves).

Studies on the Dik-dik are establishing the feeding habits and functional anatomy mainly of the digestive and reproductive systems of a potential laboratory ruminant (carried out by all staff members of the Department).

DEPARTMENT OF ECONOMICS

Research work by staff of the Department of Economics includes surveys over a wide range of Kenya's economic activities. Dr. J. K. Maitha, who has recently published or is publishing several papers on the coffee industry, is continuing with research into "Coffee in the Kenyan Economy". He is also investigating production relations in Kenyan manufacturing and the sources and the methods of Kenyan Economic statistics.

J. Heyer, who, with Dr. Ireri and J. Moris, recently published a survey of rural development in 14 districts of Kenya, is continuing with further analysis. He is also studying, with L. D. Smith and T. J. Aldington, price policy in the Kenyan dairy industry.

Research into the economic effects of the financial black market in Vietnam is being carried out by W. Beazer, who has published several papers on different aspects of the Vietnamese economy. He plans to carry out research into the monetary system in East Africa.

Z. W. Kmietowicz is undertaking research into "Income Distribution in Central Province of Kenya". He is also investigating methodological problems of income and expenditure surveys in rural areas of East Africa and sources and methods of Kenyan economic statistics. Dr. Dunstan Ireri, is also carrying out re-

search into the problems of financing small-scale farms in Kenya.

Among his forthcoming publications is "A proposal model to analyse economic interdependence among member-countries of the East African Community".

D. Etherington is making an econometric analysis of smallholder tea production in Kenya and B. Wasow is carrying out research into the money market in East Africa, while Michael Constable is investigating the coffee diversification programme: cost-benefit analysis and rural development criteria.

V.O. Opere is undertaking research into the move from East African economic integration to co-operating with the European Common Market.

DEPARTMENT OF GEOLOGY

The Department of Geology is at present engaged in seismological, structural, petrological and geophysical research of the Rift System, as well as investigations on mineral resources in Kenya.

Prof. I. S. Loupekine is continuing with the preparation of an Earthquake Catalogue and a Seismic Zoning Map of East Africa.

Investigation on the tectonics of the Rift System is being carried out by Mr. B. H. Baker, who is completing the tectonic maps of East Africa under a Unesco contract.

Dr. L. A. J. Williams is carrying out research on the petrology of the Rift System while Dr. J. Wohlenberg and Mr. N. V. Bhatt are carrying out geophysical investigations in connection with geothermal sources in the Rift System.

Work on mineral deposits is being carried out by Mr. A. M. de Quardros and Mr. E. B. Rodrigues has

just completed seismological velocity studies of the East African Rift System.

Mr. S. H. Rhemtulla is continuing geological mapping of an area in Baringo District and Mr. D. M. Zala is investigating copper deposits at Kilembe, Uganda.

DEPARTMENT OF GOVERNMENT

Research being carried out by the staff of the Department of Government includes a study of the development of KANU, a study of the University of East Africa as a problem in international integration, a study of the management of Co-operatives in Kenya and a study of training for administration for development.

There are about 12 graduate students also working with the Department, whose topics include: Kenya's foreign policy since independence, local councillors, leadership in a small town, the implementation of physical planning, the development of the tea industry as a case study in development administration and trade unionism in Kenya.

From 1969-1970 the Department has introduced a programme of student research projects whereby students may undertake research on various aspects of national development and submit dissertations based on this research as part of their final examination. For 1970 students will study various aspects of field administration, four will study co-operatives, three municipal local government and two the problems of administration in parastatal organisations.

SOCIAL SCIENCE

The Social Science Division of the Institute of Development Studies is conducting major research projects aimed at improving Kenya's agricultural production. These range from surveys in farm produce to agricultural policy in the country.

Under the overall supervision of Senior Research Fellow, Lawrence Smith and in co-operation with Mr. F. Wilson and Dr. J. U. Heyer, studies have been made on beef, cereals, the dairy industry and coffee. Mr. T. J. Aldington has produced an interim paper on the animal feeding-stuffs industry and is doing work on agricultural machinery. Mr. Smith is carrying out research into the demand and sale of fertilizers.

As members of an Inter-Ministerial Committee, Mr. Aldington and Mr. Smith studied the future of maize and wheat and their storage problems. Many suggestions and recommendations of this Working Party have been incorporated in the Kenya Development Plan 1970-74. In the dairy products sector, together with Dr. J. Heyer, they suggested to an agriculture working party methods of altering the pricing system for milk and other dairy products in a way beneficial to producers and consumers.

Dr. M. J. Westlake is carrying out a study, commissioned by the Ministry of Agriculture at the request of the International Coffee Organisation, into the effect of the current tax structure on the efficiency of the coffee industry.

Mr. Aldington is studying the animal feeds industry and Mr. Morgan and Mr. Smith have been assisting the Wheat Board with the design and analysis of a sample survey intended to investigate wheat farmers' present storage problems.

Mr. Smith, as a member of a Ministry of Agriculture Working party, has also been studying the current and future food situation in Kenya and investigating methods of overcoming malnutrition.

Another major project is the research and evaluation of the Kenya Government's Special Rural Development Programme which is being carried out

What's going on in the departments

under the overall co-ordination of Senior Research Fellow, Robert Chambers.

DEPARTMENT OF SURGERY

A study of certain clinical aspects of hydatid disease in patients in Kenya is being carried out in the Department of Surgery.

The object of this research is to increase the safety of operations on patients suffering from this disease.

The particular aspect that is being studied is anaphylactic shock occurring during the operation and experiments are being carried out on sheep to find out the reason for these reactions and to determine methods of preventing them.

This research is being done by Mr. R. M. Ross of the Department of Surgery and Dr. Coughlan of the Department of Anaesthetics.

Initial studies have been completed on a survey carried out in Karuri to determine the prevalence of duodenal ulcer in this rural community. This work was carried out by Mr. Isaac Gatumbi, Government surgeon, and Professor A. D. Roy of the Department of Surgery.

Cases of vascular disease affecting the arteries of the limbs are being studied to determine how common this condition is and whether the pattern follows that found in other countries and whether the incidence of the disease is now increasing.

Also various small projects are being carried out by junior staff in the wards to examine various aspects of patient care and to determine whether they could be improved in relationship to the facilities available in the hospitals in Kenya.

DEPARTMENT OF MEDICAL PHYSIOLOGY

Prof. Horrobin, Dr. Lloyd and Mr. Burstyn of the Department of Medical Physiology are studying the mechanism of the high blood pressure which can occur in renal disease and in pregnancy. Both types of high blood pressure are important in East Africa.

Kidney disease is very common and high blood pressure in pregnancy is an important cause of maternal death, foetal death and congenital mental retardation.

Considerable progress has been made and radical new concepts have already been published in international medical journals. It is hoped that these concepts will enable treatment to be more rational than at present and will save many lives.

Cancer of the liver is a particularly common disease in East Africa and its cause is as yet unknown. It can be diagnosed by the appearance of a particular protein in the blood.

Mrs. Parker, in conjunction with Dr. Bagshawe of the Kenyatta National Hospital and Dr. Foy of the Wellcome Laboratory, have been developing the test for use in Kenya. The team has found that baboons made pyridoxine deficient have this protein in their blood and develop liver cancer, thus possibly pointing the way to control of the disease.

Another common disease here is hepatitis, a virus infection of the liver. The virus is carried in the blood and hence blood donors can pass the disease onto people receiving a transfusion.

It has been found that as many as 5% of blood donors in Kenya are hepatitis carriers. It is clearly important that this blood should not be used for transfusion and Mrs. Parker is developing a screening test whereby infected donors can be eliminated.

DEPARTMENT OF HUMAN ANATOMY

Although research has been delayed in the Department of Human Anatomy because of heavy teaching and administrative commitments, beginnings have been made and plans drawn up in various fields.

These include the organisation of neurons, with particular reference to dendritic organisation of cerebral neurons and myelination of peripheral neurons, and the organisation of elastic fibres in various regions of the bodies of different animals.

Students have collected data for research into the development of children, with special reference to the period between birth and six years of age.

Other research projects include: palaeontology, in collaboration with the excavations being conducted by personnel of the Centre for Prehistory and Palaeontology, and primate biology, with special reference to locomotion mechanisms.

DEPARTMENT OF LAND DEVELOPMENT

In the Department of Land Development a research project has recently been completed by Mr. S. S. Yahya entitled "The Changing Pattern of Land Use and Land Values in Suburban Nairobi".

The paper examines the evolution of the present land value pattern and the manner in which it has been influenced by not only the more obvious market processes but also by socio-cultural, historical and political forces.

The relevance or otherwise of traditional Western land value theory, and the theory of urban structure, is discussed.

Finally, the urban land problem, in so far as Nairobi's growth is concerned, is outlined and sug-

gestions are put forward for public action and further research.

DEPARTMENT OF EDUCATION

Prof. F.C.A. Cammaerts, Head of the Department of Education, has a book in preparation on what developed countries, particularly the United Kingdom, have to learn from education in Africa today.

His recent publications include "Priorities for the preparations of secondary teachers in Kenya", published in the East Africa Journal of November, 1969, and "Development of Institutes of Education in East Africa", published by the Canadian Teachers' Federation this year.

Prof. Cammaerts, jointly with Prof. John Hanson, has also had a book entitled "Secondary level teachers supply and demand in Swaziland" published by Michigan State University this year.

Mr. D. Elderkin, a lecturer in the same department, is working on a study of the language of the Dahalo, while another lecturer, Mr. C. R. Wang'o-mbe, is attempting to isolate common mistakes made by learners of English as a second language, and to see how this can most effectively be rectified.

He is also concerned with the collection of African folk songs — the transcription into both solfa and staff notations, with a free English translation (This material is now with the publishers, London English Press). Finally, he is relating tribal musical interest and ability to sensitivity to sound to the learning of English as a second language.

Mrs. V. Lannoy, senior lecturer in educational psychology, is making a study of the sub-culture of the adolescent in Kenya.

Apart from this research work, students of the department are engaged as follows:

THE UNIVERSITY IN THE 1970s.

Continued from page 4

- 1) Be a heavily populated institution.
- 2) Have a variety of departments and faculties to cover a wide range of learning.
- 3) See the evolution of disciplined national-oriented students.
- 4) Witness students bid for more power.
- 5) Witness enhanced University students/Government co-operation in all walks of life.
- 6) Evolve a spirit of "helping the less fortunate" in the students: They will conduct evening/night classes and literacy classes. They will contribute, in one way or other, to self-help projects.
- 7) See mathematics and science become the coveted disciplines. Computer education will be undertaken by many.
- 8) Witness a new type of student emerge. This will be the student who will ask himself the J. F. Kennedy question "What can I do for my country to....."
- 9) Witness the evolution of a national University portraying a national image in both attitudes and cultural and traditional activities.
- 10) See serious basic research in diversified spheres of learning.

ELECTRONICS and the journalist

Continued from page 8

electrical current is switched on, whether from a generator or other sources. You don't need large rooms to get a certain distance to the screen, etc. It will take ordinary 16mm movies as well as films especially prepared for television.

Another system is the record-playing television set. You put on a small record. And you get both sound and picture in colour. At the moment records are restricted to five-minute performances, but soon

In the U.S. a colour television set adapted for video cassettes — or video cartridges as they are also called — including a tv camera enabling you to make your programmes, is expected to be priced at less than £K245. A video tv set alone is expected to sell below £K150.

15 minutes will be the average. The records are very thin and easily air mailed.

The television record makes 1500 turns per minute and has 130-150 grooves per millimetre relaying 3-4 million cycles per second. The "television record player" will cost KShs. 1,000 — 2,000, each record approximately KShs. 40.

Perhaps none of the technical possibilities mentioned appeal to the East Africans in charge of today's educational and mass communication policies. But, together with tape-recording television sets, they are here to stay and should be taken into consideration at all future stages of mass communication and adult education.