

EDUCATION AND TRAINING IN RELATION TO  
RURAL DEVELOPMENT

By Patrick Van Rensburg

Principal, Swaneng Hill School, Botswana.

Education and training geared to rural development in a predominantly rural country ought probably to be mass education and training with, primarily, vocational objectives. The national system of education will doubtless include the preparation of a certain number of people, through longer and more intensive training, for work in the modern sector, or for such professions as doctors and engineers. Here we need do no more than identify for later discussion the very grave problem constituted by the existence and extent of privilege in living conditions of more highly trained people. How far the poorer developing countries can afford to provide moral, cultural, spiritual and artistic education, given that if it is to be effective it is likely to be costly; and whether, if it cannot be given to everyone, it should be provided for a small minority, are other and essentially political problems; but we ought to be alerted to the implications and I shall discuss them in the course of this paper.

I should like to declare my personal view of what education ought ideally to be, lest I be accused of having a purely utilitarian attitude towards it. Ideally, the objective of education ought to be the fullest development of the personality, skill and intellect of every individual as a member of society, and education should enable everyone to liberate themselves from basic want. It should create fully conscious men, in the recognition that men are political, economic, social and cultural beings, and it should give them the ability and the sensitivity to control the environment without destroying it. There are accumulating wisdoms, values, knowledge and artistic expressions over the whole range of human experience which each generation and each society will want to transmit, though some selectivity and bias may be inevitable.

However, in the poorer countries, we cannot meet these ideal aims of education for everybody right now. The ideal goal for everyone can, in fact, be achieved when the economy is sufficiently developed and resources are available for the purpose.

The quickest way of getting to that goal is to develop the economy as quickly as possible so that increased expenditure can be made available at each stage of growth for what - in economic terms - shall be determined as an optimum strategy in education, a strategy that clearly must give pre-eminence to the utilitarian and vocational objectives of education.

The optimum strategy for education will, of course, be determined within the framework of the best possible economic plan, and this must naturally have reference to the existing shape of the economy. Frederick Harbison identifies three main categories in the labour force of most African countries. Only about 5% to 10% of the working population is employed in the modern sector, which embraces mining, large scale industry and large scale agriculture, transport and the civil service. (In fact, in few other developing countries does the proportion employed in the modern sector exceed 15%). By far the largest component, Harbison says, between 50% and 70%, is found in the very low productivity or subsistence sector, which "encompasses a wide variety of economic activity ranging from subsistence farming in rural areas to petty trade, hawking, peddling, personal services, stealing and petty crime in the sprawling urban ghettos.

"Another 30% to 40% of the work force may eke out a somewhat better living in a sort of intermediate sector. In the urban areas, this includes small retail trade, handicrafts, artisans, small-scale family-type manufacturing, small transport operations and household enterprises. In the rural areas it includes similar activities as well as individual part-time or full-time cash crop farmers." Harbison suggests that this sector "is a dynamic element in most developing countries. It manufactures for, sells to, and services the bulk of the population. But wages and productivity are relatively low."

The modern sector, Harbison points out, rarely expands at more than 5% per annum which means that, if only 10% of the labour force is employed in the modern sector now, employment opportunities within it will absorb only one half of 1% of the country's labour force each year. It is a characteristic feature of the modern sector that wages and consumption levels are relatively high. Clearly, it has to be asked whether the total output of the modern sector is, in most developing countries, doing very much more than maintaining its own living standards as it slowly expands. The new employment opportunities that it currently offers to one half of 1% of an average developing

country's labour force must be set against the annual growth of the labour force of  $2\frac{1}{2}\%$  and more. The ability of the modern sector to contribute to development that benefits all sectors of the population depends on its capacity to bring its living standards down to levels that the economy, as a whole, can afford. The privilege enjoyed in the modern sector has a profound effect on the aspirations of almost the whole population. The modern sector arouses ambitions which its methods of development - capital - intensive as they are - and which its living standards - high as they are - prevent it from satisfying for all but the few. But once aspirations have been aroused and then frustrated, it is only with considerable dissatisfaction that people will return to the land.

It is not only the privilege of those living in the modern sector which creates problems. The market and money economy is almost totally geared to the workings of the modern sector and though it does not take account sufficiently of the nature and workings of the traditional economy, it may sometimes have a powerful effect upon it which may indeed be a negative effect. The superior products of the modern sector might drive the local, small producer of comparable but less well-finished products out of production. And, where people come to depend on money as the medium of exchange, in the absence of it because exchange becomes increasingly difficult, production tends to cease. Money may also become the easiest means of organisation, and where there is a shortage of entrepreneurs with money, there will be unemployment, even of those with skills. This will become more marked as traditional authority, which might have been able to organise production without money, begins to disappear. The traditional and rural economy comes to depend on the modern sector with its money and market economy, or on export, and production (other than of food) becomes limited to what the modern sector will buy or what can be exported.

### Rural mobilisation

It does seem to me that the most effective and speediest programme of economic development simply must include the mobilisation of the vast numbers of population of the countryside - and that it must do so with the minimum of foreign capital input, in order to produce an ever-increasing surplus. I would expect to see this surplus allocated between investment in agriculture and industrial development, in proportions dictated by assessing the likelier source of substantial returns, these being repeatedly reinvested on the same basis. The employment of people is, in

itself, a worthwhile goal and added justification for rural mobilisation. The Agricultural sector is the major field of actual and potential employment, not only of the mass of the people but also of most of those who receive any education. It is also one of the few original sources of capital in a poor country, and it is the source of food for the hungry.

My own view is that the main vehicle for rural mobilisation ought to be more intensive and variegated production in the villages or in farm settlements. The proposals I am about to make are based on my experiences with a small co-operative production group that has recently begun to function after I had spoken to a number of villages in Serowe. Within the villages and settlements people must be involved in organised and more intensive production of a wide variety of food and beverages and such housing, furniture and household needs as fuel (wood and charcoal), soap, candles, blankets and medicinal herbs, such clothing and footwear, and such personal comforts as beer, snuff and tobacco, as can be made from local materials (or grown locally), with the simplest skills and tools and the minimum of cash inputs. The work should be organised co-operatively and a member's share of benefits must be determined entirely by labour inputs. The main aim should be to provide the villagers themselves with a wider variety of goods and services, and while cash sales should be permissible, production must not be limited only to what will sell for cash. This is not to say that there should be no production for cash sales, however. Indeed, there needs to be some, as the village will need things which it cannot produce itself. But a community may have all the facilities and abilities to produce more vegetables, eggs and meat, but if it is limited to cash sales, the shortage of cash will set a ceiling on production. Because of the shortage of cash in most rural areas, individual production does not as easily lend itself to diversified production along these lines, as co-operative production arrangements do. Limeburning and brick-making are examples of production requiring only the simplest skills and tools, and when local resources make the two possible simultaneously, a mixture of slaked lime and brick dust can produce pozzolana cement. Spinning, weaving and knitting are skills that can be easily learnt and only the simplest tools are needed. Bricklaying is quite a common skill and, provided that only simple standards are expected, can be quickly learnt. A communal garden for vegetables, tobacco and the raw materials for beer-making; a communal orchard and tree plantation; communal fields for cotton, sunflower for oils; and small groups of communally owned goats, pigs, sheep and poultry, and draught

animals; a communal pasture area for these animals; all these are within the capacity and competence of villagers to provide and maintain. Techniques of intensive horticulture and flood spreading in agriculture, make all these projects feasible in all but the most arid regions. Oil extraction and cotton ginning require processes and tools to which villagers may quickly graduate. Roofing with local materials, simple carpentry, candle and soap making, basket-making and pottery, beer-making, tobacco curing, are all skills within the competence of villagers (if not already commonly practised). The introduction of new recipes can stimulate the increased production of a greater variety of food through stimulating new tastes, and can certainly be quickly assimilated by village women.

Once those villagers involved in co-operative production find that their standard of living has risen through this type of co-operation in the use of local resources, with almost no cash disbursement, they will be more ready to co-operate in the communal projects which require a large labour force working together, such as the building of dams, catchment tanks, hafirs, roads, land conservation measures and terracing, and the building of communal workshops, lime kilns and furnaces. Individual production will not lead as easily to participation in large-scale projects as co-operative production will do. I think it worth stressing, also, that individual effort is simply incapable of lifting the rural poor out of their poverty.

Traditionalist, conservative elements, or land-owning, stockowning or other richer elements of the rural population might oppose and resist moves towards communal gardens and fields, herds and flocks, and the various means of production. A beginning has to be made with the few who are willing to merge if not all, at least some, of their labour, their fields and their stock and their success will encourage others to join forces with them.

The involvement of villagers in production, especially where burning processes are used as in limeburning and iron smelting, will make it clear to them that production does not depend on white man's magic. They may acquire a new attitude towards scientific processes even though they may not grasp the nature of the processes. Once people are involved in production and have a stake in the nation's economic life which they can really feel, their participation in the political life of the nation will be more vigorous and more real; they are also likely to be more receptive to literacy campaigns, disease prevention campaigns and other extension services. This

approach to rural development depends for its success on an integrated approach. Extension services need to be co-ordinated and integrated and both local and central Government need to have a well defined policy about services and infrastructure, about communications and energy and water supply. The central Government also needs to have a well-defined policy about the gap in living conditions between the traditional and modern sectors.

#### Educational implications of the co-operative economic approach

What are the implications for education of the economic planning strategy which I have suggested is desirable? Education must first of all be able to serve the policy of rural mobilisation. Indeed this must be the main objective of educational policy. The recognition that most of those who pass through primary schools will find no employment other than on the land or in village industry in the rural areas, brings us face to face with the need for changes in the orientation, organisation and content of primary education, though the effectiveness of reforms must depend on raising the quality of teaching in the whole primary system. Primary education is regarded almost entirely as a preparation for secondary school, even though the majority of children will never go to secondary school. Primary education must prepare people for the lives that the great majority of them will have to lead in the rural areas. I fully support the views of President Nyerere expressed in his Education for Self Reliance regarding changes in the orientation, organisation and content of primary education, though I would like to make some suggestions that add to and slightly modify his proposals in the light of my experience during the last five years with an on-the-job apprenticeship-type training for primary school graduates, which has largely been covering costs by the productive work of the trainees.

The school-leaver problem exists precisely because there is a lack of capital to solve it. There are not the resources for secondary education for all, nor for paid employment for all. It was in recognition of this fact that in early 1965 I initiated the launching, with almost no capital outlay, of a programme of on-the-job training in building construction. The recurrent costs of this programme, with its trainees taking three-year courses, have been fully covered by the productive work of the trainees over the last  $4\frac{1}{2}$  years. The work undertaken has been mainly for public or semi-public authorities like churches, co-operatives, local government and schools, which have benefitted from lower prices without any drastic fall in

building standards. The programme has for the last two consecutive years entered trainees for Government-conducted trade tests and out of a total of 48 candidates 32 have obtained certificates. To this programme (which I called the "Builders Brigade") has been added a Textile Workshop, run on similar lines though providing a two-year course, to teach spinning and weaving, textile printing and dressmaking. A Mechanical Brigade is now under way and a Tannery Brigade is envisaged.

All the trainees in the Brigades now receive five hours each week of technical theory instruction in the classroom, and five hours fifty minutes of academic instruction provided by teachers at Swaneng Hill School in English, Mathematics, Science and Development Studies, all the syllabuses being vocationally-biased. All trainees are receiving, in addition to their practical and theoretical instruction and academic teaching, three meals a day, overalls, tools, and bonuses related to their productivity.

I think that we have had enough experience with Brigades now to suggest that the Brigades system of education and training has the capacity to become the main avenue of post-primary education. I have noted the success of the Builders Brigade in covering its costs these last  $4\frac{1}{2}$  years, and the low capital cost of launching it. Admittedly, Swaneng Hill School kept the Brigade in work at times and helped it with management problems, but this does not invalidate the principle of on-the-job training that covers costs by productive works, and prices have been below market prices. Until Brigades are accorded their proper place in the educational system and fully supported by Government, support has to be provided by voluntary agencies simply in order to demonstrate to all that the programme is a viable one. The Textile Workshop is covering a large proportion of its costs - not, however, including salaries of expatriate volunteers; its capital costs were R125 (about £73 sterling) per trainee. The Builders Brigade can become the main source of qualified builders for the country, provided modern sector expatriate experts are not allowed to impose unrealistic standards that the country cannot afford. Even so, the Textile Workshop and the Builders Brigade cannot be multiplied without limit, and the supply of these workers must be related to the demand for them within the planned economy. Each industrial activity needs to be carefully examined to determine whether a Brigade system of industrial training is possible within it, provided that the appropriate resources exist in the locality. But no industrial brigade can be multiplied without limit. It is in agriculture that the

opportunities for skilled manpower are so very much greater. The Serowe Farmers Brigade has been meeting only a very small proportion of its costs. By the end of 1969, the capital input per trainee will approach R1,000 (about £585 sterling) but we should by then be covering almost all the local costs, though the salaries of expatriates - who are needed in the early stages - will prove a heavy burden to the Brigades.

### Problems & Potentials of Farmers Brigades

A training programme requiring a large capital input is less likely to provide a large-scale solution to the school leaver problem in Africa than a programme needing only a small investment of capital. In terms of these objectives, I would have to admit that the Serowe Farmers Brigade has not been a success; it has been far too expensive. But a number of points have to be made to put this judgement into proper perspective. We wanted to cover the high local running costs from the outset and the farming operation which we then felt could best meet these, given our arid climate, was, we thought, a dairy farm. We knew that we would have to wait two to three years for income from cattle-breeding. We knew even then that we ought to have moved into fattening immature stock, but from the moment the Brigade started we were beset by drought and the Brigade began to eat into capital that should have been used on buying steers for finishing. When we launched the Brigade, our instructors and managers were all expatriates with no previous experience of our very special conditions, but even when we overcame our technical difficulties - largely by acquiring the services of Mr. Vernon Gibberd, who had been specialising in research in our conditions (working with another agency) - and after we had introduced intensive water usage, and flood spreading methods, we soon came up against the market factor. We could produce milk, eggs and vegetables in large quantities, but we could not sell all that we produced; for even though many of the villagers would have liked to have them and needed them, they did not have the cash with which to buy them.

In the particular conditions of Botswana we could see an ideal solution for a Government committed to this kind of policy, to both the market problems and the problem of capital, though such a solution could not lie with a private agency. I produced estimates for a model Farmers Brigade for this climate. In terms of this model the main money-spinner will be cattle; this is the only realistic policy if the Brigade operates in and depends entirely on a money economy. The capital **costs per** trainee would



be R650;(about £380 sterling);the recurrent costs to be covered are high, amounting to R110 (about £64 sterling) per trainee per annum. But this sum pays for food seven days a week, practical training, cash bonuses, academic and theoretical teaching. It also covers depreciation, capital accumulation (both to assist trainees with settlement and to permit growth) and pays part of the cost of one moderately paid expatriate. The important point to make is that three-fifths of these capital costs represent the price of local beef cattle and of other small stock. The latest National Development Plan tells us that in 1967 there were in Botswana 1,100,000 cattle, 647,000 goats and 212,000 sheep. It would require only 12½% of the national herds to provide a programme in agriculture which, linked to industrial Brigades, could solve the school leaver problem in Botswana. It is believed that something like 20% of the population owns 60% of the national herd, which demonstrates that at least in Botswana privilege is not confined to the modern sector alone, but exists in the traditional sector as well - though there are customarily obligations on the rich that mitigate this. Nevertheless, redistribution of wealth is accepted as one aim of taxation almost everywhere, and in Botswana could clearly achieve a great deal.

The overriding importance of the market factor is stressed by all this, and it is a factor that a voluntary agency cannot overcome. In our pioneer attempts to establish a Brigade as a working model for others, we had to provide money-spinners and they needed considerable capital; we did not have the power to obtain this through fiscal policy and taxation. We could have reduced the capital investment (but not eliminated it by any means) if we had not started with a dairy, but on the other hand this was labour-intensive, provided a good training programme in animal husbandry, and also provided an immediate income. The dairy cattle remain with us and are breeding, so that in real terms of our investment, nothing has been lost.

The market factor can be overcome to some extent if, for example, the trainees can be given in kind the sort of things they would have spent their money on and which money would have been spent on for them, if money were freely available. It ought to be possible to achieve an integrated Brigade training programme with the industrial Brigade meeting some of the needs of each other and of the Farmers who provide the economic base of the programme, and with the Farmers providing food for them all. The main limiting factor on the variety of Brigades is the variety of resources in each area.

Of course, cash will still be needed for all sorts of things that cannot be provided internally and this will depend on exports or on serving or selling to the modern sector. But cash is needed anyway; at least it should not set the ceiling on the range and extent of activity and development. I am certainly in no position to state categorically that the Brigade system can everywhere solve what we euphemistically call the "school leaver problem"; whether that would be possible or not would depend partly on the numbers of young people leaving primary school each year, and on the resources available in each country. But most countries will have some organised production of exportable agricultural commodities or of agricultural produce saleable for cash in the modern sector, like cattle in Botswana. It should be possible to organise a certain amount of Brigade production in these commodities. And all but the most cursed of lands must be able to yield, whether in minerals, plants or animals, materials for home-building, for the making of clothing, footwear and furniture, and for the production of a wide variety of foods and drink, and personal and household goods.

### Settlement Problems and Plans

In the immediate future, the Serowe Farmers Brigade has to solve the problems of settlement - or of absorption into the economy - of its first graduates. The Botswana Government is tolerant of our experimentation and fully supports Brigade training but has not yet accepted the whole of our programme and its implications. As yet our co-operative village development programme is not sufficiently developed to absorb the 20 Farmers Brigade trainees who have so far opted for a communal settlement. In the present economic set-up of Botswana, the farmer trainees are well aware of wage levels in the modern sector and the pressure is on us to raise capital that will produce something comparable in settlement. I am quite certain that settlement is the right course for poor farmers in the difficult climatic conditions of this country, and it has to be a significant part of the policy of rural mobilisation. In the present system, the Farmers Brigade itself is only a consolation prize for people whose first ambition was the secondary school gravy train. And settlement, which ought to become one of the spearheads of development becomes instead the last resort for frustrated ambition.

The settlement we are proposing will, we hope, be open to members of families, and even to untrained farmers, on an apprenticeship basis, to avoid their becoming new centres of

privilege. Of course, it can be argued that the capital which is spent on the Farmers Brigade itself and which would be spent on the settlement scheme increases the danger of this, and the danger will remain for as long as the Farmers Brigade trainees can see that other people who have undergone institutional training are doing so much better than they are. This is a problem that has to be tackled throughout the economy. The wage levels in the South African mines may for a time set a minimum beneath which settlement earnings should not fall, but that situation should disappear as privilege is seen to be whittled away, because this reduction of privilege could create an atmosphere of national commitment.

Of course, once co-operative village development became a part of national policy, given the attention due to it, most Brigade trainees could find a place within the settlements. No doubt it would be in the national interest to open up new areas and Brigade trainees would provide just the material for this purpose.

Until co-operative village development is a national policy, we are trying to plan diversified settlements, though we are by no means unaware of the difficulties that face us. We know from other parts of the world that the policy will work, given a national determination to make it. The capital costs of settlement can be drastically reduced if settlers can be persuaded to accept some of their earnings, not in cash, but in kind. There is a ceiling on production from poultry, pigs, dairy, goats, vegetables (and some other crops which could be intensively produced from borehole irrigation), determined primarily by market limitation. Yet production should be increased in settlement and the production of these products does not require large sums of capital. The capital is required for the cattle because they alone are a sure means of producing cash, and cash of course is necessary to buy things from outside the settlement. Production of these non-money earning products can be increased only if they can be exchanged for the goods the farmers would buy if they had money. It is for this reason that I favour, in principle, a diversified settlement programme, involving farmers, builders, bricklayers, limeburners, spinners, weavers, seamstresses, teachers, nurses, blacksmiths, mechanics, brewers, carpenters, thatchers, tanners and so on, so that there will be a vigorous internal exchange of goods and services and in which the demand of an ever-increasing variety of agricultural products normally not easily marketable inside Botswana enables farmers to exchange their produce.

for industrial skills and services produced within the settlement. The diversified settlement might have a central co-operative exporting not only the raw agricultural products, but processed products as well, such as mats, leather goods and cooking oil, enabling the settlement as a whole to benefit from the value added by industrial processes. Goods and services that the settlement needs but cannot itself produce, like fuels and fertilisers, can be imported in exchange for its produce.

There are other problems that need to be solved before the Brigade system can become widespread, one of the biggest being the supply of instructors. This is a problem which could only be solved by a crash training programme for instructors. There must also be land to absorb trainees of Farmers Brigades and the authorities must be willing and able to allocate it in sufficient quantity.

### Reform of Primary Education

I said earlier that I would like to supplement President Nyerere's proposals for a reform of primary education, in the light of my experience with Brigades. President Nyerere assumed that the great majority of young people who attended primary schools would not proceed to secondary school. Their primary education would be all that they would receive. Primary education ought therefore to be sufficient in itself to equip them for life in the rural areas, which would provide the only possible work opportunities for most of them. "We should not" wrote the Tanzanian President, "determine the type of things children are taught in primary schools by the things a doctor, engineer, teacher, economist or administrator need to know. Most of our pupils will never be any of these things ... Our sights must be on the majority; it is they we must be aiming at in determining the curriculum and syllabus." President Nyerere's view is that "Each school should have, as an integral part of it, a farm or workshop ... This is not a suggestion that a school farm or workshop should be attached to every school for training purposes. It is a suggestion that every school should also be a farm, that the school community should consist of both teachers and farmers, and pupils and farmers. . . The most important thing is that the school members should learn that it is their farm, and that their living standards depend on it.

"... The farm work and products should be integrated into the school life; thus the properties of fertilisers can be explained in the science classes ... the possibilities of proper

grazing practices, and of terracing and soil conservation methods can all be taught theoretically at the same time as they are put into practice ... the school farm must be created by the school community clearing their own bush ...". With all this I agree; there is no doubt that agriculture and rural science provide just as good a medium and discipline for inculcating rational thought, and for sharpening powers of observation and deduction, as does the teaching of the French Revolution in African primary schools.

President Nyerere also points out that the primary school entrance age is laid down in the interest of the small minority who will be lucky enough to get to secondary school, while the great majority who do not, will be too young to do anything else when they leave school. He wants the entrance age fixed at ten.

My proposed modifications of President Nyerere's policy for primary education are by no means radical, and amount to adaptations for those countries where the Brigade system could be generally applied - that is, those countries where the resources are available (both of exportable and saleable commodities, as well as of those for local production and exchange) to cope with the numbers of primary school leavers involved.

There is no doubt that Brigade training would be most effective if it were preceded by a seven year primary course in which agriculture, rural science, science, mathematics and some form of civics and development studies course, were taught along with the predominantly practical activities. This applies especially to Farmers Brigade training. Clearly, ten years of training and education, ought to produce better qualified farmers and artisans than seven years will do, especially if Brigade training is of a high standard.

Where primary education can be followed by Brigade training, then I believe the entrance age should be fixed at eight years; the first four years are probably too early to attempt any actual vocational training, but this can be stepped up year by year. Certainly in the early years, even if the primary school is organised as a farm, much in the way the Brigade is, there is little chance that the children would be able to cover the costs of their education in the way a Brigade does.

In those countries where the circumstances favour the establishment of Brigades on a large scale, the Brigade system

of education and training can replace the existing secondary school system, and all who wish to proceed to further education should first work in one of the Brigades.

In addition to industrial activity in the villages, the economic plan will want to provide for a certain amount of large scale industrialisation, mining, and even large scale agriculture. There will be a need for very large dams, power stations, national roads and communications. A certain number of people will be needed, like doctors, engineers, agriculturalists and veterinary surgeons, whose training is long and intensive. And extension and research workers will be needed to serve and promote rural development. Some discrimination in the intensity and length of training of different personnel is unavoidable and will have to be tolerated. On the other hand, if these more highly trained people, who will no doubt form a small minority, are to enjoy economic privilege, then as now, there would be great pressure and competition for the limited number of places in the relevant training institutions. Privilege - as I suggested earlier - not only acts as a magnet but also creates dissatisfaction with alternative avenues of training for jobs with lower salaries. This is true also of the gap between urban and rural living conditions.

### Non-Vocational Aspects of Brigade Teaching

Before proceeding to analyse the existing pattern of secondary education, and before discussing the large, all embracing post-Brigade institutions which I feel should be established, I need to say something more about the non-vocational aspects of Brigade teaching. While this system of education should be self-contained, it ought to be able to lead on to the next stage. The objectives of education at this level ought to encourage rational thinking, initiative, reliability, self-discipline and loyalty to agreed communal objectives, integrity and moral courage, and the ability to feel compassion for others. It should clearly inform them about the nature of their society and more especially its economy and their role in it. It should also give them some commitment to national objectives. We should be quite clear and quite precise about what people need to know in order to think rationally. We can help people to think scientifically and to think about production, without trying to make scientists of them; we certainly do not need to take them through the laborious process of examination science syllabuses. Agriculture and rural studies provide just as good discipline for rational thinking, for making sound judgements, as an understanding of European history. If

compassion, and through it, commitment and tolerance, can be inculcated, it can be done as well through a well-written and simple story in a local setting, as through the teacher's interpretation of the difficult language of Shakespeare. There should always be opportunities and time for music, and discussions over a wide range of topics. In earlier writing I may have tended to underestimate just how much people can learn from practical and productive work, from co-operative work and discussion, and from having responsibility for their own affairs.

The main purpose of the existing pattern of secondary education which is directly modelled on the British Grammar school or French Lycee, is to prepare young people for life in the modern sector. Culturally, it alienates them from the rest of the population and I shall attempt later to define this and examine its implications. It also elevates them into an economically privileged class. Because it is so costly, secondary education can be provided for only a very small minority in a poor country but, because it provides for its successful graduates access to the glittering prizes of the modern sector, there is tremendous public pressure for more and more secondary schools.

Harbison writes that "the absorptive capacity of the modern sector for university graduates as well as secondary and primary school leavers is also strictly limited. Even in African countries, university graduates (in most fields except science, medicine and engineering) are experiencing difficulty in finding suitable jobs. This is now true in Nigeria. Within a few years, the same will be true of East Africa. Ethiopia already has a formidable surplus of unemployed secondary school leavers. In Kenya, the surplus of secondary school graduates is likely to reach alarming levels within the next few years. This situation will become aggravated as the output of university graduates swells and as the remaining jobs held by expatriates are filled by Africans." There will be openings for qualified secondary and primary school teachers for a while yet in Botswana, and in the immediate future as mining starts, a lot of graduates and school leavers will find jobs. But we should guard against drawing long-term conclusions from this. Harbison stresses that "there will simply not be enough high-level positions in the large public and private bureaucracies nor clerical and white collar jobs . . . to absorb the outputs of the educational industry. This is clear from most manpower surveys . . . and it squares with the experience of countries in Asia and Latin America whose education systems are more advanced than those in Africa."

The emerging nations are not going to develop their economies without a great deal of productive work; much hard manual work is going to be necessary in the process. These countries cannot afford machines to do this task. This is a reality that people from developed countries find hard to accept. What Julius Nyerere says of Tanzania is valid for Botswana and will remain so despite mining developments.

"And the truth is that our ... republic has at present a poor, undeveloped and agricultural economy. We have very little capital to invest in big factories or modern machines; we are short of people with skill and experience. What we do have is land in abundance and people who are willing to work hard for their own improvement. It is the use of these latter resources which will decide whether we reach our total goals or not. If we use these resources in a spirit of self-reliance ... then we shall make progress slowly but surely. And it will be real progress, affecting the lives of the masses, not just having spectacular showpieces in the towns, while the rest of the people live in their present poverty."

The developed countries are rich enough that the manual workers can be paid, and paid quite well. But there are not enough resources in the underdeveloped countries to pay even low wages to the vast army of workers who will be needed to undertake the necessary tasks of development. In emerging countries the leadership must either force the ordinary people to work or they must join them and lead them. It is in this context that Frantz Fanon's injunction assumes its full meaning: "It is only when men and women are included on a vast scale in enlightened and fruitful work that form and body are given to that consciousness. Then the flag and the palace where sits the government cease to be the symbols of the nation. The nation deserts those brightly lit, empty shells and takes shelter in the country where it is given life and dynamic power."

#### Dangers of producing an elite

Since it was founded in 1963, the policies of Swaneng Hill School have always taken account of the danger of creating a small, privileged and even self-perpetuating elite in a country such as Botswana where shortages of capital dictate that only a handful of people can receive post-primary education. To quote myself, we have throughout been "extremely anxious to discourage the notion that education is just a ladder on which ambition climbs to privilege. We have felt that it is of some importance that the



educated minority in a developing country should feel committed to stepping up the pace of development and committed also to the idea that an ever-increasing number of people should share the benefits of development. We try to ensure that, when our students leave us, they will feel under some compulsion from within themselves, through sympathy and fellow-feeling with the poor and hungry, to fight want, ignorance and disease in their country. We seek to equip them not only with the commitment but also with the confidence, knowledge and skill to tackle themselves, the problems facing their country."

During the last six and a half years, a fair proportion of our students have shown a very satisfying degree of awareness of our policies during their stay at school. Many of the students have participated quite effectively and enthusiastically in voluntary manual work on construction and other projects both within and outside the school, and they have built a number of buildings themselves, including a massive school hall, now nearing completion. The students do all the chores in the school and even their own catering (except for week-day lunches), they run a co-operatively organised vegetable garden, and, generally speaking, they accept a standard of living below that of secondary students at other schools. But while I record the successes, impressive as they are, I must also honestly acknowledge that there is also quite a fair body of students who have managed to remain uninfluenced by the policies of the school. Their sights were set squarely on the certificate that will still, in this economy, for a while yet, provide the openings to well-paid government jobs and they remain committed to that objective when they leave. And even those who are aware of the school's policies and objectives, finally find that their moral attitudes become undermined by the irresistible financial temptations of the modern sector. Even some of the most responsive students, as they near the hurdles of the final examinations, abandon their commitment to voluntary work and communal service to concentrate on their certificates. While society offers excessively high rewards and a permanent, total release from manual work and physical drudgery for academic attainments, even those most dedicated to wider social, political and economic progress will find themselves drawn to the glittering prizes.

If a valid case has been made from these arguments that everyone undergoing post-primary education should go through the Brigades, then they equally support the case that no group of students, at any level, should exclusively be academics and be wholly released from manual or productive work.

In a paper I wrote for a seminar at the University of Botswana, Lesotho and Swaziland, I had the following to say about post-primary education: "The main economic justification for the academic functions of the secondary school is no doubt that they are a necessary part of the training, not only of top-level technicians", but of all those whom I have already acknowledged to be necessary to planned development and whose training must be longer and more intensive than that which Brigades can provide.

"What qualities," I asked, "besides their respective vocational skills, will enable these people best to serve the economic plan? Can such qualities be taught? Does the teaching of them depend on academic learning? Intelligence is clearly inherent, and while initiative, the ability to discriminate and to reason, and original thought, are bound up with it, all these qualities can be improved through education. Being well-informed also depends primarily on education. Young people can probably be trained in reliability, self-discipline, self-confidence, and organising ability. Integrity, moral courage and enthusiasm can be inculcated; so too, possibly, can compassion - and through it - dedication and commitment, and tolerance, qualities which make leadership at all levels sounder, wiser and more humane. Certainly the ability to communicate with others can be improved by education.

"Some of these qualities could doubtless be learned in Brigades, not in formal teaching situations, but by virtue of the responsibilities thrust on trainees for running their own affairs. But in general, those qualities associated with mental processes, and those based on a foundation of knowledge, are probably best learned from academic work. Of course there will always be exceptional individuals who can make the most of scanty education to develop their talents, for whom the limited education of the Brigades will be quite enough to take them further."

"Mathematics does help teach precision and it helps us to organise our thoughts. Science helps us shape our view of the world and our attitude towards our environment; it gives us mastery over our resources. Speaking for myself, I have no doubt that I am a more compassionate man because of the impact on me of the deeper appreciation of English literature that came to me through study."

I am not now quite as certain about these words as I

was then. Earlier in this paper I wondered aloud how far we could afford to provide certain aspects of non-vocational education when only the minority can have it. I am sure that there are certain human qualities recognised by most cultures as admirable and worth inculcating or instilling where it is possible to do so. I have mentioned some of these as worthwhile encouraging during Brigade training. I am now in some doubt, where before I was more sure, whether the inculcation and instilling of any of these qualities can be said to depend on any academic discipline, though it is true that some qualities might be heightened by a real appreciation of literature, art and music. Whatever we may hope to arouse in our students with exotic cultural treasures, I think we must be aware that cultural alienation is bound up with elitism. I suppose that cultural alienation only has significance on this score. The African elite is objectionable to men like Fanon, Nyerere, Sekou Touré and Moumouni not because he appreciates Beethoven, Cezanne or Milton, but because the economic privilege he enjoys constitutes economic exploitation. The view of culture that these African leaders have is essentially a politically orientated one. Fanon writes that, "Culture... in its essence ... is opposed to custom for custom is always the deterioration of culture ... The native intellectual ... must realise that the truths of a nation are in the first place the realities of the life that is being lived by its people now." Sekou Touré adds that, "To take part in the African revolution it is not enough to write a revolutionary song; you must fashion the revolution with the people. And if you fashion it with the people, the songs will come themselves, and of themselves." While this is all frankly political, I think it makes the point that there is no harm in presenting western culture, as gifts, for appreciation and to add to human sensitivity, as long as we do not seek deliberately by so doing to create a privileged elite. It may well be however that these cultural gifts ought more appropriately to be presented on the radio rather than to small minorities in schools.

How many subjects ought each student to take who proceeds beyond the Brigade for further education? Clearly his vocational choice should dictate a nucleus of subjects. In my earlier thinking I took the view that every student specialising in either technical or academic subjects ought to take some subjects in the other. What I am prepared to question, I think, is the subject content of the subjects which the student is taking other than those in which his vocational choice makes him specialise. I would be prepared even to question whether we need to retain the compartmentalisation of academic dis-

ciplines in respect of the non-vocational subjects. What this means is that in respect of further education, as in respect of the Brigades, we should be willing to re-examine our aims in every subject - when it is to be taught non-vocationally. What is probably required in respect of both Brigades and further education is to outline specific bodies of knowledge that everyone needs to know to help them to be responsible, useful, tolerant and rational members of societies. These are areas on which my staff and I will be concentrating our attention in the immediate future.

### Proposals for post-Brigade education & training

Further education after primary schooling and Brigade training, ought to be provided in large post-primary institutions providing technical and commercial training, scientific training and such academic training as can be justified, agricultural training, rural development training and even teacher training. These institutions ought to be linked to Brigades (though not every Brigade will be linked to an institution) with the greatest integration possible of the two, to prevent the growth of a status structure in society. If the spearhead of development is to be in the villages and settlements, many of the more intensively trained people will be needed to work there and take to the rural areas their skills. A good preparation for this is close and frequent contact with the Brigade trainees who will be the husbandmen and artisans of the rural areas.

These large institutions of further education will have to provide a much larger proportion of economically unproductive academic training than the Brigades, and they will need to employ highly qualified teachers. They will need considerable subsidies and should limit these by covering as much of their costs by productive work as the constraints of academic studies will allow. This is another good reason for a close and careful study of just what and how much academic work is needed for the average student in the institutions of further study. It is not only productive work that is necessary but the jobs like catering and cleaning which cost a great deal if servants are employed. And besides, the attitudes of students will be very much affected by their residential conditions in boarding establishments; standards should not be higher than can be provided in the rural areas. It is important, too, to discourage the notion that largely academic work sets those who do it above those who do not.

Productive work is also important in equating the institution's students with the trainees of the Brigades. And, of course, it contributes to the development of the community.

While voluntary work and service within the school are important and should continue, they are not enough by themselves, and service in the outside community is quite vital not only because development in the community is a good objective in itself but because the commitment to the community will close the gap between the elite and the ordinary people, through the constant reminder of the realities of underdeveloped rural life.

The school should do all it can to promote economic development in the community, and the only limitations on this are those set by the skills of staff and students. Members of my staff and I initiated the Swaneng Consumers Co-operative Society, and we and several students helped to run it in the early stages; some of us are still associated with it. Members of the staff also helped launch a producers co-operative and students helped launch a livestock marketing co-operative. I have made mention of other projects we are working within the village.

I have several reasons for advocating an all embracing institution of further education. A diversified curriculum in each secondary school will facilitate the provision of training in a wide range of subjects. The combination of several institutions into one will itself make the wider range of courses economic; it will prevent the duplication of academic faculties in a whole lot of different technical institutions and teacher training colleges. Large centralised institutions can co-operate better with manpower planners in preparing and providing the professional, technical, clerical and entrepreneurial skills in the proportions required by sound economic planning. The wider curriculum would help institutions to cater better for a wider range of aptitudes among its pupils, and this it will need to do as development proceeds and as more and more young people are admitted to the institutions. Then again, by offering a wide range of subjects, including technical subjects, the establishment would become more effective in promoting development in the surrounding community.

Every one of the subjects offered in the all-embracing institutions should be made to serve the policy of making the school a focal point of development, and provide the basis for productive work. The possibilities in science are obvious, and indeed the school laboratories should do considerable research

work for the village into the economic potentialities of local resources. Some of the academic disciplines can be harnessed to promote literacy campaigns, disease prevention campaigns, and to provide publicity material for rural development generally. Indeed, here is a more sensible vehicle for teaching English than writing essays on rather irrelevant topics.

### Course in Development Studies.

In my booklet on Education and Development in an Emerging Country, I described at length a draft course in Civics. We have now produced a new draft and renamed the course Development Studies. I should like to add to what I have said in general about the course in my booklet, and I should like to stress that some form of this course ought to be included for all students as a compulsory feature of whatever non-vocational material is to be taught in the institutions of further education. The Development Studies course consists of seven sections. The first is an economic analysis section, explaining the factors of production, the meaning of consumption and investment, the importance of the surplus to development provided it is invested rather than consumed and what specialisation means. The section also discusses money, employment and labour, the allocation of resources, capital accumulation and population growth.

The second section deals with pre-industrial history, starting with man as a hunter and gatherer and proceeding through the first agricultural revolution to the eve of the industrial revolution. This section shows man's early efforts to use the resources of nature to his advantage, and also how each technical innovation was part of a cumulative process that made the next step possible and so created the climate that made the industrial revolution technologically feasible. The third section analyses scientific progress both before and after the industrial revolution and notes its role in development. The fourth section discusses politics and how governments and ruling classes have always played an important part in the control of the surplus. The fifth section concerns economic development and industrialisation. Here we show the main contrasts between industrial and pre-industrial societies, and we discuss the first industrial revolution, some early experiences of industrialisation, the special problems of industrialisation today, and some contemporary experiences of industrialisation. The problems of rising expectations, prestige spending, luxury imports, are discussed along with the pros and cons of intermediate technology

and labour-intensive methods. The sixth section discusses the economic situation in the student's own country and section seven analyses social and cultural change related to economic development and industrialisation.

Economic development makes very heavy demands on developing societies and as many people as possible within the society should have an understanding of what these demands are. Everyone should know the conflict between investment and consumption and the need to keep down wages and salaries. All should have given serious thought to the conflict between the demands of development and established custom. The engineer and the architect, for example, should both be aware of such problems as the effect on employment levels and import statistics of capital-intensive (as opposed to labour-intensive) techniques, when planning roads, dams and other major construction work. In most developing countries primary teachers constitute quite a sizeable proportion of those who draw salaries: to secure their co-operation in implementing the economic plan would be of immense value, particularly because of the great numbers of children whom they could influence.

Of course, the knowledge that comes from Development Studies is not of itself any guarantee of correct decisions, or of co-operation, but a great many people in positions of responsibility and authority, with power to affect quite profoundly the course of development, take the wrong decisions and the wrong turnings, often simply through lack of the right information.

It is important that people be made to understand just how complex an economy has to be to sustain a civil service. It is important that they be taught about the processes of production, the importance of the accumulation of tools, of increasing skill and knowledge, and the indispensable requirement of hard work for everyone. They must also be shown that agriculture is almost the only original source of capital, and how important it is to revitalise agriculture to promote development. Too many of the educated young have a contempt for the land. They see education precisely as a means of escaping from the land into offices. The country's development and the production of food will be adversely affected by this contempt and by the neglect of rural areas and agriculture.

If the post-primary school is to be involved in local economic planning and development, the Development Studies

Department is in the best position to co-ordinate and organise this involvement. It will be seen from my outline of the course (Civics, under the heading 'The Local Plan') in my booklet, that I proposed that the school should undertake detailed resource surveys in the area around the school using students as data collectors and enumerators. We have already made a start on this at Swaneng Hill School in conjunction with the Ministry of Development Planning.

The Development Studies course can be one of the main instruments for making students aware of their society and its needs, of the needs for rural development and for an integrated approach to it within a comprehensive national development plan. Given the right national and educational atmosphere, it should be possible to inculcate a sense of dedication and commitment to a national progress that is designed to benefit all.