Stresses faced by higher education as a result of both student and social criticism are examined and related to the specific role the physical plant department plays in the changing environment. The interface between the physical plant administrator and the chief executive officer is explored, and consideration is given to what each expects of the other, and how this relationship supports the goals of the university. The goals are seen as teaching, service to the community, and research. Financial pressures facing the university are discussed, including the effects of inflation and public demands for efficiency, and methods by which the university president can deal with these pressures are considered. Maximum communication and contact is advocated, including use of the committee approach to problem solving. Qualities of a good administrator are outlined: loyalty, flexibility, and integrity. They are related to successful dealings with faculty, staff, students, the community at large, and to efficiency in the physical plant department. (LBH)
Higher education has been pressured in recent years by the same stresses acting on other aspects of society—rising costs, dwindling resources, and accountability for fiscal and other governing policies. Complicating this picture is a growing disenchantment among legislators and other citizens regarding the actual worth of degree programs. Even students have begun questioning their places in academia.

The following remarks focus on the adjustments higher education has been required to make as well as on the specific role the physical plant department plays in this changing environment. It explores the interface between the physical plant administrator and the chief executive officer and what each expects of the other, and how this relationship supports the goals of the university—teaching, service to the community and research.

Has Higher Education Oversold Itself?

To paraphrase a comment made by the governor of Georgia, higher education has to a large degree oversold itself. It has presented an inaccurate image to the taxpayer, clouding other issues rightfully entitled to a share of the tax dollar.

In the early 1960’s, higher education could do no wrong. Enrollments were high, the job market for graduates was booming, and faculty and staff received adequate wages. There was little criticism and few people questioned the value of higher education. In short, everything was rosy.

In the middle 1960’s, the picture began to change rapidly. Student unrest genuinely tested college administrators, many of whom did not know how to handle the burden placed on them. With that trend also came the first public disenchantment and the accusation that administrators were incompetent. The golden image faded.

A universal direction was to take a second look at the support given colleges, because even the students seemingly did not care what happened to them. Governors, boards of regents, trustees and taxpayers surveyed the situation developing on campuses. Newspapers for the first time published salaries, and the public became aware that members of the academic community did very well financially. Some college presidents made more than state governors, it was learned, and some faculty members made as much as $50,000 per year. Pleas for additional funding were met skeptically by citizens who made only $9,000 a year.

Against that backdrop of criticism rose the concept of accountability. Basically, higher education is in the business of delivering a service, but the value of that service cannot be broken down easily into a profit and loss statement. When someone asks me how the university accounts for its expenditures, I can say that we graduated “x” number of students. If asked if it were done efficiently, I must say that I can’t answer.

By DR. ARTHUR G. HANSEN

An alumnus of Purdue University, the author presently serves as president of that institution—one of only two engineers ever to hold the post. Besides a degree in electrical engineering, he also holds a masters degree from Purdue in mathematics and a Ph.D. in mathematics from Case Institute of Technology (now Case Western Reserve University). From 1948-1959 he worked in aeronautical research for NASA and the Cornell Aeronautical Laboratory before turning to teaching and administration. In addition to teaching posts at several institutions, Hansen was a professor of mechanical engineering and dean of the College of Engineering at Georgia Institute of Technology before becoming president of that institution in 1969. He has served as an industrial consultant and is the author of two books and numerous papers relating to engineering and applied mathematics.
that completely, because I simply do not know. Much of what complicates that knowledge is a question of the meaning of a quality education.

As the concept of accountability grew, another phenomenon grew with it: Graduating students were finding it increasingly difficult to get jobs. In the late 1960's many students came to the university and said they did not care about jobs—they were there to be "fulfilled," to "find themselves." Well, that was great, just so long as at the end of four years they could find work.

Disenchantment Rampant

Simultaneously with the growing disenchantment of the public emerged the disenchantment of students. Today they are asking if it is worth the time and expense to go to college only to find it impossible to work in their chosen fields.

I recall one case of a girl in Atlanta. She had a bachelor's degree in psychology, but ended up working in management at Burger Chef. She was being taught how to deliver hamburgers efficiently to the public. Who was she working with? An engineer and a graduate of a business school. Not one of them could find a job in his field at that time, so they all ended up at Burger Chef.

Several larger Midwest state institutions noticed a decline in enrollment after the sophomore year. They checked with students who were in good standing but who were not returning to school to see why they had dropped out. The answer was surprising: Students were not sure whether going to college was relevant to their needs at that time.

How far this trend will continue is anybody's guess. One attitude emerging among students is an increased interest in vocational education, rather than strictly professional or liberal education, the traditional province of universities. In Indiana, there is a tremendous upsurge in vocational-technical training. The strongest growth rate is seen in vocational and technical schools offering two-year associate degrees or one-year certificates.

At the same time, enrollments at several major institutions in the state are declining. One university has lost approximately 20% of its students and the loss in income and tuition is staggering. Continuing to keep dormitories open when only 50% occupied is a major problem.

Add Inflationary Factors

Other chilling factors add to the problem of lack of sympathy by the public, lack of understanding by the student and push-pull of accountability. Those factors are inflation and rising costs, and coupled with the other problems, they make higher education very vulnerable. This vulnerability is especially true for state institutions faced with biennial appropriations. They are forced to live with an appropriation without the benefit of an escalation factor to offset rising costs.

At Purdue University, the director of physical plant came to me with a problem over coal prices. The increase over the previous year was $988,000, and we did not know where the additional money would come from. The ultimate answer was an increase in student tuition and fees, which simply covered the increase in coal costs, not other current cost increases campus-wide.

A manufacturer can increase the selling price of products to offset increased costs. The only selling price the university can increase is tuition, but people argue that further increases in tuition will mean people cannot afford to go to college. The situation often appears hopeless. As tuition increases, student enrollment drops and tuition must be increased again. This is a situation that can quickly become unstable.

Emphasis on effective management—getting the most out of every dollar—is more critical today than ever before. My genuine worry is whether higher education in its previous quality form can truly survive.

As the president of a state institution, I hear not only from legislators, but also from private citizens and perhaps get broader input than administrators of private colleges. Higher education now finds itself in the position of having to present its case to legislators bombarded with requests from other service areas which also are entitled to support from tax revenue.

The physical appearance of the campus is crucial to the institution's public image. The taxpayer who sees that the campus is not clean and not well-maintained is apt to determine that the condition results from poor management, rather than from lack of funds.

Planning is another function critical to the survival of an institution. Effective planning requires a coordinated approach to needs two, three, five years in the future. The college president must know that his physical, administrative, and academic planners have analyzed to the best of their abilities where the institution will be in future years.

I need the best-informed guesses Purdue's Director of Physical Plant Walter Wade can give me about anticipated cost increases related to plant operations. I need precise facts and figures because every penny counts, and the university cannot afford to be caught unawares. The increase in coal costs discussed previously was anticipated to some extent about a year ago. Based on estimates, I knew that allowances would have to be made.

Public Demands Efficiency

Efficiency and accountability are catch phrases that the public relates to a university's academic functions. External complaints rarely relate to the physical plant. Complaints I hear mainly concern academic classloads and office hours of professors and the additional income generated through their consulting work.

Public scrutiny of academicians is merciless. I can tell the public that because of the fine research carried out that health care will be better, that roads will improve, that they will benefit directly in some way. They do not care to listen. They want to know how much class and office time the professor puts in for his salary.

Internally, the situation is reversed. A dean questions the number of people required to repair, a sign. When we talk about saving money, they know where it should be saved—in the physical plant. The reaction is understandable, for deans are being pressured very hard to cut costs, increase class sizes and do more of the type of thing the public expects. So, the dean says that if cuts are to be made, that the academic sphere should be left alone and service operations should be cut. While the academic functions bear the brunt of external pressure, the business office and physical plant bear it internally.

To summarize, the problem of public perception will remain with us for some time, for I do not see any great change in attitude nor sudden reappraisal of higher education. At best, things might change in four or five years, but not in the near future. More than ever the public will ask why higher education should be supported to the extent that it is, and they will question the return to society for the money spent. That is the problem of everyone associated with the university. Improving the public image of higher education is not the sole responsibility of the president, but rather is shared with all faculty, administrators and staff.
Communicating With Physical Plant

The college or university has three primary missions—to teach, to serve the community and to carry out research. Occasionally, I remind myself that as the college president I no longer teach, no longer do research and do not appear at times to serve anyone, thus why do I have my job? The reason is that I function best by supporting these activities and making sure that the university fulfills its missions.

It should be noted, however, that teaching can be done and service performed and research carried out without administrators, or without physical plants for that matter. It can even be done without faculty, as it is with “free universities” established on many campuses.

Thus, administrators, in general, and the physical plant administrator, in particular, have the job of providing the environment for faculty, students and staff, and that environment enables the teaching, research and service functions to be done efficiently and effectively.

Because the administrative functions of the university, including the physical plant, lie in the service area, they are vulnerable. Certain physical plant services will be attacked as unnecessary. It is important that the physical plant have explanations of its operations and methods to counter these attacks. The physical plant administrator should do his homework and should be prepared to speak to the public at-large, and legislators if necessary, to justify the cost and quality of services his department performs.

To distinguish how the physical plant administrator relates to the president, it is necessary to define the service function of plant operations within the university, and how that function achieves the environment for teaching, service and research. Minimally, most physical plants have five or six common operations: Building and equipment maintenance, custodial services, operation and maintenance of utility services, landscape and grounds maintenance, and repairs, renovations and alterations. Administratively, there are secondary roles that the physical plant plays on some campuses: Safety and security, construction planning and inspection, and campus planning.

The Communications Approach

How does the president communicate and work with this diverse management structure? I will outline briefly three approaches. First, there is the so-called fractionated physical plant approach. Administratively, such a university would have all functions considered either academic or business, with the physical plant operations considered under the latter category.

Physical plant functions, such as building and equipment maintenance, would be treated as one unit. Safety and security would be treated separately, as would campus planning. Thus, the planning office, the office of safety and security and the physical plant all would report to an officer such as a vice president for business affairs or the president of the university. When decisions are made involving physical planning, there should be a very strong interchange or relationship between these three groups.

Unfortunately, in universities using such an organizational structure, there is apt to be competition between these groups. Even though each group may have an individualized approach to campus planning problems, at least when ideas must pass to the vice presidential level, communication is necessary between the three elemental groups.

From the standpoint of the physical plant administrator, this approach is fractionated because his voice in the planning process is weighed along with that of the planning office and
the office of security and safety. That does not mean that one
service outweighs another, but only that each is submerged to
some extent. I call this a minimum contact situation, because
the president depends significantly on the administrator of
each major office.
A second approach is only a slight variation on the first.
In addition to academic functions, the university also would
have a vice president for business affairs as well as a second
vice president for planning. As before, the physical plant would
answer to the vice president for business affairs, as would
the office of safety and security. However, the planning office
would be elevated to the level of a vice president.
Using this kind of administrative structure requires greater
coordination of the various units. In short, as planning becomes
more important, the vice president for that function must interface
closer with the vice president for business affairs, who will depend more heavily upon his physical plant admin-
istrator. I would call this a moderate contact approach, as the visibility of the physical plant administrator is improved.

"Maximum Contact" Increases Visibility

The maximum contact approach, from the standpoint of the physical plant administrator, enables increased visibility as far as input to the president is concerned. Under this arrangement, the physical plant administrator answers directly to the vice president for business affairs, but all of the functions relating to the physical aspects of the university report to him: Planning, safety and security and the various maintenance and operating services.
The operation stands alone, independent and strong. The physical plant administrator is now on line, and from my standpoint, on a par with the chief academic officer. When any consultations are held involving physical facilities, the physical plant administrator is on in the discussion from inception. This is the foundation of the true facilities planning team approach. As president, I would make it a point to sit in on many of the planning meetings, and after a few of them I would know my physical plant administrator very well, and recognize, firsthand, his habits, characteristics, attitudes and leadership capabilities.

Occasionally, the vice president for business affairs in any of these three arrangements is a very strong individual who does not permit the chain of command to flow easily to the president. In order to increase the physical plant's influence on the president, without going through the vice president for business affairs, the physical plant administrator should simply approach the president and invite him to see physical plant operations firsthand.

At that time it would be wise to make sure that the president understands the physical plant's functions, how they are carried out and what the physical plant administrator is responsible for directly. Also, the physical plant administrator might subtly outline the problems he faces. In other words, the physical plant administrator must make the president aware so that somehow communication can be established between his office and the physical plant.

I don't think the vice president for business affairs can possibly say anything against the establishment of this direct communication, because the physical plant administrator is acting in the best interests of everyone concerned and for the good of the university.

You might call this an exercise in gamesmanship. It's not easy; it takes tact, diplomacy and downright skill to bring it off. It's tough and it may not work. You still can get blocked. Even the president can sometimes find himself blocked—from all sides. A smart president will not let this happen and will see to it that his channels of communication are open, so that he isn't limited only to what his vice presidents for business affairs and academic affairs want to tell him, which could be a distorted view of the university and not what's really going on.

Another variation on this theme is for the physical plant administrator to develop allies within the president's own office staff. This is risky, but it can work. This also can work by contributing to a two-way grapevine. These allies can also make the physical plant administrator privy to things important to his department that may not come down to him through the normal channels.

Committees Can Improve Communication

A useful, formal vehicle of communication is an executive committee composed of various officers of the university, such as the director of physical plant, vice president for business affairs, director of auxiliary services, controller and business manager and perhaps others.

One of the important activities of the executive committee is budget formulation. This can provide the physical plant administrator with an ideal opportunity to endear himself to the president as well as to other members of the committee. When the inevitable battle for budget appropriations comes up, he can gird himself with sound documents, facts and figures to support his positions and thereby demonstrate his understanding of the role of his department in support of academic and fiscal policies.

Such a committee provides the opportunity for give-and-take in an atmosphere of mutual concern and interest. Here a physical plant administrator can really shine, if he is not placed in the position of pleading for funds as an invited guest of the committee and can back up his requests in a thorough, professional manner. Conversely, he can fail miserably if he is unprepared or incapable of presenting his background material convincingly.

What To Expect From The President

The problem I hear about most from the director of physical plant is that of maintaining adequate salaries and professional challenge to attract and hold good personnel. I'm also warned time and again that while everybody understands the needs of the faculty, oftentimes the president and vice presidents tend to overlook the needs of the physical plant. During the past year there have been major problems with the physical plant and staff, because they have been hurt most by rising costs and inflation. At all times, both sides of the organizational structure—faculty and administration—should be kept in the president's mind.

Purdue at one time had an annual faculty seminar, during which faculty met and introduced new members; it was the president's job to welcome them to the campus and to explain the goals of the university. That seminar now involves both faculty and staff and provides the physical plant administrator the opportunity to introduce his management needs as well as to have new members of his staff introduced to the university community.

The president must overcome any inclination he may have to emphasize one or the other side of the organizational structure, rather than a combination of the academic and administrative functions. It is very basic reasoning that if one side fails, the other does not function properly. That reasoning should be made clear to the public and to the campus community as well.

Proper recognition of physical plant services and personnel is an important aspect of the president's job. Such recognition
can be made during meetings of the administrative advisory or executive committees. In addition to meeting informally with physical plant staff during such occasions as retirement or Christmas parties, the president also should endeavor to visit in the physical plant and talk directly with staff.

He should get to know the people who make the campus operation work, to know them personally and to talk with them. In effect, what the president is saying by these actions is that these people are important to the campus and that he cares about them. Such recognition is a morale-builder and makes everyone’s job easier.

**What The President Expect**

The physical plant administrator should sensitize himself to the mission of the physical plant within the larger context of the university’s goals. He also should attempt to maintain the proper perspective on his department. Regardless of the group within a university, there is a tendency toward empire building. The business affairs office tends to be an empire unto itself. Nevertheless, one has to keep a perspective that indeed each administrative unit and service area exists for a reason. The job of the service areas is to maintain an environment in which teaching, service to the community and research can be achieved effectively and efficiently.

The primary expectation of a college president toward the physical plant is excellent management of operations and funds. He wants an accounting of how funds are used. Good personnel management is even more critical in physical plant operations than in academic administrative areas. Good personnel managers in the physical plant mean that trouble will not flare over working conditions, wages and career potential.

The need for proper training is important and is necessary for upgrading personnel.

At Purdue, I expect an effective preventive maintenance program. A plan should be presented that I can work with and apply funds to appropriately. In that way, there is no reason to be caught short. No reason to have a physical plant administrator tell me that a roof just fell in. That is the kind of thing that should be watched and planned for and taken care of months or years in advance. Such a program should outline a schedule for making capital improvements.

The fundamental issue is that the president wants no surprises.

**Qualities Of A Good Administrator**

In choosing a physical plant administrator, I would look for three qualities in addition to engineering expertise: Loyalty, flexibility and integrity. By loyalty, I do not mean that an employee must necessarily agree with me, and he definitely should have an opportunity to present his opinion.

Once a decision is made, however, it is the responsibility of a loyal administrator to support it. Only by adopting this attitude can he be accepted as a bona fide member of the management team. He may report to his fellow workers that he “tried to have his plan approved, but a decision was made against it” and we will live with it and make the best of it.”

From time to time, one department’s opinion may hold out against another department’s plan, while everyone backs whatever decision is made.

A flexible administrator who can understand someone else’s problems is essential. A situation at a regional campus of Purdue provides an example of this quality in action: A ten-year master plan incorporating space needs for a projected enrollment had been worked out. The plan called for a physical-plant stores building at the far end of the projected campus.

A second look at the enrollment projections indicated in some minds that the campus would not grow as quickly as originally estimated; therefore, it was unnecessary to locate buildings far from the present core. Originators of the master plan maintained their position, but it was the physical plant administrator who stepped in to suggest changing the master plan to relocate the building at a less remote site.

Another case involving a remodeling scheme provides another illustration of how flexibility is important to the relationship between the physical plant administrator and the president. Faculty members operating on a very limited budget requested an estimate for remodeling several offices. The estimate was far outside what they could afford to pay, but several students offered their time and talents to aid in the renovation of the space without the physical plant’s knowledge of the project.

All went smoothly until the newspapers printed a story about the students’ efforts on behalf of the faculty. Since such work by unauthorized individuals violated several building codes and safety regulations, the physical plant protested to me. The physical plant administrator’s flexibility was demonstrated because he understood that even though the work was unauthorized, it would be impossible to undo it and thereby alienate the students and faculty involved. Everybody concerned was flexible, and the physical plant completed the work which the students had begun.

That situation could have resulted in a confrontation between me, the faculty, students and the physical plant administrator with very undesirable results, but we were able to reach a compromise satisfactory to all. In addition, I sent a memorandum to faculty and department heads reminding them that no maintenance work should be undertaken without first checking with the physical plant. Ultimately, I had this opportunity to defend the policy that was in the best interests of the university—that maintenance work should be done in compliance with state and national codes and laws by experts employed by the institution.

**Integrity—An Essential Quality**

Integrity is the final quality I look for in a good administrator. Simply stated, integrity is knowing the difference between right and wrong and living by that knowledge. An administrator with integrity reflects that quality in his subordinates.

Integrity shows in a number of small ways: The care with which decisions are made; the way materials are used so as not to be wasteful; general cost-consciousness. In simplistic terms, the administrator with integrity knows that the money he spends on the job is not his, but that he is the steward of it, and he emphasizes that principle to those who work for him.

As in any organization, physical plant personnel have many opportunities to display unethical behavior: A man can one-half can of paint left after a job and takes it home; another uses a physical plant-owned vehicle for some personal job. These may seem like very small items, but even suchii things can generate an enormous amount of criticism. The difference in whether an employee is honest in such dealings often is dependent upon the type of administrator he works for.

In addition to personal qualities which reflect in a man’s work, I also look for a different kind of professional expertise than I would have five years ago. Besides being an engineering professional, today’s physical plant administrator must be knowledgeable about labor relations and have someone on his staff who is an expert in that field. I want my physical plant administrator to know about HEW guidelines, fair employment practices and unions—how they are organized and how they work on campuses.
He should be particularly sensitive to grievances and complaints. If a campus is not unionized, it should have a good, professionally staffed organization for hearing grievances and complaints. Career training and opportunity also are part of that overall scheme.

Broad Knowledge Required

The physical plant administrator should be acquainted with modern business techniques, planning, contracts, scheduling, record keeping—the most efficient and effective techniques known. In some instances, he may be required to work with computerized operations and inventory control.

A knowledge of current policy regarding OSHA and Environmental Protection Agency regulations and guidelines is essential. He should know how OSHA codes affect various departments on campus and how to bring those facilities into compliance with the law. No president wants to be caught unaware by an OSHA inspector who says the campus needs $1 million in repairs.

This year Purdue’s physical plant administrator requested $100,000 to begin upgrading facilities in compliance with OSHA. I asked him if that was enough and he said “no,” but that it would start the job and at least make people aware of the effort. I told him he had the $100,000 and to get started.

Over the next several years, there will be an allocation of approximately $100,000 a year to bring Purdue fully into compliance with OSHA. When the physical plant administrator made his request for the initial $100,000 he did not base that request on a “feeling.” He knew paragraph by paragraph which standards the university’s facilities violated.

I am concerned with the ability of the physical plant administrator to optimize operations to cut costs. Last year during the energy crisis I went to the business office and asked them how we could save as much energy as possible. They went to the physical plant, which began studying lighting levels in various campus buildings. Through the efforts and careful analysis of the physical plant, Purdue saved $250,000 the first year of its energy conservation program.

Assessing Budget Alternatives

The relative value of trade-offs is important. For instance, a request was made to install central air conditioning in a building presently using window units. I asked, what is wrong with window units when they are already installed, and all you have to do is flick a switch to turn them on? I wanted to know the trade-offs—the cost of replacement versus the cost of maintaining units already in place. I continually ask for the best technical judgment of the physical plant administrator. If a careful and detailed analysis has not been made which shows justification for action one way or the other, I cannot act.

That brings me to the next and most important point. Budget preparation and defense, mentioned briefly earlier. The first question I ask my physical plant administrator is: What are the essential physical plant activities and what do you feel you must have absolutely to keep your operation going? The next question is: What alternatives exist for doing the job efficiently and effectively?

An example of the search for such alternatives is seen in the in-house versus contract cleaning services for dormitories. In an effort to pare costs, contract cleaning was suggested. Because it was not immediately known exactly how much, if any, money would be saved, a test was run in one dormitory. The results were that although contract was cheaper than in-house cleaning, the quality of work was inferior. Based on the effect inferior cleaning would have on building occupants, contract cleaning was abandoned.

Never-Ending Search For Efficiency

But the question never ceases: How can we do the same job more effectively and more efficiently? I do not want to hear from academic departments, business administrators or physical plant administrators that there are no new ideas, no alternatives, no feasible solutions to problems. In order to defend the physical plant, I must know that the operation is efficient. If someone reports angrily that he saw three men repairing a sign, I want to know that each of those men was necessary to accomplishing the task.

The president needs to know priorities, and the physical plant administrator needs to know priorities. In the event of a budget cut, he must have a contingency plan. During the last year I asked the physical plant to cut its expenditures by 8%. They drew up a plan which accounted for an 8% savings. Then I asked to see that reduction in order of priority—what is the item easiest to cut and what is the toughest—and to assess as closely as possible how those cuts would affect teaching, service and research.

In summary, it is essential that physical plant personnel keep in close touch with the president. Such a relationship reflects pride in the physical plant operation—and it is pride that welds each department in a university into a team, which it must be in order to survive. No one group can strike out by itself and dismiss the rest, for each works for the ultimate fulfillment of the missions of the institution.

The physical plant has a tough job, but it is my hope that college presidents recognize and support the important role the department plays in the success of the institution. Physical plant administrators should participate in planning and policy development, alongside academic administrators and faculty, all sharing a commonality of purpose. "The university cannot work without the physical plant administrator, nor will he have the opportunity for such a personally rewarding occupation if there is no university."