DUDLEY SMITH OPENING WITH "BEGINNERS INTRODUCTION TO LICENSING"

Dudley Smith, Marc Finnegan and Paul Grant (President, LES-Australia).

FOUNDING MEETING LES-AUSTRALIA — March 6 & 7, 1974

Gentlemen:

Your LES "mid-wife" wishes to report that our newest baby, Australia, was launched feet up (Australia is on the bottom of the globe as you in the Northern Hemisphere must know) March 7 and he indeed is vigorous, intelligent, robust, and friendly. A finer group we could not have join us and via this report I bring you their greetings.

First the country, then the meeting, then the "thank yous". A very large country with great animal, agricultural, and mineral wealth, Australia's people are well educated but few in number. Among business and licensing men, the country is famous for economic and political stability. About 1,000 U.S. and U.K. companies alone (not to mention Japanese, etc.) have, since WW II, experienced this stability as they formed Australian subsidiaries and joint ventures (almost always with an associated license agreement). These are run largely by Australian nationals and the six Australian state governments both encourage these ventures and seek to entice new ones (outside of minerals, real estate and banks where the Federal Government has clamped down). Most favored technology areas currently are in chemicals, plastics, textiles and building materials. Licenses "in" far exceed licenses "out" and this is not necessarily bad for, coupled with foreign capital, Australia surely is well on its way to becoming one of the world's great industrial nations.

Now to the meeting. Attendance was just over 50 and included a fair number of "bosses" as well as licensing men, patent agents, attorneys, and government workers. Your overseas representatives included Mitzuya Okano, President of LES Japan, Marc Finnegan, President of LES USA (and wife), and yours truly whose track record includes mid-wife help with all eight LES member societies. Liz Solomon, a member of LES France, also attended.

A cocktail party Wednesday evening allowed registrants to become acquainted. At 7:30 a.m. Thursday morning, I started my Beginners Course and, in truth, must admit I never have seen such active audience participation. The main meeting began at 9:30 a.m. and ran until a little past 5 p.m. Included were the following: Marc Finnegan outlining the history of LES, the importance to Australians of forming a member society, and future activities on the world LES calendar; Professor Bolotin of the University of Melbourne (keynote speaker) urging Australians to do more research; Ron Bannerman (a truly charming and intelligent man) speaking as Commonwealth Commissioner of Trade Practices on what most of us would call antitrust limitations in Australia, Mitsuya Okano on the role licensed technology has had in Japan's development; Stan Armitage with a case history of a very successful licensing project from Australia to the rest of the world; Al Tatlock advising Australians on points to watch when licensing "in"; and Marc Finnegan on legal problems in international licensing (by the end of the day, it was obvious that Marc had made a first class impression and was most appreciated as a representative of LES "par excellence").

Officers elected for LES Australia were as follows:

Paul Grant, CSIRO (gov't research and licensing) — President

Eric Sunman, Bendix Australia — President Elect

Alan Limbury, Baker & McKenzie (meeting organizer) — Vice President

J. H. Seidler, Australia Innovation Corp. — Vice President

John Stonier, BHP Co. Ltd. — Secretary

John Terry, Griffith, Hassel & Frazer — Treasurer

Gold LES pens were awarded, formal elections were held, LES Japan presented a beautiful wood block print to LES Australia, and, on behalf of LES International, yours truly presented a bottle of scotch to the primary Australia moving force, Pete Horgan. LES Australia gave a dinner Wednesday evening and Marc Finnegan reciprocated for LES International with a dinner Thursday evening.

In short, this meeting was extremely well organized and the potential for a strong, well functioning member society was much in evidence. Personally, I wish to thank each of you for making my trip possible (I covered 26,310 miles what with having started the previous Friday from Germany where I had spent the week on Celanese license negotiations). I am sincerely appreciative and the memory must be one of the most vivid and enjoyable of my entire life.

Best regards to each of you.

Your tired but happy representative,

Dudley B. Smith

RESEARCH, TECHNOLOGY AND LICENSING — OPPORTUNITIES FOR AUSTRALIAN INDUSTRY

Keynote address presented
by
Professor H. H. Bolotin, University of Melbourne

I. Introduction

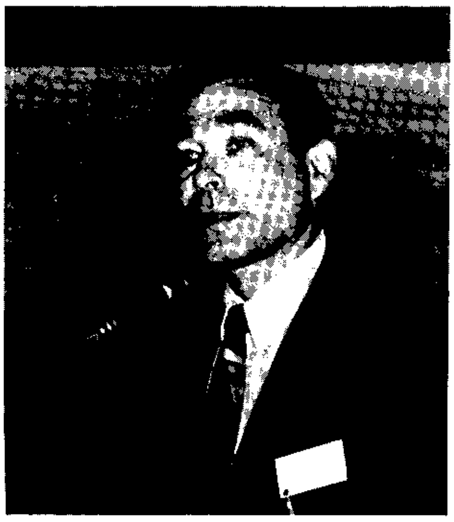
It is indeed a pleasure to have the opportunity to address you this morning on a topic we all view as important, challenging, and potentially profitable.

As you already know, I am a physicist. Now, many of you might have expected an economist, a cost-analysis expert, a patent lawyer, or a Department of Trade representative would have been a more natural choice for keynote speaker to a symposium of industrial, legal, and business men of no mean acumen and stature.

My economic credentials are completely specified when I inform you that my guiding economic policy is "buy low and sell high." Unfortunately, in practice, my experience as a casual shares investor has been that I too often buy high and, much too often, sell low. Indeed, a glance at my past shares portfolio would convince any well-managed, large company to pay me *not* to buy their shares, in order to guarantee that the market value of their stock does not decline.

So, I am not here as an economist.

I am here as one who does know a fair bit about research and development, and one who has actively participated



Professor Herbert Bolotin

directly, and as a consultant, in this rewarding and important activity. And, at the risk of foreshadowing the main thrust of my talk, I must say that without research and development (R & D) there is nothing to license, there are no major inroads into new markets, and without R&D the crystal ball shows stagnation ahead.

Now many of you — and far too many Australian enterprises (and by that I mean dinkydi Australian enterprises) — would say I was wrong. Sure, you might say, R&D is important. But, let the overseas companies do the R&D, we'll license those developments and, through those licenses, expand our markets, our growth, and our profits. And, indeed, you are correct to some extent. Many Australian enterprises that are licensees have profited in this way. And, perhaps, you are satisfied. The British originated the slogan "I'm alright, Jack" and Australians have taken it up. We now see how well it has served Britain. If you subscribe to that slogan, I am here to ask you to append it with "but, Jack, I could do much better, and I will."

If you company is a licensee — even a profitable licensee — but not also a licensor or the initiator of new developments, you are, for all intent and purposes, a consumer. And we all know consumers are the most disadvantaged economic group with no bargaining power whatsoever.

If you are a consumer, you can be sure that sometime, somehow, and in someway you are getting the short end of the stick — and, as an industrial enterprise, the short end of the profit margin.

II. Licensing and Dependence

It is perhaps superfluous to comment to a congress of specialists that, despite rewards demonostrated to accrue to both signatories of many a licensing agreement, due caution, detailed study, and considerable astute deliberation are absolutely required before either party enters into such an arrangement. Any activity that smells of potential profit also reeks with a fundamental element of risk and bears the traces of the perfume of possible loss. These conflicting aromas pervaded the atmosphere at the very first bartering transaction of passing nomads and continue to charge the air that surrounds every present-day commercial undertaking.

We accept this. That is what business is all about. Indeed, many organisations and individuals view these challenges and risks as the tantalizing and flavouring spices that make commercial enterprise so appealing.

I would be the first to say that becoming a licensee may, indeed, be a profitable venture. There are, however, formidable risks involved. You undoubtedly know far better than I do both the risks and rewards associated with becoming a licensee. And, I will not presume on your time and patience to enumerate them to such an audience of specialists.

Although there are risks for both parties to a licensing agreement, some say the licensee may be the one who risks the greatest capital and undertakes the greatest gamble by way of commitment of resources. In addition, the licensee is a buyer. As a buyer, he may be in competition with other potential buyers of that license, and be forced to pay a premium price for the privilege of securing it. Further, not all licensing agreements result in a profitable venture.

But the combination of risks, competition, and occasional losses is an accepted and real part of any business or industrial operation, even when a licensing agreement is not involved. Licensing is just another important facet of our industrial structure and we must learn to expect and accept the similar concomitants that pertain to this area of operation as well.

However, of greater import, there is a most serious and potentially damaging trap into which even a highly profitable licensee can unwittingly fall — one that is usually only spoken of in whispers — one that is so uncomfortably obvious and dangerous that we usually try to dismiss its existence by pretending it isn't there. It is a trap that may not always cause the ruin of an individual company, yet it is so invidious that when collectively ignored and disregarded by too large a segment of our commercial community can cause national industrial stagnation.

Gentlemen, although so attractively baited with delicious immediate profit, and one that closes ever so slowly — but with inexorable firmness — is the trap of unrelenting dependence. Licensees who do not complementarily carry out their own researches and developments are wholly dependent upon developments, ideas, and inventions that are generated by others. It is just this dependence on overseas developments that characterises, with only some singular exceptions, virtually all of Australian industrial enterprise.

III. Attitudes and Maturity

Ever since my arrival in Australia nearly three years ago, I have been a chagrined witness to the painful symptoms of a chronic malady afflicting Australia. Plaintive and hollow disclaimers notwithstanding, the disease evidenced by "the second-city syndrome" is all too prevalent here.

As some of you may know, the phrase "second-city syndrome" was originally used to describe the attitude of Chicago that held that: if New York has it, does it, likes it, or feels it — it must be good. If Chicago has it, does, likes it, or feels it, and New York does not — it must be second-rate.

To Chicago's credit, even when in the throes of this debilitating ailment, it only took a back seat to New York — it felt the equal or better of any other city in the world. Some few years ago, Chicago somehow found the cure, and the second-city syndrome no longer characterises the mental self-image of Chicagoans.

By way of contrast, this "second-city syndrome" is so ingrained in Australia that attitudes here maintain that if it originates in Australia it is, by definition, second-rate — if it originates virtually anywhere else it is, by definition, first-class. There are those, both here and abroad, that claim this Australian attitude does not characterise a disease, but a true and honest self-assessment of the facts. I, for one, cannot subscribe to that thesis.

If I, too, felt the "no-hoper" condition was real, I would not be here to address you today. I have seen far too much clear evidence of first-rate people, ideas, developments, and ingenuity in Australia and know there is more of the same yet to reveal itself. But, at the same time, I have too often observed these same ideas, developments, and discoveries floating down the river to oblivion having been cast upon these waters by both their originators and Australians in general. That degree of self-depreciation characterizes the second-city syndrome carried to the extreme.

Although Australia is a relatively young country, and Australian enterprise a rather recent entrant in the industrial sweepstakes, ample time has elapsed, and sufficient growth, development, and change have taken place to expect a certain maturity of action and attitude to have evolved to allow for a fresh, critical self-evaluation to take place that is free, for the moment, of the sheep's back, "I'm alright, Jack," and all other irrelevant issues.

If, on balance, that self-assessment persuades us that there *is* no firm foundation on which to base a more self-confident attitude, no real resources of world-class men, no meaningful ideas, no first-rate expertise, and no true capability to allow us to climb out of our morass, then I would be the first to say we should ride the Merino's back into the sunset and take another look after fifty or so more years have gone by.

If, on the other hand, we realise, as I do, that we have already reached that stage of development and maturity necessary to prepare us to make some real advances, to appreciate and rely heavily on our own world-class contributions and to push them, and to set a climate and mode of operation that encourages more of the same, then let us place an R.I.P. head-stone on the "second-city syndrome" and get on with the challenging and fruitful job that lies ahead.

The time has come when we must appreciate that our time-honoured slogans fool no one but ourselves. Most of the developed western nations often find them transparent; they recognise that "made in Australia" is too often a euphemism for "copied in Australia by Australian labour," and that "developed in Australia" really means "developed in Australia under overseas license."

We so often hear ourselves echo the cry "Australia — the lucky country!" We are so conditioned by our past luck that too many of us are content to sit back and wait for the day Providence again showers us with fortune. When are we going to build on that luck, exploit our good fortune, and make certain that if Lady Luck becomes fickle and shuns us for another, our progress and development will keep us sailing ahead without the need for the favourable winds of chance? Isn't it time we resolved to make the "made in Australia" and "developed in Australia" labels respected and coveted around the world *and* in Australia itself?

Although it is but one avenue to this end, R&D is the vital and necessary road down which Australian enterprise must itself travel.

IV. Research and Development

Research and Development (R & D) is that exercise designed to give birth to a new technique, adaptation, product, process, or procedure. It is the only means whereby that better mousetrap can be developed. Protected by world patents, that mousetrap can then be produced and sold around the world in comeptition only with the old mousetrap that this new development has superceded and made obsolete. If mousetraps are not the business of the developers, their manufacture can be licensed out to others with a return that may reap even richer rewards for the originators.

Research and Development is an investment. I contend it can be one of the best investments any industrial enterprise can make. Approached and conceived in the proper way, R&D is the industrial oasis at which both industrial giants and smaller independent industrial organizations can come to drink and receive substenance.

But, let us not be either naive or blind. As an investment, there are associated risks — risks to be appreciated, risks that must condition our mode of R&D participation and operation, but risks that are wholly insufficient to persuade us to avoid R&D like a plague and warrant our peaceful and docile submission to the enveloping arms dependence holds out to us.

The risks, however, are real — but so are the potential profits and benefits of R&D.

Let us first mention some risks — we cannot operate with our heads in the sand — and later, consider the benefits of R&D that make these risks worthwhile.

Risk 1: It can require a commitment of funds and resources for buildings, laboratory space, technical equipment, employment of scientists, engineers, and technical personnel that are out of all proportion to anticipated rewards associated with even a particularly successful R&D project.

Risk 2: The R&D project may not be successful.

Risk 3: The R&D of your competitors may come up with the development before you do.

Risk 4: You may not have ever engaged in R&D before. You don't really know how to go about it. It may, for you, be a wasteful and costly exercise in futility if not undertaken with intelligent planning and with realistic goals in mind.

Risk 5: You may be too small to weather a protracted development project that takes too long before reaching success.

Risk 6: You may develop a product just at the time your market for that item disappears. Your flower blossoms too late.

Risk 7: You may be at that stage where prior corporate commitments forbid another activity that appears more chancy than those just undertaken.

Risk 8: You may have a successful development that remains unexploited due to your inability to find the appropriate licensee. You may not have the know-how to properly assess the true potential worth of that development, and not set a realistic value on what you have to license.

There are more risks one could enumerate, but those listed are perhaps salient, and should certainly satisfy those who find those risks mentioned sufficient to justify their view that R&D is for others.

As in all enterprise — risk is the name of the game. With no risk, there is no profit. The object is to minimise the risk with little or no sacrifice of potential gain. Whatever your business, and whatever your business philosophy, it is nevertheless true that you can't win if you don't play the game. In the R&D game, one must constantly keep in mind that it is not necessary to win the grand jackpot, as R&D can offer excellent pay-offs as long as the game is properly played.

If risks pertain to R&D, what are those associated mitigating benefits that make this activity so necessary and rewarding? In short, what makes R&D so important an exercise that no industiral enterprise worth its salt can afford not to pursue it to some degree?

R&D is that fundamental undertaking that ensures a steady flow of new products, new processes, new production-line improvements, new efficiencies, new discoveries, and the birth of new industries. Without it, we would forever be making the same products in the same way, using the same materials, the same techniques; go on cutting grain with the same old scythe and never discovering the mechanised reaper; continue to use costly, unskilled labour when an efficient automated process begs for development. Without it, we continue to use the abacus for lack of development of an integrated-circuit desk calculator or high-speed computer; we go on writing letters with a quill pen never dreaming of the typewriter or the printing press, and continue mining iron ore while huge deposits of bauxite, rich in aluminium, are considered just so much worthless farm land.

Gentlemen, the days are long since gone when the industrial community can sit back and rely on the lone inventor, working in his barn, to come up with the new discoveries. How many of you would be content to depend on these for your bread and butter. These brilliant individuals do still exist, and the best of their recent contributions make front-page news — not as often because of their importance, but more because of their rarity considering our present sophisticated and complex state of development.

More and more, and with increasing frequency and significance, the new developments demand highly trained scientists, engineers, technicians, sophisticated equipment, co-ordinated effort, and knowledge at the forefront of our understanding. It is primarily in the scientific laboratory, in the well-equipped world of electronics, and in the collective minds of groups of highly educated individuals that new developments are born.

It is true that some of the more important developments and new industries had been generated in basement workshops using money borrowed from someone's widowed mother-in-law. That smacks of the so-called "good old days" when an unskilled farm labourer could invent a new type plough. But, if you look more closely at the typical new generation of basement-originated developments, you find, more often than not, that the individuals involved are highly trained and educated scientists and engineers just resigned from universities, scientific laboratories and computer firms who have used mother-in-law's money to purchase the most modern and sophisticated equipment in order to pursue a project whose underpinnings are based upon the most advanced and complex fore-front knowledge in chemistry, physics, engineering, electronics, metallurgy, etc.

With commonplace regularity, the most industrially significant new discoveries and developments are flowing from laboratories where the latest knowledge is assiduously applied to specific problems, methods, and techniques of direct, immediate utility and benefit to industry.

What I am saying is, that one cannot afford to wait for that magnificent and revolutionary development to grow solely and completely from the slips of paper dropped into your "suggestion box" for which you have budgeted $25 as an award for the best idea. If that is your concept of R&D, you may wait forever. R&D is something that must be properly, efficiently, intelligently, and aggressively pursued. It takes the right people, at the right time, for the right purpose. In short, R&D is as much an important facet of your operation as is your assembly line, your market survey, or your board-room meetings. If you are not prepared to enter the world of R&D with intelligent planning, with proper and realistic goals and expectations in mind, and with a commitment equal to that made to other segments of your operation, you are not prepared for — and should not be goaded into — R&D. Go on as you have, continue to function as a licensee, and cross your fingers and hope for the best.

If, on the other hand, you appreciate the value of R&D but are new to the game, feel it too large an investment, or do not know how to go about it in the best way, there may be avenues whereby you can pursue such a venture with a minimum of risk and investment. And, perhaps, I can make some of this clear to you.

But before you jump, remember it *is* an investment. It may not always pay off, but neither does everyone of your other activities. And, you accept false starts and disappointments in these other areas with equanimity. However, it is equally important to bear in mind that should your specific goal not be achieved, you may still develop — as an "accidental" by-product of your own R&D — a new process, idea, or technique that is of no direct use to you but one that is of substantial benefit to others if offered to them under license. This "accident" occurs more often than one might guess. That is, R&D even accidentally pays off — and not always for the specific purpose for which it is undertaken.

When it comes to licensing, per se, we must keep it uppermost in mind that licensing should not be an end in itself — certainly not for the licensee. Licensing provides an intimate introduction to know-how associated with new developments and the more valuable opportunity to develop broadened and channelled expertise to prepare one to build on this and go on to one's own new developments. Licensing should be a stepping stone to new opportunities — otherwise, it may too often mean operating as a blind automation under license; it may mean not getting full value for money spent.

That, gentlemen, is the complementary role played by your own R&D.

Part of the rationale for the existence of the Licensing Executives Society of Australia and your affiliation with all your international counterparts, is to establish and facilitate the interchange of information, ideas, and knowledge of mutual concern and interest. L.E.S. (Australia) can benefit a great deal from such an exchange of information and know-how on the taxation, business, and legal side of licensing. However, if we continue to operate in the partial vacuum that our own lack of serious R&D has lef, L.E.S. (Australia) does not really participated in an *exchange* of information, but merely serves as a one-way receiver of particulars from those overseas bretheren who represent the licensors — and a one-way receiver only picks up what is transmitted to it.

Without indigenous developments wrought by our own R&D, there is no true interchange of information — we are like earth-bound observers who can see only one side of the moon — only the side chosen by nature or chance to be illuminated for our viewing.

The Crunch

Now that the risks and benefits of R&D have been spoken of, we arrive at "The How-To-Go-About-It-Guide-To-R&D," or "Can A Medium-Size Australian Industrial Concern Find Real Happiness In The Strange World Of R&D?"

What I am about to say may have little impact on firms such as B.H.P., I,C.I. (Australia), and one or two other industrial giants who have, and continue to, conduct research and development in well-equipped, well-staffed, and intelligently-managed research laboratories. These, however, are the exceptions, not the rule in Australia, even for very large industrial enterprises. These few companies have appreciated the value and indispensible utility of R&D, and have profited by this means. Due to this, at the same time, they are licensees, licensors, and keepers of their own developments.

Perhaps, what I am about to offer may have little effect on an Australian subsidiary of an overseas parent firm that, despite its Australian management, is keyed into London, Amsterdam, or other overseas board-rooms of the parent company by Telex and telephone in so efficient a manner that independence of operation is unfeasible; besides, the overseas parent may consider that it conducts R&D more efficiently, more productively, and more profitably at the home base.

With these exclusions, there may not be anyone left in the audience with whom we can converse. I hope not.

If you represent a "free-agent" Australian company of moderate size, it is natural to look to the fine R&D laboratories of B.H.P. and one or two other large firms. You may wish to emulate them but, of course, feel you cannot do so on the scale on which you see them operate, and consider R&D must be left for the "big boys." You may be correct that you cannot engage in R&D to the same extent as they do, but you can be wrong that you cannot undertake R&D with profit and benefit proportionate to your size, turnover, and finances. Indeed, on a relative scale, perhaps your R&D can be even more profitable than that of B.H.P.

If you feel that R&D is only the province of the industrial giants, how come you are in operation? Afterall, you don't also say that all manufacturing, all chemical processing, all fabrication of test equipment, all electronics, and all brooms and mops must also be left for the big fellows alone. Then, why single out R&D as the province of only the giants of industry? For your size, for your scale of operation, for your particular field of endeavor, you may even do better at R&D than they.

First let us dispense with the plaintive cry "Look, we tried R&D, it was a flop, we had our fingers burned, it's just not for us."

Those who shun R&D for this reason do not, at the same time, cease to conduct market surveys just because their first few did not pan out. They continue to market "thingamajigs" — at a profit — although their 1971 experience showed a loss in this area of operation. They sacked employees for poor performance but, despite that experience, promptly hired more competent replacements.

In other words, you have suffered failures in some facets of your activities, learned what went wrong, tried to remove the cause, gained from the experience, and gotten the best people available to give you advice, provide expertise, serve as consultants, analyse the root causes of your failures and, yet, never use the excuse "we burned our fingers" to cease operation. Why?

Perhaps, the reason you could accept losses and failures and go on to find the causes, remove them, and proceed to convert red ink to black, was because these areas of operation were familiar to you; you had the proper experience, you accepted these losses and set-backs in those instances as part of doing business.

You may have even dropped some unprofitable activity, but only after receipt of the best advice and expert opinions. You may have *selectively* phased out certain operations, but not thrown in the sponge. Why do you then single out R&D as the hot potato you must drop without sufficient advice, expertise, real experience, or efforts to remove the particular faults that pertained. How come R&D automatically gets the baby-with-the-bath-water-treatment and not other facets of your operation?

Who are you fooling? You've "burned your fingers in R&D," indeed! Your fingers were already so deeply scarred with third-degree burns from your normal form of activities in the past, that you only thought you felt the pain of a poor R&D job. Perhaps, you entered R&D with such reluctance and misgiving that you were applying the burn ointment in anticipation before that exercise ever got underway.

Perhaps, your fling into R&D was a failure. Have you ever asked yourself, or someone more experienced, "why?" Have you tried to alter your attitude, goals, or R&D operation so as to minimize its failures; to maximize its chance of success? Have you ever thought you entered R&D in the wrong way and for the wrong reasons?

If yours is a company that is sufficiently large, it behooves you to set up an R&D laboratory or unit appropriate to your size, your activities, and your desire to enter new areas of operation. But, before doing so — get the most experienced and expert advice! Make certain your goals and objectives are defined, choose those R&D projects that appear to offer a meaningful benefit to you if successful, and pick only those few initial projects that build on your already available expertise and experience.

Make certain your initial objectives are not too ambitious. Above all, don't expect miracles. Give your R&D venture some shakedown time. Make certain you don't hire the best people to run the show and then, because of doubts, reluctance, and grudging preconceptions become so mean with your funds that the R&D project is equipped with only cheap make-do and obsolete equipment and facilities.

Again — before doing so — get the best and most experienced advice. You must be prepared to pay for that advice. A quick phone call — on the cheap — can, at best, get you top-of-the-head judgments and recommendations. These are not adequate. You get only what you pay for. You would never ask a consulting time-study expert to look at your assembly line and expect a dependable and considered recommendation for just a lunch and cup of coffee as a fee. R&D advice may be even more important and is well worth the cost, as it may ensure that assembly line produces new products for profit in the future and not the same old yo-yo for which the market has vanished.

Advice is essential. It may persuade you that R&D — for the purposes you have selected — is ill-advised or even budgeted too generously. That can certainly save you corporate funds. It may persuade you that more investment is needed; that what you are budgeting for R&D may be wasted as it is insufficient for the task. It may help you to alter your objectives and attitudes with greater chance for success. If this isn't worth the rather small cost required, neither is your engineering consultant, your market survey, your advertising, or the consensus arrived at in your boardroom meetings.

A simple, true example of foolhardy bull-headedness may drive home the point. A large Australian mining company contracted to buy a new, but proven, Canadian device — at substantial cost — shown to locate nickel deposits; a device based on sound principles and demonstrated to work on site in Canada. The contract for purchase was undertaken without proper advice. When delivered, it was found to be inadequate and inappropriate to the task in Australia. Some tens of thousands of dollars down the drain.

Why wouldn't it work? Simply because it depended upon the characteristics of electrical conduction of the sub-soil. Canada suffered an ice-age which leached the soil of certain salts. Australia's ice-age is yet to come, and Australian soil composition remains unsuitable for this technique. Yet, a $100 or $200 opinion from a competent consulting geophysicist would have predicted this failure, given the reasons for that failure, and saved a sizeable chunk of corporate money.

No matter what it costs, proper advice in R&D is an insurance policy against failure. It does not *guarantee* success, but materially enhances its probability.

However, no matter what advice is obtained, it is your decision — and yours alone — as to whether you can afford, or choose to commit, a reasonably sizeable amount of corporate funds in setting up such a laboratory.

Setting up a laboratory may, indeed, not be the most prudent investment — at least initially. Perhaps you can have the R&D done without the purchase of a half-million dollar facility which, it is only hoped, will yield benefits that justify that investment in R&D. Only once the R&D *proves* itself to be worth that investment, should you make such a monetary commitment. Perhaps, your R&D needs such a facility but, by no stretch of imagination, will it return that investment — even when amortized over a span of years.

Well, believe it or not, you may not need to make that investment and, yet, those R&D projects can be undertaken and pursued with great efficiency, be staffed by the very best research and development people, and offer an even greater chance of success or profit. If, the project unfortunately fails to provide the desired end, you have at least saved the cost of that capital investment in facilities that would then turn into a white elephant as far as your operation is concerned.

I am not suggesting R&D on the cheap. All that is meant is that, when feasible, considerable capital investment in R&D laboratories may be avoided — at least initially, perhaps for many years.

Further, you may be able to secure the best research people, the most sophisticated test and analysis instrumentation, and assemble a forefront multidisciplinary team for R&D — not necessarily on a full-time basis — not with a commitment to long-term salaries, etc. — but only for the time specifically spent on your particular project. Indeed, you need not invest in training of first-rate research and development personnel — they are already leaders in their field; you need not spend the time and money to assemble top-flight facilities — they are already at hand; you need not provide buildings, car parks, etc. — they are already provided.

Utopia? Not at all. Another effective means of conducting R&D? Yes! Is this just so much pie-in-the-sky? It is not. You are already obtaining other invaluable services in just this way.

To make this mode of operation clear to you, don't you use the services of consulting engineers and window cleaners, contract out for market surveys, and use the services of adversiting firms? Certainly you do. And all you pay for is your fair share of their services rendered to you. You do not train these people, do not supply their buildings, staff, or facilities. They are also occupied in performing these and other services for a host of other firms. Your cost is nowhere near that required for their total operation. You pay only for services rendered.

If they do not perform satisfactorily, there are others to whom you can go to get the job done better — and the switch costs you virtually nothing. In other words, you utilize existing facilities and expertise in which you do not have a proprietary interest or financial stake.

In addition, you cavalierly use the funds of a silent partner with no need for prior consultation, with no fear that partner will desert you. That partner is the Federal Treasury. Sure, when you turn a profit, he wants his share. But, when the profits are good you don't grumble about your tax bite too much. But, you must, and I am sure you do, keep in mind that when some facet of your operation results in a loss, the Federal Treasury contributes its sizeable share to ease these losses — your tax is materially reduced. Here is a partner that shares your losses with no complaint. You don't even have to solicit his agreement to risk his capital.

Now every accountant is fully aware of this in all normal phases of your operation. All I want to stress is that if your R&D is not successful, the Federal Treasury will also pay you back a fair chunk of that lost investment.

With this background laid out, let me spell out what I mean.

There are university professors and university staff that have the finest facilities for research — already paid for and operating in forefront research areas. Many of these research areas are not applied to direct industrial interests, but they can be. These research people are at the head of their fields, are aware of the latest forefront knowledge, and conversant with the latest developments, instruments, and techniques that could be of inestimable value to R&D applied to your interests. They are familiar with knowledge in allied fields that can be brought to bear on your problems and activities.

If, say, a physicist such as myself is occupied on one of your development problems using his facilities, his technical people, in his buildings, and employing his store of knowledge and experience, and a sticky point requires the advice of a chemist, a top flight chemist is just a few steps away ready to offer his contribution.

Now some of you are restraining yourselves, ready to cry out "We have gone to the groves of academe and gotten a cold shoulder. No one seems interested in our needs in R&D." Well gentlemen, you have gone to the wrong person, approached the wrong institution, and called it quits.

I, and scores of my colleagues in a variety of fields are ready, willing, able, and anxious to participate. We may all have different reasons for our interest in industrial R&D participation. Some would relish the challenge of the work; some may look to pocket-money from consulting fees; some, such as myself, feel that that kind of activity is a vital and necessary aspect of the training of our research students; some just like the university atmosphere but prefer applied research. If you don't know any of these people, I would be happy to bring you together. They do exist!

What is lacking — and, in essence, just about all that is lacking — is our knowledge of your problems that need working on, a familiarity with the developments you seek, and discussion with you on what your needs are.

A close-to-home example may help. A paint manufacturer came to us with a problem. He felt confident cadmium was present in his new paints; present to the extent that it would be dangerous for household use or as paint on dolls and other toys. Since I employ an atom-smasher for my own research, with proper arrangements this $350,000 facility was available to me to use on his problem. Using techniques already developed for totally other purposes, this facility could be used to expose and measure trace concentrations of elements present to less than one part in 10 million. We used this to analyze his paint samples. He was initially relieved — no traces of cadmium. But, arsenic was there in a concentration of 10 parts per million, sufficient to cause his paint to be rejected as dangerous. He never suspected its presence. He paid for little more than the cost of these analyses — it cost him $225. How many thousands of dollars did he save by avoiding law-suits from the public's potential use of his dangerous paints.

No industrial laboratory in this nation has this facility, neither does C.S.I.R.O. or any other university. Indeed, no industrial concern can really afford it — but it was there, with the proper people, for no capital outlay of this industrial concern.

C.S.I.R.O. is similarly there to use for certain types of R&D. Unisearch at the University of New South Wales and Technisearch at R.M.I.T. in Melbourne have other facilities and expertise to offer for just your R&D. Don't let all this effective — but relatively cheap — R&D capability go unexploited for your purposes. Don't close your mind, or eyes, to this important and valuable opportunity.

If you do set up your own R&D laboratory, these are some of the same people who can give you the best and most expert consulting advice on how to set it up and on how to proceed with your projects. Those same research students of mine, trained not only in physics but in applied research, will then make fine feed-stock for your best R&D employees. You didn't pay for the education they got — the government did. Don't let that investment by your silent partner go to waste.

Some may say that such "ivory-tower" advise is naive. You hard-headed businessmen know better. When are you going to realize that computers, the latest analytical techniques, the most advanced medical apparatus and some of the greatest electronic advances all originated, and were brought to fruition, in universities — not by industrial concerns. Perhaps it is you who is naive and inexperienced.

You take every advantage open to you in every other facet of your operation — why neglect opportunities such as these in that most valuable and profitable industrial undertaking called Research and Development. How ever you go about — go about it. If you approach R&D in the proper way, you and most of Australian enterprise can break free of the shackles of dependence, increase your profits, and make Australian industry stand tall in the realm of international trade and competition.

I hope what I have said proves helpful. I think it needed to be said, and needs to be repeated. It is time we stepped out into the forefront of development and gave the rest of the industrialized world a run for their money.

LES/INTERNATIONAL: IT'S ACHIEVEMENTS AND OBJECTIVES

by
*Marcus B. Finnegan**

I'd like to start out by sending this yellow pad around the room; I'd like to get the name and address of each one of you, if I may, and I'll explain why later on. I think I'll have something to send you when I get back to the United States.

The title of my talk is "LES/International: It's Achievements and Objectives". Standing up here to discuss such a weighty subject I feel a little bit like Zsa Zsa Gabor's fifth husband. I know what I am supposed to do; I just hope I can make it interesting enough. I think as I mentioned earlier, it is probably a dream of most Americans to come to Australia some time during their lives and I'm very delighted