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Hopkins Lecture July 86

"Politics and Passions: Adventures in Engineering"

"It had to happen sometime. Men have built bridges for men for thousands of years. Likewise, for many centuries, scientists in search of truth have probed the fastnesses of mechanics and geometry. Throughout all this time the tangled skeins of theory and practice have crossed and parted. Only during fleeting instants have the philosopher and builder recognised each other's arts and powers. But there had to be a stocktaking. Elegance and craftsmanship had to be aligned with scientific discovery and natural philosophy. It has taken patience, research and scholarship, but it has been done. Hegel would have said it needed passion, and this is true. And it needed Hopkins."

That was a quotation. I make no apologies, because I wrote the original, 16 years ago. It was a book review of Harry Hopkins' outstanding work: "A Span of Bridges".

"A Span of Bridges" was a remarkable book. It was

more than a chronology of man's artifacts, although in that respect it was superb. But also it was a scholarly, erudite search for the truth behind engineering achievement, behind the transformation of inert stone and iron into graceful, practical living works, behind the labours of men who combined practicality, perception and passion.

From the book, we can identify the man. Harry Hopkins understood, better than most, the things that go together towards professional fulfilment. The pursuit of excellence in all things is an evolutionary occurrence, involving in turn a number of experiences. These could be defined as acquaintance, familiarity, competence, expertise and mastery. It was always clear to Harry Hopkins that this cycle of progression towards enlightenment could be achieved only if the disciplines of scholarship, practice and tuition were all woven into its pattern. He knew this, and he practised it, as I found out 33 years ago.

In 1953 a small group of public works design and construction engineers was invited to a one-week

Seminar on concrete and soils engineering, to be held on the old Worcester St Campus. This was an initiative of Harry Hopkins who just two years previously had been appointed Head of the Department. He was quick to realise that "out there", away from the campus, challenges were being encountered day by day in the public works scene, calling for special skills and understanding of people who some time earlier had walked the cloisters of Worcester St. It was his early understanding of the value of continuing education which led to the remarkable relationship we now enjoy between the practice of engineering, and its institutional teaching process. From those humble beginnings have sprung almost two generations of practitioners for whom the campus was not a finite terminal element at the beginning, but remains an ever-present environment with its own dynamics and interactions with the work-place. That was the legacy of Harry Hopkins, and those who share in it will always be his debtors.

Now can we look at some public issues involving not just engineering but technology as a whole. Some of us, who have come here to-night because of our association with H.I. Hopkins, chose the discipline and vocation of engineering for our life's work. In one way or another we have identified our personal goals and aspirations. Take this definition of technology: "The development and management of physical resources to meet human needs." No one could quarrel with that in terms of either simplicity or altruism. And yet, in the present climate of prime profile politicism, such a mission is fraught with unexpected problems. From the extremely influential lobbies that haunt the corridors of power to the triennial bribes of party manifestos, forces are at work which demand from technology and its management special levels of skill and understanding. And we are not always matching these needs.

To-night I want to talk about three issues.

I want to talk about resource management, especially public resources, and the grave risks in not looking at the whole task.

I want to talk about the impact of the cash register syndrome on New Zealand's research and development, and the legacy this could leave our children if we fail to address its implications.

Finally I want to comment on the cult of consumerism, and the way it is tending to influence both political and professional behaviour.

In the area of resource management, I shall cover just two main issues, land transportation and the environment. The land transportation story is a remarkable one. It is so, because of the paradox in which we now find ourselves. With great ingenuity and entrepreneurial skill over more than 100 years, we developed two main transport assets, a road and a rail system, which are both in world class for such a small nation and such a difficult physical environment. Then, over the last decade or two, we have succeeded in mismanaging those assets so completely that both entire systems are at risk. It is almost incredible that a democratic state embracing a people with a high level

of intelligence could do such a thing, but this is so.

Let us look first at what we have achieved.

As a built asset, New Zealand's railway system represents some of the finest engineering survey, design and construction work the world has ever seen. In addition, railway mechanical engineers designed and built the world's most efficient steam locomotives of their time, and the signals and electrical engineers broke a great deal of new ground and were at the forefront of their technology. The whole resource, as with any railway system, has had a great potential for bulk transportation, especially in more recent years with the development of computerised traffic control.

New Zealand's highway system has likewise been a built asset on which we can look back with pride. It was evident early on that the national rail system needed to be supplemented by a roading network, and over the years we have developed low-cost rural roads to provide all-weather access to most of the remote settlements, and sealed highways of an

appropriate standard to link the main centres. The secret of success of this whole system has been flexibility, and this is a quality which in my belief has been sadly undersold to our consumer public. The art of sound development is to produce things which which are both necessary and sufficient for the users of the time. At the same time, they must be capable of being extended to meet new demands, and not be locked into a state of premature obscurity. The New Zealand roading network is a shining example of this philosophy. Engineers have produced a system to meet the needs of the time, yet with minimum disruption and fuss have been able to upgrade it progressively to match changes in need. Now we have about 100,000 kilometres of legal roads, which for a population of $3\frac{1}{4}$ million people is quite an achievement.

So there we have it : a small country blessed with two land transportation systems that represent the best that world technology could offer. It would be comforting to close the book here, and sit back and relax in the glow of such an achievement.

But look what we have now.

We have a grossly under-utilised rail transport system brought to its knees by a long history of political ineptitude and public apathy. We have a fragile rural highway network so grossly over-committed and abused by bulk transportation that all but a fraction of the country's roading budget is spent stitching together the wounds, and next to nothing on future investment.

How has this come about?

This has happened because of two refrains which constantly echo through the corridors of government and its advisers. The first is: "Let us have freedom of competition." The second is: "Let the costs lie where they fall."

As expressions of our democratic institutional ethos, such refrains no doubt are accepted by many as being top of the pop charts. But as often as not they become no more than parsimonious platitudes, and in the transport field, arrant stupidity.

The point is this. What we have are not two alternative transport systems, but two complementary ones. The rail system is ideal for shifting cargoes in bulk. Properly managed, it can carry many times its present payloads, and it can do so far more efficiently than can any other means. Some years ago the Hutt Valley ran out of concrete aggregates, and they were imported from the Wairarapa. Did the industry use the rail option with the Rimutaka Tunnel? It did not. It brought the material, thousands of tonnes of it, over the hill in 38-tonne road transporter units. If we look at fuel costs alone, the material needed five times the fuel per tonne-kilometre of transport, than would have been the case with the rail that was already there.

Meanwhile, as the tourists and private motorists are discovering to their dismay, the highway system is becoming the arena for multi-axled monsters, with all the problems they produce. For example, a truck-trailer unit travelling at speed on a wet road surface can atomise the equivalent of a 44 gallon drum.

of water every second. The driving environment in this situation is deplorable, and is not helped by the fact that the average New Zealand motorist is one of the most immature and unskilled in the Western world.

To deal with the enormous physical costs of this misdirection of bulk transport, we have a system of road user charges which ostensibly apportion to the heavy transport industry the costs of maintaining our flexible pavement system. It seems to be politically acceptable to knock the roads to pieces, and then charge those responsible for fixing them up again. Would it not have been better to have avoided the problem in the first place?

The answer is to employ the rail link as a bulk transportation artery, and the roading system as a distribution network. They are both ideally suited for this division of effort. Only two things are missing in the equation which could make that come about.

One is the need for technologists, the transport

industry, and the consumer to develop effective transfer facilities — modifying existing capsules if necessary — so that the two systems mesh in as a single operating entity, and with minimum effort in the transfer process. New Zealand technologists have demonstrated time and time again their ability to solve these kinds of problems. One has only to recall the elementary containerised air-cargo system, developed nearly 40 years ago, and operating between Wellington and Blenheim. First of its kind in the world, it has had a remarkable history of a cheap, effective service.

The other item in the equation is that of political and public attitude. When we stop poor-mouthing and criticising rail transport, when we abandon the "freedom of choice" syndrome, and when we achieve a political, industrial and public commitment to integrating the whole transport network, then and only then will we justify our inheritance of these two great resources, the product of five generations of New Zealand's finest technology.

This will need, no doubt, some bold central government direction, together with a firm understanding that in the interests of New Zealand, people may not be able to do what they like in this matter. And that would be a change!

Now could I talk about politics and the environment.

You will no doubt be aware of the substantial changes that are in progress in the state services scene as part of the government's commitment to re-organise environmental administration.

The government is to be applauded for the initiatives it took to review critically the role of state agencies in the environmental field. Less noteworthy however are some of the decisions taken, and I would like to comment on the perennial postulate that you fix the environment by shuffling the bureaucracy. The validity of this approach is about as credible as a three-legged biped.

The success stories in environmental management,

and there are many, typify the very interactive and successful work achieved over the years by groups of people, many of whom were in the day-to-day business of development, and took time off from their busy schedules to participate in these activities. From this I draw two conclusions.

The first is that everything we have inherited today in the practice of environmental care — the assessment and audit process, the research and development, and the systems of public involvement — have not arisen out of some independent regulatory agency doing its thing. No, it is from the interaction between people charged with development, and those whose prime concern is environmental protection. The systems we had developed were not perfect, but their failures were minuscule compared with their lack of support from earlier administrations because of the dominance of cash register politics and the continued syndrome of short-term accountability.

My second point is that no persons or organisations

ever perform best in their calling and to the dictates of their conscience if their behavioural code is regulated by someone else. We do well in things particularly if we have a stake in them. The art of environmental management is to incorporate the environmental ethic in one's own development work, right from the beginnings of the education and training process, through to the conception and completion of a task. In the educational area, we still hear pleas to have environmental subject added to existing criteria. Such pleas are as unrealistic, indeed nonsensical, as the arguments that we render a project environmentally sound if we put a cloak on it to make it look good, and sort out how to deal with the wastes. What in fact is needed is not "yet another subject", but rather the re-development of the whole curriculum to embrace environmental principles.

Why do I make this point about education? I do so because the principle is equally applicable to all other facets in our business of development. There is no way that any development agency

can work effectively in the environmental area if those elements of its planning and operational activities which have environmental connotations are separated out and put somewhere else. One has only to look at history to see what has happened throughout the world when you introduce external controls into behavioural areas. The most effective way to increase fuel consumption in a time of shortage is to ration it. The most effective way to increase an external deficit due to balance-of-payment problems is to introduce import licensing. Individual ingenuity is very effective in overcoming bureaucratic controls if these fail to have regard to the ethics, morals and professional abilities of people charged with development, and along with it, care for the environment.

Having made these points, I can only conclude that the government's decision to remove the environmental elements from multi-purpose agencies will produce more problems than it will solve. The opportunities to seek balanced holistic decisions on resource allocations will be fewer and less evident,

and the source of that special quality of advice to ministers will be no longer there.

May I make one last observation on this environmental issue.

In our short history of 150 years or so, we New Zealanders have built many things, and left many artifacts. The ones that give grace to our environment do so because their builders cared. They cared because they had learned and they knew human values. They did not shuffle off that sacred trust to others beyond their ken, nor left it to other intellects to do their thinking for them.

Now could we move to the second act in this performance — the user-pays concept in research and development.

With the widespread demands to save money, it was not unexpected that government research would be a ready target for the axe-man. There are good reasons for this. There is still a large section of the industry which "leans on the government" for research and the solutions it brings. There is also some research taking place which is not being evaluated in terms of its effectiveness, whose costs are not being effectively monitored, and which is of little value to our future development.

Bold steps are being taken in the government scene, including making realistic charges for services and competing on the open market. This will have a salutary effect on the quality of the work.

The same is happening in other areas of technology, like the design and construction of engineering works. Activities which were previously undertaken by state engineering agencies, and

financed either by them or by bulk allocations from the votes of client departments, are now subject to a much tighter level of accountability. They will also be open to competition from the private sector.

This all makes good sense, and already there is evidence in government engineering and architectural agencies of a strong sense of purpose, better performance and increased productivity.

But like all bold steps in development, risks are involved. This is no excuse for not taking the kind of action now in hand, and one must acknowledge the government's single-mindedness and dedication to getting a better deal for the taxpayer's dollar. The important thing is to recognise the risks and do something about them.

In the enthusiasm to put government engineering in the marketplace and to release its erstwhile captive clients, there could be pressure to sharpen up designs, reduce safety margins, and compromise on standards. There are those who say that

this may not be a bad thing, that some government agencies are heavy-handed on standards and frustrate innovation, and that, for example, "an elephant is a mouse designed by the Ministry of Works."

Nevertheless, we must tread warily in this territory, and there is a message about this which should not be ignored. Let me give you some facts on a case concerning design standards and safety. Harry Hopkins' first love was bridges, and it is to these I turn now.

Earlier in this presentation I made the point that we had built in New Zealand about 100,000 kilometres of roads, and that this called for a high quality of civil engineering in view of the rugged nature of much of the terrain. Not unexpectedly we have built a lot of bridges as part of the roading system — but would you believe 11,000?

That is quite a shopping list of bridges, and they have had quite a colorful history.

It has been said that the one constant thing in the world is change, and this certainly is the case with bridge design loadings.

During the first quarter of this century, there was no standard pattern of the loading used for design purposes, although the loads due to various forms of horse-drawn wagons and of traction engines appeared to be used in bridge designs reported in early volumes of the technical literature.

During the 1920's, the Public Works Department adopted a 16-ton traction engine with 10-ton trailers as the standard design loading for main highway bridges.

In 1943 the American standard H-S loading was adopted, with a gross load of 33 tonnes. At that time the Engineer-in-Chief was bold enough to express doubt that the need would ever arise again to up-grade the loading.

It lasted 18 years.

In 1961, the gross design loading was increased by adding a trailer unit to the design load pattern.

One would have thought that this would have satisfied the heavy haulage industry, but in 1972, only 11 years later, up it went again in conformity with a much heavier European standard loading.

Now we have the situation where rather less than 40% of our 11,000 bridges were originally designed to carry the present legal highway loads to which they are being subjected.

Contrary to what alarmists might think, this is a perfectly normal and acceptable situation. At any time in our history of development we shall have a set of facilities with degrees of serviceability ranging from superlative to totally inadequate.

As the demands of society change, and as the facilities themselves go through the process of ageing, there is a progressive up-grading going on. Associated

with this up-grading there is a periodic review in standards. Because this review procedure is inevitably a step function by nature, there will always be situations where the design capacity of some facilities will be less than those required, and less than the actual loads permitted.

To live with this situation, and thus to avoid taking facilities out of service, calls for good engineering design, with appropriate margins to bridge the gaps in later life between their design capacity and the loads imposed on them. This is exactly the case with our bridge system, and over the years the roading authorities have accepted the advice of its engineering consultants, the Civil Directorate of the Ministry of Works and Development, in the matter of standards.

The risk of involving the marketplace in this design development is that competition may lead to "cheaper" design work. In such a case, structures could be designed for current or forecast loads with little or no margin of safety in the event

of changes in client needs. Now we know from experience that forecasting is a notoriously inexact exercise, and it is also probably true that more structural problems occur because of changed user needs than from any other cause.

So here is my philosophy about design and construction in the public works scene. It involves trying new things and learning about their performance. As a result it tends to define standards which industry and the profession generally accept. I believe it is most important therefore that we should tread very warily in the path of competitive design standards in this area. It would be easy to accept "clever" design techniques which we would otherwise have eschewed, just to retain a competitive edge. The risk in doing this is that it can invite a higher failure level statistically, and this can be damaging to development of the technology. It is important that we try new things, but this must be done with care and conservatism. My philosophy is a bit of a paradox: be careful of the burdens you place on your works, and you can

do new things with confidence. Conservatism can lead to ~~effective~~ innovation. It can also help avoid premature obsolescence of our assets.

So much for the bridge design story. It is only one chapter in an anthology of innovation, where wise counsel prevailed over demands for ostensibly cheaper options. One has only to recall such things as developing practical standards for concrete control, radiographic inspection of welded steelwork, criteria for prestressing, geothermal engineering, seismic design of structures, roading, and hydraulic engineering. In all of these fields, easier paths could have been followed. For example, the Ministry's criteria for full radiography of pressure conduits such as penstocks were often criticised in early days as being too difficult to achieve. They initially involved costs and efforts so great that some engineers wondered whether some other solution should not be found. There was a long learning process in all the operations — the rolling of the heavy steel platework, the preparation of the joints for welding, the sequence of laying down

"the welds, the stress-relieving process, and finally the development of the sophisticated equipment and techniques to obtain radiographic pictures of the entire welded joint. Yet in the long run these problems were solved, what was new became routine, and now we have the benefit of very secure, well-engineered construction in all the pipelines and pressure vessels of our hydro system. There was no room for short cuts or second best.

So we see that in the development scene, adopting a more expensive option can give tangible benefits by way of reduced obsolescence and trouble-free performance. In a way, it is akin to the Deming philosophy on the quest for quality.

Success stories of this kind are legion in the business of development. Less impressive has been the business of conservation.

The demands for tangible returns on investments in science and engineering have engendered a rather ruthless sorting process, where short-term ventures tend to receive the nod.

If one looks at an activity like soil conservation and rivers control, we see a situation where research and experiment into preserving our natural assets are difficult to quantify even on a medium-term cost-benefit basis. So inevitably in the public works scene this tends to gravitate to the bottom of the pecking order. Yet here again, New Zealand has been a world leader in many aspects of soil conservation and river protection. We were the first to adopt aerial over-sowing and top-dressing. We are right now in the process of developing the world's first complete radio-telemetry network for the remote monitoring of rainfall and flood data. The payoff won't occur to-morrow, but in the long term it will be immense. It is worth noting that the advantages of this project were so convincing that it received government endorsement for an accelerated installation programme in a recent cost-cutting budget when almost everything else went back to the bottom of the "in" tray. There are many other such tasks in the conservation

area which struggle to be recognised, and they will need more vigorous sponsorship and better support than in the past if we really care about what we leave to future generations.

I've said enough about the dollar in politics. If from this you have gained the impression that I am critical of present government moves, then this would be regrettable. The pressure for economic management has a lot going for it, and a new sense of purpose pervades many of the corridors of power. What I do say is that we had better know what we are about, and be prepared to take a wider look at some of the implications.

Now can I touch a little on the third issue — the cult of consumerism.

No doubt, from the early days of primitive human beings, the tribes had their gurus and witch-doctors — people of wisdom or cunning whose pronouncements were deemed to be the immutable truth. Then, over the centuries, we have had

the scholars and philosophers — from Aristotle to René Descartes — who addressed issues which were so fundamental that no ordinary mortals could gain-say their findings. In the last two or three hundred years we have had the professional experts — people who by various processes acquired their skills, and then practised their callings. Their activities were often characterised by obscurity and mysticism, and to reinforce their monastic profile they set up their own societies and codes of behaviour, and presented a uniform and predictable image to their clients. Again, nobody questioned their findings.

Meanwhile the democratic systems of government went through rather a similar process of evolution. The elected representatives were able to take unto themselves that aura of infallibility that enabled them to attend to the business of government with little involvement or interference from their constituents.

Why did all these gurus do so well without being

questioned? The answer is that there was little or no information available, and nobody outside of the guru group knew what was going on.

The information explosion has changed all this. It is access to the printed word, the telephone receiver, the radio loudspeaker, and the cathode ray tube which is rapidly transforming the whole relationship between the pundit and the proletariat. Public talk-backs and panel discussions abound. Management and direction are moving from "top down" to "bottom up". After thousands of years of a steady-state system, the whole thing has been turned upside-down in the space of only two generations.

The pressures of consumerism have left their mark on professional engineering. It was not so long ago — less than one decade in fact — when proposals came before the Institution Council for some consulting engineering practices to set up as limited liability companies. This seemed to be a radical move at the time, and it generated a great deal of opposition, especially from the

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older members of the profession. Yet in retrospect, in the age of consumerism and instant litigation, it is accepted as an entirely proprietous and sensible thing to do. Not long after that, in response to political and public criticisms of alleged price rings in professional groups, it was suggested that scale fees and standard terms of engagement should be given away. Then consultants could compete for tasks on the open market, and it was over to the professional and his client to settle on a deal with little or no reference to the erstwhile protocol of standard conditions. Here again, this seemed incredible to some of the senior members of the engineering profession. Yet now it is becoming accepted practice, as also is advertising one's capabilities — a form of graduation so to speak, from the business card inserted in the appropriate newspaper column of bygone days.

What needs to be appreciated is the quite different relationship which is now developing between a client and his professional adviser. No longer can the professional always be assured of support

or loyalty from his client. We now have a much more consumer-oriented clientele which not only expects top quality professional work, but also effectively a performance guarantee to remove risk from a client, and to seek damages from a professional adviser in the event of failure. Not unexpectedly the legal profession has joined the party, as well as the insurance industry whose fine print is having a marked influence on the behavioural response of professional advisers.

That such developments are costly and time consuming is of no small concern. But there is another consequence more serious in my view. This is the prospect that important technical information might be withheld from the profession on the grounds that it is subjudice in a particular situation. Let me take you back to an engineering failure which occurred 27 years ago.

In October 1959, two steel girders for a single lane road bridge over Papa Creek in Wairarapa County collapsed during construction. Some workmen

were injured. The collapse occurred due to buckling while the girder system was being launched across the gully formed by the creek.

It was accepted that an enquiry should be conducted. There were many interested parties involved, including the county as client, the National Roads Board as part-sponsor of the work, the county's consulting engineer who devised the erection procedure, the bridge contractor, the steel supplier, and the Labour Department which had responsibility for construction safety.

It was interesting to witness what took place, and to be involved in the outcome. It was still a time in our lives when things were simple, and questions of truth and fact mattered more than questions of liability. It was agreed that the enquiry should be exclusively of a technical nature, so that the real cause of the failure could be determined for the benefit of all concerned. It was specifically decided that the question of liability, if mistakes had been made, would not be a consideration of the

enquiry. As a result, all cards were laid on the table, and the cause of the collapse was very promptly determined. The failure was due to the elastic instability of the unsupported lengths of the beams between cross frames, and it was found that there was a great disparity in the critical strength of the system under different design codes. The consulting engineer had used a standard code formula for buckling strength which was in the process of being superseded, but not yet adopted by standards organisations. As a result of the illuminating and frank discussions on the implications of the consultant's choice of design code, it was possible to alert the profession promptly to the situation, and promulgate a new standard.

One might wonder what would have been the outcome if the same situation had occurred to-day.

One could imagine the insurers directing their clients not to divulge any information or offer any opinions on the grounds that this might prejudice the question of liability. It could well be that the real truth might emerge much later, or not at all,

on the grounds that it might be cheaper to negotiate a settlement than go through the pains of litigation. Meanwhile, engineered construction could be that much more at risk, because the requisite information was not available.

Could we look at another facet of this consumer-driven market. A new and perhaps unexpected dimension has now crept into the relationship between central and local government politicians and their professional advisers. This has proved to be true not just in engineering, but also in other areas such as forestry, land management, economics and public health. The days are past when advisers to politicians under the old Westminster system enjoyed anonymity and professional immunity. Politicians were never bound to accept the counsel of their professional advisers, and no professional should lose any sleep over his considered advice being turned down. The difference now is that the politician is much more disposed to seek advice elsewhere, and even to criticise publicly his own professional advisers when their views are unpalatable or unacceptable. Here

again, it is his prerogative to do this, and those at the receiving end will need to be better prepared to deal with these new kinds of situations.

Politics has its passions, a fashionable one at present being to criticise works done in the past. Most times this deserves to be treated with ignore, but we are only human, and at times the hackles can rise. I was particularly disappointed to hear recently some accusations made at senior government level relating to the forestry development project in the Poverty Bay / East Cape region. Allegations were made that professional officers were incompetent in the way they planned and planted such massive forests without regard for future harvesting and marketing. It is politically easy to forget that one of the prime objectives of the scheme was soil conservation, arising out of some of the worst erosion problems in the history of this country. It is also easy to overlook the fact that when the project was launched about ten years ago, market prospects for raw and processed timber looked very attractive, and there appeared to be great oppor-

tunities for additional employment in a wide range of categories throughout the region. If the politician involved would like to be enlightened, then he can read the Taylor Report — a document which received international acclaim as an example of multi-purpose resource development.

I am concerned that such uninformed and ill-conceived remarks appeared to go unchallenged, because I believe we ought to be in the business of looking ahead, and not casting stones indiscriminately behind us. No doubt from time to time our planning will come unstuck. That is the time to square our shoulders and move on to the next business rather than knock yesterday's initiators. They did a good job for New Zealand and they deserve better than they sometimes get.

Well, here it is. Over the last hour I have dealt with only three issues, but in the long run they all relate to the resources at our command, and the legacy that their management will leave our children and grandchildren. We live in a magnificent

piece of global real estate, and many times we have shown our ability to perform well in this environment. The future is not going to be easy, but as a nation we have those qualities that are needed — initiative, flexibility and compassion. Harry Hopkins was richly endowed with these qualities, as we saw so clearly on the campus, at his home, and in the community.

Now he has moved on, but the extent to which we follow his principles, and the extent to which we, too, put our faith in the young people around us, is the hallmark of our country's destiny.
