THE JOURNAL OF THE AMERICAN COLLEGE OF DENTISTS

Social Dentistry—Why Not?

Liberal Education—A Need

Doctors and Journalism

Tri-State Section Papers

Career Guidance

OCTOBER 1964

THE JOURNAL
OF THE
AMERICAN COLLEGE OF DENTISTS

OCTOBER 1964

VOLUME 31
NUMBER 4

Editor

T. F. McBRIDE
College of Dentistry
Ohio State University
305 W. 12th Ave.
Columbus, Ohio 43210

Business Manager

O. W. BRANDHORST
4236 Lindell Blvd.
St. Louis, Missouri 63108

The Journal of the American College of Dentists is published quarterly—in January, April, July, and October—by the American College of Dentists at 1201-05 Bluff Street, Fulton, Missouri 65251 • Subscription $7.50 a year; single copies $2.00 • Second class postage paid at Fulton, Missouri •

All expressions of opinion and statements of supposed fact are published on the authority of the writer over whose signature they appear and are not to be regarded as expressing the views of the American College of Dentists, unless such statements or opinions have been adopted by the American College of Dentists.

Correspondence relating to manuscripts, their publication, and similar editorial matters should be sent to the Editor. Other items concerning subscriptions, change of address, reprints, etc., should be sent to the Business Manager.

The JOURNAL is a publication member of the American Association of Dental Editors.

For bibliographic references the JOURNAL title is abbreviated J.Am.Col. Den. and should be followed by the volume number, page, month, and year. The reference for this issue is J.Am.Col.Den. 31:pp, Oct. 1964.

In This Issue

EDITORIALS

UNDERSTANDING BY COMMUNICATION,
Jack S. Rounds 195

TEACHING "SOCIAL DENTISTRY,"
Walton J. Pelton 196

CHANGES IN CONSTITUTION AND BYLAWS 198

THE LIBERAL EDUCATION OF THE DENTIST,
Leonard S. Stein 199

JOURNALISM IN THE HEALTH PROFESSIONS,
Clifton O. Dummett 211

INFLUENCE OF ORGANIZED DENTISTRY ON PRACTICE,
William Herbert Jolley 225

DENTAL PRACTICE: IMPACT ON CURRICULUM,
Granville Sherman, Jr. 229

DIAGNOSIS AND TREATMENT PLANNING: THE KEYSTONE,
Roy M. Smith 233

THE ROLE OF RESEARCH IN CONTINUING EDUCATION,
James Floyd Smith 239

HOW PERSONS CAN BE INTERESTED IN DENTISTRY AS A CAREER,
Kenneth W. Durham 242

ACD PROGRAM—SAN FRANCISCO, 1964 252

VOLUME 31, INDEX 253

OFFICERS AND REGENTS, 1963-1964 256

OCTOBER, 1964

Understanding by Communication

Occasionally criticism has been voiced by members of the College that inadequate communication between the administration and the Fellowship is responsible for a lack of complete understanding of the College by many of its Fellows.

The Board of Regents has long been aware that broader and more effective means of communication among the members is desirable. The Board has studied this matter constantly with full realization that a better understanding of all facets of the College program, by the Fellowship, can add strength in the fulfilling of objectives and in attaining goals.

The dissemination of information regarding all College affairs has usually been through its publications, the JOURNAL and the *Reporter,* published reports of committees, correspondence from the Central Office, lecture programs, and through attendance at the annual meeting and Convocation.

Upon invitation of the Regents, Sectional Representatives have met in St. Louis for three consecutive years, the purpose being to develop a closer relationship and understanding among Fellows, Sections, and the Board. Although these conferences have been stimulating to the representatives attending, it is questionable whether the efforts and costs involved have been justified. The value of these meetings is questioned because of the apathy so often demonstrated by many Section members and too often by Section officers, even though enthusiastic and informative reports have been brought back and given to the Sections by the representatives. Fellows of the American College of Dentists are justly proud of their Fellowship but more than a few are willing to "let George do it."

Frequently one hears a Fellow erroneously refer to Fellowship as "membership in the F.A.C.D." or to Fellowship in the "American College of Dentistry." This can only be due to a lack of awareness, or to thoughtlessness, which surely cannot be blamed upon the College administration and its "inadequate methods of communication."

Harry and Bonaro Overstreet, in their book "The Mind Goes Forth," have stated "the importance of understanding may be the very thing upon which harmony within any group or organization

depends. One of the most rewarding directions which the human mind can take is in agreeing with another, which means that there has been an understanding in thinking between individuals."

In 1920, when the College was founded, a group of men of stature and vision set a pattern for the profession by establishing the purpose and the objectives of the College. Let us continue to follow this pattern and to improve upon it by better understanding.

JACK S. ROUNDS

Teaching "Social Dentistry"

The leadership role of dental schools in establishing the practice patterns and professional attitudes of young men who will provide professional guidance in the future is well recognized and accepted everywhere. To some extent the accreditation program of the American Dental Association's Council on Dental Education is an elevating influence on what is taught in the dental schools in the United States.

The rapidity and thoroughness with which the Council on Dental Education's recommendations for curriculum improvements have been put into effect, as one might anticipate, have also been influenced by the attitudes and interests of the several deans and their faculties. An illuminating example is the requirement by the Council in the late 1930's that dental schools include a course in dentistry for children. At the same time the Council voted to require a course in public health.

During the intervening two and a half decades dental schools have brought about tremendous advancements in the science and art of pedodontics. On the other hand, the performance of dental schools concerning dental public health is disappointing. The lack of a favorable impact of public health courses on the social attitudes of dentists, their un-alertness to social changes and their slowness to apply research findings as they have become available have become more harmful with the passage of time. The good results of the Council's action in the first instance and the indifferent results in the second have set the stage for re-evaluating the efforts of dental schools to graduate young men fully conscious of their obligations, as well as their rights and privileges.

The gap is yet very wide between the ADA's forthright published statement that "dental care should be available to all regardless of income or geographic location as rapidly as resources will permit" and a real effort by the profession to reach such an objective. As further documentation, the *Survey of Dentistry* proposes many public health programs, financial recommendations, and manpower objectives which are apparently repugnant to a substantial portion of the dental profession. Certainly, there can be little argument that dental schools and the Council on Dental Education have been less effective in influencing professional attitudes about dental care for all of society than they have in changing the performance of dentists concerning dental technics for children.

Recognizing that a course or two in public health will not overcome the tendency of dental faculties to train students exclusively to treat only those patients who demand and are willing to pay for the finest type of dental care, it becomes obvious that new approaches must be made. In doing so, it will be necessary to take into account the enormous faculty resistance existing in most schools concerning the necessity to teach students how to technically and socially manage indigent, dentally indigent, and part-pay patients.

Of all the evidence of the profession's lack of leadership in health affairs the most damaging is society's disinterest in supporting the dental profession's own educational program. Private sources of financial support for dental education and dental research are extremely meager. Undoubtedly many educated and influential people believe that dentists make little or no contribution to the public welfare and believe, in turn, that dental education does not merit generous contributions. Even alumni support of dental schools is far from adequate. Government, at all levels, is also looked to for financial assistance. But, here again legislators, who appropriate funds, being people, are less aware of the plight of dental education than they are of the needs of other health service institutions. Even so, most informed observers feel that tax-supported dental institutions, depending on a few laymen, fare better financially than do the privately supported schools who must depend on many.

It is unfortunate that groups of dentists, however small, are so ill-informed of the official position taken by their own organization (ADA) and the fundamental problems involved that they oppose proposals for governmental support to improve the distribution of

dental care or the financial position of dental schools. From the public's viewpoint the inescapable conclusion is that dentists are vested interests concerned only with their own welfare.

Since the leadership role of dental schools in producing young practitioners with a social consciousness must be improved, the paper by Philip E. Blackerby entitled "Why Not a Department of Social Dentistry?" published in the *Journal of Dental Education,* September, 1960, was most timely.

Indeed, why not a department of social dentistry?

WALTER J. PELTON

This editorial was a part of the introductory remarks at a Seminar on Departments of Social Dentistry held at Kellyton, Alabama, April 11-12, 1963. The Seminar was sponsored by the University of Alabama School of Dentistry and the Manpower and Education Branch, Division of Dental Public Health and Resources, U. S. Public Health Service.

Dr. Pelton is a former Regent, and following a long career in the U. S. Public Health Service is now Professor and Chairman of the Department of Community Dentistry at the University of Alabama.

Changes in Constitution and Bylaws

Several amendments to the Constitution and Bylaws have been proposed and will be presented for action at the San Francisco meeting, November 8, 1964.

To be considered: rewording and listing of certain general statements; submission of approved nominations to Section officers; definition and duties of appointive officers and Board of Regents; increase in membership fee and dues; provision for a mail ballot; and conforming changes if the several amendments are adopted.

Members of the College were duly notified of these amendments in the August, 1964, *Reporter.* Fellows are urged to re-read the proposals (and the budgetary studies appended) so that understanding and considered action may be taken at the annual business meeting.

The Liberal Education Of the Dentist

LEONARD S. STEIN, A.M., Ph.D.

In this day of increasing specialization and professionalism, the problem of liberal education is often discussed. I offer you a slightly different view than is usually to be heard, a view that I believe to be especially applicable to the case of the dentist. The principles underlying my remarks are applicable to other professional men—but I hope you will agree with me that the dentist is a special case, and I hope also that when I finish, you will agree that I have managed to slant my ideas in a way that makes them especially useful to the professional dentist.

In discussing liberal education, I want to make four points:

First, the training offered by a modern professional school can seriously interfere with one's liberal education.

Second, we live in an age marked by two kinds of change, and only a liberal education lets us meet these two kinds of change successfully.

Third, liberal education is that training that toughens the mind.

Fourth, there are at least two ways to gain a liberal education.

The Danger of a Professional School

Let me immediately say that I do *not* object to professional schools because they teach a specialty. On the contrary, so far as I am concerned, that kind of criticism of a professional school is, at best, unreasonable. If we need anything at this time in the unfolding of human destiny, it is more and more precision. When a periodontist in Chicago saved one of my molars, I was delighted that he knew so much about oral physiology, and I couldn't have cared less whether

---

Dr. Stein is Dean of Metropolitan College (and Assistant Professor of Political Science) at Saint Louis University. This is an abridged version of the speech delivered at the annual meeting and initiation of the Saint Louis University School of Dentistry chapter of Omicron Kappa Upsilon, April 30, 1964.

Metropolitan College is the extension, or continuing education, division of Saint Louis University, and is presently working with the School of Dentistry in expanding the School's Continuing Dental Education activity.

he knew any philosophy or history. Likewise, when I need help from an historian, I want the best historian I can find, and I don't care what understanding he has of anesthesia or of nuclear physics.

Instead, my criticism of the professional school is precisely that professional schools today are so *good*. They teach so much, that their graduates face the grave danger of thinking that professional school is the end of education.

This wasn't always true. Within the memories of men still living, so-called schools of dentistry taught hardly anything worth knowing. In dentistry, as in a number of other professions, we have seen enormous progress in the past four or five decades.

We have seen this progress for two reasons. The first and most obvious, is the enormous growth in our knowledge and understanding, produced by biological research of all kinds. We at Saint Louis University have had our share of dedicated men who dared to reject what they knew and to search out new knowledge, new understandings, new procedures. Happily, our School of Dentistry is still "controversial": we still teach some things that others in the profession aren't yet ready to accept, and I hope our dental faculty will always be controversial.

The second reason for progress in professional education is the enormous improvement in education at every level. We have now learned how to educate young children in a much more efficient fashion than was true even thirty years ago, and you are all familiar with the improvements in secondary education of the past ten years, developments that will soon completely transform the high school curriculum. We now teach algebra to third and fourth-graders, and some pretty sophisticated biology in junior high, and some quite sophisticated mathematics and physics in senior high. The result of these improvements in our elementary and secondary schools is that young men and women come to the university considerably better prepared for serious work than was true in the past—and this, in turn, lets our professional schools do a much better job than they ever could before.

The ultimate result of this is that the man who graduates from dental school today is a very skilled practitioner. He has at his fingertips an enormous number of facts, and considerable understanding of those facts. He is a better diagnostician at graduation than were the

men who graduated in the past, and he knows more procedures—and more complex procedures. Indeed, he is so skilled, so sophisticated as a professional practitioner, that he faces the grave danger of thinking he knows everything. He will have no trouble finding older men who know less than he does—and in the unconscious contempt that the young and vigorous always have for their elders, the newly-graduated dentist, or physician, or engineer, is a prime prospect for the trap that awaits him—the trap of ignoring a fundamental fact about himself and about his profession.

The fact is simply put: that professional school is merely the *beginning,* and not the end, of education. Indeed, I go further, and say that what is learned in professional school is merely the *unimportant* part of education. The important part still awaits.

In making this remark, I stand with Plato, that ancient Greek scholar. Over two millenia ago, Plato argued that the important things in life could be learned only after one had achieved his thirtieth birthday. Children and young people, he argued, can learn only facts and skills—techniques, if you will: mathematics, music, horsemanship, the skills of warfare. If Plato were alive today, I suspect he would add to the list, skills of surgery and of oral rehabilitation, and similar complex and difficult skills.

But true wisdom and understanding, Plato declared, are denied us until we can add experience and maturity to our knowledge and skills. These—wisdom and understanding—one begins to learn when he assumes adult responsibilities: earning a living, playing a chosen professional role, taking up social and religious and family obligations. For it is only in the complex inter-play of the *real* factors of *real* life that one learns about life and men and that thin line between animal existence and human dignity. These things cannot be learned in the essentially artificial atmosphere of school . . . whether by "school" we mean the second grade or the independent research of a university graduate student.

If you will examine your own lives, I'm sure you will agree that you've learned much more in the years since your graduation, than in the years before. And this part of your education has been important *precisely* because *you have educated yourself.* If war is too important to be left to the generals, surely your education is too important to be entrusted to educators.

Two Kinds of Change

What I have been arguing may be re-stated in these words: School is *not* preparation for life, but only the basic training that gets us ready to *start* learning, to start our liberal education. And we need the kind of learning that I call "liberal education," because only that kind of education lets us face two fundamental kinds of *change* that we all face in these days.

The first kind is the newest—and we are indebted to Margaret Mead, the great anthropologist, for a phrase that sums up this kind of change. In an article published in the *Harvard Business Review* in 1958, she declared: "No one will live all his life in the world into which he was born, and no one will die in the world in which he worked in his maturity."*

This dramatic phrase sums up what we all know about the rapid growth of knowledge in contemporary life—or, to put it negatively, about the rapid obsolescence of knowledge. This phrase is as dramatic as the times in which we live. Even in school, changes occur: the dental senior learns facts, techniques, and procedures that did not exist when he entered dental school. Every profession nowadays pays lip service to the need for continuing education, for keeping up with new developments—and you as dentists know how much of your leisure time must be devoted to that difficult task if you are to be true to your professional obligations. In some fields, indeed, knowledge becomes obsolete so rapidly as to stagger the imagination and to pose a very difficult problem indeed for the professionals. In certain branches of engineering, for example, it has been estimated that what the trained engineer learns in university—that is, his professional skill and knowledge—has a half-life of ten years or less. Truly, the electronic engineer or the space scientist does not die in the world in which he lived.

Not only is scientific knowledge growing at a rapid rate, but other kinds of changes seem to occur in this modern world more rapidly than ever before. It was not enough that we could defeat Hitler in the 1940's and fight and win a Cold War against Russia in the 1950's, we must now in the 1960's confront the fact of a new threat from China. Africa is a boiling cauldron of nationalism, as new nations

---

* Margaret Mead. "Thinking Ahead: Why Is Education Obsolete?" *Harvard Business Review,* November-December, 1958, p. 27.

seek to move from stone age to industrialism in a few seconds of historical time; South America began its revolutions in the last century, but seems not yet to have managed to arrange things in a workable fashion. The home front offers no relief from these international problems either. Poverty, and overcrowded schools, and a rising crime rate, and overcrowded highways, and a resurgence of the radical right wing, and the deterioration of our cities—all these and other problems demand our attention, demand that we face constantly a changing society.

As Miss Mead's phrase makes plain, we live in a revolutionary age, one that demands of us a very large number of decisions. And those decisions are on new subjects, new problems—many of which did not exist when we attended school. Thus we are forced to continue our educations, each individually according to his own sense of responsibility. School cannot possibly prepare us for these kinds of decisions.

But the very drama of the times in which we live, the very drama of Miss Mead's phrase, sometimes leads us to forget another kind of change—a kind of inevitable human change that, used wisely, enables us to deal efficiently and effectively with the changing world. This second kind of change is the normal growth pattern of the human individual throughout his lifespan. This change is a natural part of human life that makes you different each year from what you were earlier. Like our other natural talents, this continued growth offers us constantly an opportunity for *improvement.* We know in advance that we will be different at age 50 than we were at age 40, and different at age 40 than we were at age 30. If we *use* that change, then we are *wiser* at the age of 40 than at 30, and wiser yet at 50. With age, comes experience and insight and understandings denied to the young—and to the moral man, age brings with it also the opportunity to use his growing wisdom in the service of himself, his profession, his society.

This may seem obvious. As dentists, as biological scientists, you are thoroughly familiar with developmental concepts, with the principle that human physiology—and even the human psyche—is subject to some laws of change. And yet, this principle is not so obvious to all men. We know men and women who refuse to grow: who cling to the thoughtless and happy irresponsibility of childhood, and who consider their education ended upon graduation from school—

be it high school, or college, or professional school—who refuse to accept the responsibility of learning how to cope with the new problems that face our society and our world in these times. We all know men and women who will not take on their social and civic obligations, who refuse to take their turn at civic leadership—or, for that matter, even their turn at carrying the leadership burden in their own professional societies. In this connection, I remind you of the statistics that show that a percentage of well-educated Americans don't even vote—and one of the scandals of our American democracy is that "nice people" won't "play politics," won't do precinct work, won't join a political party and try to elect the township or ward committeemen or struggle to make sure that good candidates get nominated. I repeat: This is a scandal. And to bring the question home, I would ask you dentists a pertinent question. As you know, most local elections on fluoridating the water supply have failed—and I ask you: To what extent is the dental professional responsible for these failures? Is organized dentistry delinquent in its responsibility to the rest of us, on this question?

I don't mean to point a finger just at the dental profession. Similar questions can be asked of other professional groups, and of business and trade associations in every line of business. I do mean, however, to point out, in the most direct fashion, that you don't learn in school how to conduct a political campaign . . . you don't learn in school how to stop evil men from destroying the good parts of our society . . . you don't learn in school how to persuade the backward and the childish to grow up. These are some of the important things that each man must learn for himself, out of his own mature experience, out of thoughtful growth throughout the lifespan.

What Is Liberal Education?

It is precisely the need to deal with problems like those that one needs liberal education. It is a liberal education that enables men to make decisions wisely—the decisions that come to all men normally in their lifespans, and the very great number of decisions that come to us in these days because of the revolutionary nature of this age. Indeed, a sound liberal education *encourages* men to *want* to make decisions about the important problems that confront mankind. We are all indebted to a very large number of men and women who have

this kind of "want," who have had the courage to seek out problems and work through them to the benefit of all of us.

If this be an adequate broad definition of "liberal education," then I believe you can best translate "liberal education" into this kind of operational formulation: It is training *that toughens the mind,* that enables the individual to *face* reality and to *deal* with that reality skillfully and forcefully.

And this kind of education—mind-toughening—can be gained, I believe, only through one's own efforts in his adult years. Indeed, I go further and argue that tough-mindedness is the crucial prerequisite to genuine maturity.

It is difficult to describe tough-mindedness, for it varies with the individual. But it is easy to see tough-mindedness in operation. It is that quality of mind and psyche that leads the researcher along unpopular paths, even into topics that are not academically fashionable —like the question of extraction as a part of orthodontic therapy. It is tough-mindedness that leads to the teaching of the truth—and equally, tough-mindedness is the first prerequisite for perceiving what is true. Tough-mindedness is what leads us to perform duty . . . civic, religous, family . . . even at the expense of immediate self-interest. It was tough-mindedness that led Socrates to drink the hemlock rather than reject by actions, what he had long preached in words. The ordinary citizen exercises that same quality when as a juror he votes the death penalty for a vicious murderer against whom the evidence seems overwhelming; he needs to be even more tough-minded to hold out against his fellow jurors when his conscience tells him that the evidence is *not* overwhelming. In other situations, too, this quality enables us to stand aloof from the crowd when the majority is wrong—and, conversely, motivates us to throw our enthusiasms and energies, even our lives, onto the side that deserves our support. Tough-mindedness does not make cynics of us, but it does enable us to recognize the infinite variety among human motivations and modes of behavior, and to deal with each in appropriate fashion.

Indeed, the viability of a democratic society depends upon the existence of a significant minority of tough-minded individualists—men and women who come to their own decisions on important policy matters and who influence and stimulate the less thoughtful among us. The same is true of a profession, like dentistry, if it would

prosper. It is a very small compliment to suggest that this audience includes a high percentage of tough-minded individualists, who serve as leaders—not necessarily popular, but leaders, nonetheless—to advance the science and profession of dentistry despite the fashions of the moment.

Perhaps I can best illustrate the meaning of tough-mindedness by talking about a different kind of professional skill—that of the mechanic. You have all had experience with the repairman who comes to your home—or to whom you take your automobile—who displays no humaneness, very little rationality, and only a minimum of technical competence. I hope that some of you have had experience with the opposite type of technician also. He is the kind who starts with the notion that the broken washing machine is there to wash the baby's diapers, and therefore he must accept the housewife's concern as real and meaningful in itself. He offers to the washing machine the same sensitivity in the technical sphere, as he offers to the machine's owner in the human sphere—and he is for that reason alone a better mechanic than his oafish colleague. I would not willingly offend anyone—but this distinction might also be drawn about physicians and lawyers and salesmen and dentists—and adult educators.

In brief, the distinction is this: that the oaf has failed to face reality, whereas the more competent mechanic has somehow toughened his mind sufficiently so that he can assume the *total* burden offered by the broken washing machine: the broken gear and the housewife's concern, the mechanical and the human aspects of the problem.

How to Gain a Liberal Education

If this be an adequate conception of a liberal education and its results, one moves inevitably to the questions of how to gain a liberal education, how to toughen one's mind. There are at least two answers to that question.

The traditional view of a liberal education is that it consists of the mastery of our intellectual heritage, with special emphasis on philosophy, literature, and history, but including also science and the arts of communication, especially reading. In this connection, I recall a gentleman I knew some years ago in Chicago, a gentleman enrolled in a special intensive four-year program for adults based primarily on

the "Great Books." He worked all day, every day, like the rest of us, and attended classes in the evening. The program in which he was enrolled required considerable reading of difficult works, and my friend made a practice of rising early and spending an hour each morning reading his assignment for the week. In warm weather, he would sit in the park fronting on Chicago's Loop, near his office, reading and puzzling until time to go to work. Of this practice, he once told me: "After an hour's effort to analyze Aristotle or St. Thomas, the problems on my desk seem simple." Here is a man who found genuinely liberating education in the traditional liberal subjects; for him, philosophy was not a surrogate for reality, but a preparation for life and its problems, a means toward tough-mindedness.

This example also suggests the reason that liberal subjects—and especially the great works of philosophy and literature produced by Western civilization—have been, and can be, so effective in liberal education. What are called the "Great Books," for example, represent our culture's best effort to come to grips with reality; they frequently plunge to the heart of the real problems that confront mankind, and do so with intellectual skill and vigor. By trying to re-experience the thought processes of the great authors of our tradition, we gain skill in our own search for reality. Like the dental student who learns to deal with impacted wisdom teeth by watching and then working under the direction of a fine oral surgeon, so do we understand better how government works by reading Machiavelli and Mill, strengthen religious faith from Rousseau as well as Pascal, improve our understanding of human motives with both Freud and Sophocles.

But there are *other* ways to become liberally educated also. The mechanic who understands the role of the machine in the lives of its users, and the military expert who appreciates the *full* meaning of war to the accomplishment of human goals, and the orthodontist who looks beyond jaw-angle and tooth-crowding to the human psyche, and the teacher who seeks to help the young man or woman develop *all* of himself as well as the specific skills and knowledge the teacher has to give—these, too, are liberally educated. Each of these has torn from his eyes the veil of illusion that prevents him from seeing, through both space and time, beyond his own immediate interests and concerns.

And how is that veil of illusion to be torn away? Why, by recognizing constantly that we have many roles to play, and that the mastery of all these roles is a lifelong task. In short, the road to a liberal education is to be found in a life of continuing education.

This seems like a harsh prescription, a difficult road to follow. And it is: Those who choose this path, find it full of the agony of uncertainty, for it means constantly to seek new experiences, to reject—or at least question—old habits, old knowledge, old understandings, and to seek for new ways, new understandings, new knowledge. And when those new ways are found, what a thrill . . . what deep satisfaction at knowing that one has, all by himself, reshaped his own mind and psyche and being, has grown in a desirable direction.

What, now, does this mean in specific terms? I have suggested that the systematic study of our western intellectual tradition is a good mind-toughening exercise. In all seriousness, I suggest that if you truly understand Aristotle, you will find your dental techniques improved—for you will have a mind honed to such sharpness that you will not be satisfied to remove a tooth exactly the way you did last month and last year; you will seek better extraction methods, and even—if you are blessed with this kind of talent—better kinds of instruments with which to do the extraction.

I have suggested that this is not the only means to a liberal education; indeed, I will turn around the remark I just made: You will also gain a liberal education by concentrating on the *perfection of your professional skills.* If you make a determined effort to keep up with the new developments in your chosen life work—*and do it in the right way*—you will also sharpen your mind to razor-sharpness. It is not enough merely to learn how to use electro-surgery; you must also add to your understanding of the cell's growth and development, increase your insight into physiology and anatomy, and thus gain a *total* understanding of electro-surgical techniques and machines. Indeed, by learning in this total fashion you become more confident of your skill and understanding—and this confidence in turn will be shared by your patients, who will approach your chair with the calmness that can add so much to your own therapeutic efforts.

And as your professional skills grow toward perfection in this broad-gauged fashion, you will also become a bigger *person.* As your professional understanding reaches toward perfection, you will find yourself more effective as a leader of your profession, more skilled

in your relations with your spouse and children and friends, more comfortable as you face the difficult political and social and international problems that you, as a citizen in these times, must face. You will be able to deal with these non-dental matters, because your *professional* growth will be *human,* taking account of your full nature as a man.

I have deliberately avoided any mention of automation, because I don't believe automation is new at all. A long time ago, men discovered that it is possible to do excellent work in a routine fashion, to automate their brains and hands and thus avoid thinking altogether. You know dentists like that, and I know both political scientists and adult educators who are more like machines than like humans. Automation is new only in that it lets machines take on what men have already proved can be done—and this reminds me of the story about the first completely-automated jet airplane—a story that summarizes what I have been trying to say.

Imagine, if you will, that automation has taken a sudden spurt, and that we are now ready for completely automatic airplane flights. You're a passenger on the first commercial automated flight, but don't know it. You enter the jet plane, are welcomed by a comely stewardess, take your seat and strap in. The jet engines warm, and just as the plane trundles on to the runway and begins the take-off, a male voice begins to speak over the public address system. Here's what it says:

"Welcome, ladies and gentlemen, to the first completely automatic commercial airplane flight. This is a recorded message, informing you that there is no pilot, no co-pilot, no engineer, no radio operator on this plane . . . indeed, not a single human being in front of the door to the flight deck. Please relax and enjoy yourself, for this history-making flight will be the safest you've ever made. The automatic pilot is the best ever produced, and has been tested in over 5,000 hours in the air. In addition to the automated devices on the plane, special equipment on the ground is monitoring every minute of the flight, double-checking the programmed schedule to insure that your trip will be completely safe and comfortable. As you enjoy the beautiful view from 70,000 feet, remember that nothing can go wrong nothing can go wrong nothing can go wrong nothing can go wrong nothing can go wrong. . . ."

There are yet some things that men can do better than machines.

We speak better, we think better—indeed, all the important decisions of life can be made only by men, and neither machines nor machine-minded men are of any use whatsoever on these crucial decisions. This—the ability to make important decisions—is the end product of liberal education.

The author offers his gratitude to two faculty members of the Saint Louis University School of Dentistry for their help with this manuscript: Dr. James D. Harrison, for his invitation to deliver this speech and thus for stimulating its production; and Dr. Kenneth C. Marshall, who was kind enough to review the manuscript for technical accuracy.

NATIONAL HUMANITIES FOUNDATION

The establishment of a National Humanities Foundation similar to the National Science Foundation, is recommended in a report by a 20-member commission representing three of the nation's leading scholarly organizations—the American Council of Learned Societies, the Council of Graduate Schools in the United States, and the United Chapters of Phi Beta Kappa.

The proposed foundation, with a 24-member board and a director appointed by the President for six-year terms, would have the authority to award scholarships, fellowships, and grants to individuals; assist organizations to develop and encourage scholars, artists, and teachers; promote improved teaching in the humanities; help to construct and equip buildings, especially libraries; and arrange for the exchange of scholarly and artistic personnel and information, both internally with the United States and with other countries.

The recommendations say that such a foundation should be concerned with support to qualified and endorsed individuals including artists, scholars, and teachers in the humanities and the arts—the latter to include the creative and performing arts; the study of languages, literature, history, and philosophy; the history of criticism and the theory of art and music; and the history and comparison of religion and of law. Further, "those aspects of the social sciences that have humanistic content and employ humanistic methods," would be supported, but, "it is assumed that the National Science Foundation will continue to be concerned with social science where its principles and approach resemble those of natural and applied sciences."—*Ohio State University Research News,* July 17, 1964.

Journalism in the Health Professions

CLIFTON O. DUMMETT, D.D.S.

The Dental Service at the Veterans Administration Hospital, Tuskegee, Alabama, in cooperation with the Research and Education Committee of the Hospital, held a medico-dental symposium on journalism in the health professions, January 17, 1964. This was the first time that this type of conference had been presented in a VA installation, and also the first time that a Dental Service had cooperated with the Research Service to make such a presentation.

The contributions which journalism makes to the health professions are of special significance. Communications among researchers, teachers, general and specialized practitioners, fellow scientists, clinicians, undergraduate and graduate students, and the public, are absolutely essential if these vocations and professions are to progress and multiply their contributions for the welfare of mankind.

If the quality of scientific journalism is good, its functions can be more easily accomplished, and its contributions will be all the more impressive.

In order to effectuate a program designed to emphasize the role of scientific writing of research projects, competent and experienced lecturers were selected to explore the main topic and review some of the principles involved in scientific writing and research.

The Scientific Literature

The first presentation by President Harold D. West, Meharry Medical College, was titled "The Scientific Literature: The What and Why." Dr. West observed that the preservation of records of the details involved in explorations continually being made into the unknown, constitutes one of the most important single factors in human progress. It is by consulting these records that we become aware of the expanding borders resulting from discovery of the nature of

---

Presented at the Veterans Administration Research Study Group in Oral Diseases Conference held in conjunction with the International Association for Dental Research, March 22, 1964, Los Angeles.

Dr. Dummett is Chief of Dental Service and Executive Secretary and Chairman, Research and Education, VA Hospital, Tuskegee, Alabama.

disease and its treatment. Here may be found the earliest and the latest experiments on clinical methods, scientific techniques, electronics, engineering, mathematics, physics, and the basic sciences of medicine and dentistry. Here in printed form are to be found the results of all of man's efforts at scientific endeavor worth recording. From these one gets the stimuli, the suggestions and the urges, which, coupled with thought processes, logic, and imagination lead to further inquiry.

The enormity of this mass of data is one of the first characteristics which makes its impact upon us. There has been a constant increase in the amount of research being done over recent decades; this increase has been almost explosive in nature. In late years, there have been fantastic quantities of money made available to qualified investigators for their research. This factor will continue to increase the vastness of the scientific literature.

There are those who feel that much worthless material somehow creeps into the literature, taking up valuable space. An article published in the *Saturday Review** on the "purpose of experiments" gives one type of philosophy. The author says:

> Experiments ought to be done for a purpose—a purpose other than the immediate objective in mind, but also having a vague sense of something beyond the immediate objective, toward which one is striving. True exploratory research is really the working out of a winding trail into the unknown. The investigator who is attracted by this type of research is attracted by the same thrill, albeit at a sublimated level, that was once enjoyed by the explorers in breaking through the confines of the old world. This is the kind of research our academic and governmental administrations must be very careful to preserve. They must encourage the desire and guarantee the freedom for such exploration into the unknown, just as it was necessary and profitable to the administrations of the old world to allow individuals to explore the unknown geographical world.
>
> Project research is, of course, necessary. There are certain needs of society which must be met as soon as possible for its immediate benefit; but it is also necessary to preserve this other type of exploratory research. The latter must be guarded from attenuation by those who do not understand that this type of research is vital for our future.

Dr. West pointed out that the scientific literature is housed in libraries, which in turn are sponsored by colleges and universities, government, societies, hospitals, and research institutes. One publication lists 765 research (including medical and dental) library col-

---

* The purpose of experiments. Paul W. Eiss, *Saturday Review,* Jan. 4, 1964, p. 92.

lections arranged by state and city in the United States and Canada.

The largest medical library in the United States is also one of the largest in the world. This is the Armed Forces Medical Library. To get some idea of the volume of service it renders it might be mentioned that in 1952 it photographed 2,000,000 pages in response to 88,000 requests. The Public Health Service maintains libraries such as those of the National Institutes of Health, which are concerned chiefly with research in public health and preventive medicine. The Atomic Energy Commission maintains libraries in the United States and abroad to assist with research on the effects of nuclear radiation and the applications of atomic energy to medicine. The Veterans Administration maintains libraries for their professional staffs and also for patients. There were 170 of these in 1956.

Society libraries are supported by professional associations. Some of these are among the largest libraries—such as those of the Royal Society of Medicine in London, the College of Physicians of Philadelphia, the New York Academy of Medicine, and the Boston Medical Library.

The libraries of the American Dental Association, the American Medical Association, and the American College of Surgeons maintain a pamphlet and reprint collection rather than large numbers of bound volumes. Many of these are for distribution on request. The library of the American College of Surgeons will translate articles from periodicals and prepare abstracts for its members for a fee.

Dr. West concluded his presentation with an admonition to researchers. He advised that no research worker of the present day is entitled to advance what he believes to be a new theory until he has explored the existing literature on the subject, nor should he embark upon experimental study until he has ascertained how much has been achieved or attempted on the same or similar lines.

Manuscript Preparation

The second speaker was the editor of the American Dental Association, Dr. Leland C. Hendershot. He discussed the topic, "Basic Principles in Manuscript Preparation."

Dr. Hendershot began his presentation with a significant quotation from an article by Professor George J. Kienzle, Director of the School of Journalism at Ohio State University, in the *Journal of the American Dental Association* (December, 1963):

> The effective writer knows that his function is twofold: he is at once the writer-teacher and the student-reader. He must sit on both sides of the writer's desk; he must view what he has to say from both sides of the teacher's rostrum. This is no easy task. It tests not only the author's ability to write but also his capacity to analyze an audience and communicate with it. If he goes into too much detail, he may bore his audience and lose readers; if he explains too little, he may frustrate his readers and lose them.
>
> Professional writers know these things; they accept rethinking, rewriting, and even rejecting of material (including whole articles and books) as a necessary part of editorial life. Ernest Hemingway once said: "Writing is a trade I am still learning. I'm apprenticed out at it until I die. A dope can say you mastered it. But I know nobody ever mastered it, or could not have been better."

This statement emphasizes that writing is a difficult and painful procedure. Unfortunately, too few authors of technical articles are willing to go through the agony of producing their best. Too many are content to send off to the editor, copy which should probably be handwritten with crayon rather than typed.

The title usually is the shortest part of a manuscript, but sometimes the most difficult to write. It is a most important feature and deserves the author's closest attention. It should indicate what the article is about. It should attract readers, and it should allow for easy and accurate indexing.

The first step in preparing a manuscript is a good literature search. Most authors begin their literature surveys before experimentation begins, and the best maintain good reading habits throughout their careers. They also maintain card files and reprint files so that they can compile their bibliographies easily.

A good literature search is conducted by consulting the indexes and abstract journals. The following should be of the greatest value: the *Index to Dental Literature, Index Medicus, Chemical Abstracts, Biological Abstracts, and Excerpta Medica.* The latest reviews on the chosen topic and related subjects should also be read, and the recent literature which has not yet appeared in the indexes and abstract journals should be consulted.

Most scientific articles contain the following sections: introduction, materials and methods, results, discussion, summary, and bibliography. It is not important which section is written first or that the sections be written in a particular sequence. The wise writer will have prepared in advance an outline of what he wishes to say, and he will have the contents of each section clearly in mind before he

begins to write. He knows that regardless of how good his outline is, he will have to prepare several drafts of his paper.

The introduction should tell the reader *why* the paper was written. If the article is a research report the author often will give a brief description of his major findings. The existing pertinent literature usually is cited in the introduction.

A short introduction usually will suffice. If it is well written, the reader will be encouraged to go on to other parts of the paper.

In the materials and methods section, the author tells what he did and how he did it in sufficient detail to enable another investigator to repeat the work. This should be clearly, accurately, and concisely written.

In the results section, the author should tell what he found. Data should be presented so that the reader may form his own conclusions since they may not agree with the author's. Ordinarily, little text is necessary in the results section if the tables and figures are well done. Ideally, each table and figure should be able to stand alone. The reader should be able to derive the full meaning without having to refer to the text. Much emphasis has been placed on statistical analyses of data, and some authors feel that editors are prone to overemphasizing the importance of statistics in the evaluation of research results. Sometimes this feeling is justified. It is not necessary, for example, to resort to mathematics to prove the difference between day and night.

The discussion section of the paper is perhaps the most difficult to write, for here the author follows an ever-narrowing trail which is the no-man's land between genius and fool, and he must know where to stop and where to drive the stake which marks the end of his journey.

The summary should be just that. It usually is short, and consists of a description of the study, the findings, and the author's conclusions.

Editors probably would agree that more errors occur in the bibliographic references than in all other parts of the manuscript combined. Volume, page numbers, and dates are easy to transcribe incorrectly. Words are left out of titles; authors' names are mispelled. The number of errors which can creep into a reference list is almost endless. The problem has been so bad for so long that many

editors make a practice of checking each literature reference for accuracy.

Illustrations should be no larger than 8½ x 11 and no smaller than 3 x 4 inches, but there are exceptions to this rule which the editor will be glad to consider if the dimensions of the illustrations do not fall within this range.

A good photographic print is the first important step in conveying information to readers through illustrations. Black and white glossy photos of drawings offer several advantages. The original drawings need not be subjected to the risk of being damaged or lost in the mails. Duplicate copies of photographs can be made easily and cheaply.

Legends for figures should be typed on separate sheets of paper, not on the figures themselves. Tables—including their legends—should also be typed on separate sheets and not be put into the body of the manuscript.

Never mount photographs, and never put paperclips on them! The figure number, the author's name, and identification of the figure should be written on the backs of photographs lightly in soft lead pencil, never with a pressure or a writing tool which would indent the photograph. The envelope in which the photographs are mailed should contain one or two pieces of cardboard so the pictures will not get bent, and the envelope should be marked "Photographs —Do Not Bend!"

Library Facilities

The third presentation was by Mr. Orville T. Chambers, a professional librarian attached to the Air University Library at Gunter Air Force Base, Alabama. Mr. Chambers' paper, "Utilizing Library Facilities for Reading and in Collecting References and Bibliographies," began by presenting the basic responsibilities which the librarian has to the user, and vice versa.

It was pointed out that it is the librarian's job to provide medical library reference works—indexes and abstracts—for his patrons. The most complete and comprehensive indexes to the medical literature have been compiled in the Unitd States. The focal point of this work has always been the National Library of Medicine.

For a thorough review of the medical literature, the basic tool is the *Index Catalogue of the Library of Surgeon General's Office,* com-

monly referred to as "America's greatest contribution to medicine." For the period which it covers—from earliest times to about 1950—its 58 volumes in 4 series present the most complete coverage of the medical literature of the world. Publication of this work has ceased, since its format could not be continued under the pressures of the medical literature explosion and increasing production costs. With the passing of the *Index Catalogue* in 1948, the NLM began publishing the *Medical Library Catalogue,* an author and subject catalogue of books which have been added to the library. This is also published in 5-year cumulations.

Another important periodical index which has served medical researchers in the United States was called the *Index Medicus* and was produced monthly by John Shaw Billings and Robert Fletcher from 1879 until 1927.

In 1916 the American Medical Association began publishing the *Quarterly Cumulative Index to Current Medical Literature.* This index was combined in 1927 with the previously mentioned *Index Medicus,* creating the *Quarterly Cumulative Index Medicus,* which in turn ceased publication with the 1956 cumulation. The *QCIM* experienced production difficulties which caused it to become, after World War II, a semi-annual publication which appeared over 2 years late.

Fortunately, as a stopgap measure, in 1941 the Army Medical Library started producing a weekly index to periodicals called *Current List of Medical Literature.* In 1950, the *CLML* became a monthly publication, with author and subject indexes to each issue and cumulated semi-annual indexes.

In 1960, the *CLML* underwent several changes. The name became *Index Medicus,* the old format was changed, making it easier and more convenient to use, and an added feature at the back of each issue was a listing of recent United States publications of medical interest. The American Medical Association assumed the responsibility for publishing annually an excellent author and subject cumulation.

An extremely useful new tool from the National Library of Medicine is the annual *Bibliography of Medical Reviews,* which first appeared in 1955. This bibliography presents significant articles which review the literature of medicine of the past year. These articles have been previously cited in the *Index Medicus.*

The first volume of the *Index of the Periodical Dental Literature*

was published in 1921 with support from the American Dental Association, and it covered the years 1911 through 1915. It continued until 1938, when the ADA completely took over its publication, changing its name to the *Index to Dental Literature in the English Language*. There is now available in this work a coverage of the dental literature from 1839. In 1962, twenty foreign journals were included in its list of journals indexed, and the addition of more is anticipated. The phrase "in the English Language" has been dropped from the title. The ADA in 1956 also began publishing its monthly *Dental Abstracts,* which includes abstracts, in English, of articles selected from foreign journals. Its contents are grouped under subject headings.

Scientific Writings

The next paper, "The Types of Scientific Writings: Criteria of Excellence" was given by the VA Central Office representative, Dr. Robert I. McClaughry, Director of Education Service of Research and Education in Medicine. Dr. McClaughry presented his own philosophy about the criteria of excellence of scientific research writings. Simplicity and clarity are of course basic requirements.

The essential difference between the person who writes well and the person who doesn't, does not always depend upon the words in the vocabulary of the individual, but rather on the definition which the individual imposes on the words.

The question of effectiveness or lack of effectiveness of scientific writing revolves around the question of who is doing the scientific writing. This gets to be a matter of just how much responsibility the writer is willing to assume. The answer to the question of whether or not excellence is important can only be given by the writer himself, since he is the only person responsible for the excellence of his scientific writing.

There was a spirited discussion of many points of Dr. McClaughry's presentation and he reemphasized the fact that he was not willing to accept the judgment of his peers or anyone else for that matter, as to what excellence is or is not. Accepting for oneself the responsibility for what one does is the sensible procedure. The recognition of one's own limitations is of course vital.

In concluding his discussion, Dr. McClaughry proceeded to elaborate on the matter of research fund appropriation, and pointed out

that for quite some time the Veterans Administration had been under a considerable amount of pressure to abandon the independent appropriation of research funds to the agency, and to accept the device of applying directly to the National Institutes of Health. This was resisted for two reasons. The first is that there are areas in which the interests of the NIH are not identical with those of the VA and therefore an independent appropriation allows the VA to use its money in a way which is most effectively related to the specific job to be done. The other fact is that the VA firmly believes in the principle of diversity of sources of support. The concept that a VA investigator may have available the possibility of getting money from the NIH or from the American Cancer Society, for example, offers an advantage over the possibility of only one source.

Over the last three years the Research and Education Office has examined a series of major national meetings and major national journals, each of which publishes combinations of papers on basic sciences and in the clinical fields. Consistently, it has been found that for programs in this select group, where the competition is on a national basis, between 15 and 20 per cent of the papers accepted in these journals have been placed by people from the VA Hospitals.

Concepts of Research

The next paper titled "Basic Concepts in Scientific Medical Research: Formulating the Study," was by Dr. Joseph F. Volker, vice-president of health affairs of the University of Alabama.

Scientific research is still an art. Dr. George Whipple has pointed out that the important prerequisites in the field of investigations are merely accurate observation and clear thinking. These are acquired by experience, and this experience is acquired in "an atmosphere of benevolent neglect." The best way to learn to become an investigator is to have the opportunity of working in areas where there are one's peers, who are willing to help the potential scientist to learn by making mistakes. This is what might be called "benevolent neglect," and it is the system in which there is a preceptor who permits an investigator to begin an experimental program, discusses it with him generally, expresses opinions, makes suggestions, inevitably reviews his progress with him, and if he is going down for the third time, rescues him.

There are a whole number of things such as intuition and inspiration which are associated with the art of scientific investigation. Even though it has been emphasized that if someone is going to participate in the area of scientific investigation he should read the literature, there are a number of individuals who would advise against it. They point out with rather good examples to defend their points of view, that extensive surveys of the literature have as many drawbacks as they have assets. Actually, the whole question of surveying the literature is now beyond us, because the tremendous explosion of knowledge is such that individuals cannot anticipate making a thorough search of the literature.

Under these circumstances, we therefore find ourselves questioning, in scientific investigation, how important it is to read and survey the literature. Of course one cannot ignore the scientific literature. One has to read it, but be very careful not to drown in it. One has to understand that when faced with the problem of reading the literature, it has to be read critically. One of the great satisfactions in the conduct of research and one of the reasons men continue to do research, is that on rare occasions, they experience what may be called "the thrill of discovery." They make an original observation which they are able to interpret and visualize as having a maximum benefit for some particular set of circumstances.

Dr. Volker reviewed extensively the research studies in mottled enamel and his own well-known work on the topical application of fluorides to tooth enamel. For a long period of time, people tended to think only in terms of the toxicology of the fluorides. This was the most obvious thing. The individual who thought about fluorides in physiological terms was immediately up against great resistance, and it was only by an entirely different approach, the approach of epidemiology, that it became clear that there were good things about fluorides. Obviously, of course, this is one of the approaches to research. The other involves clear thinking.

Subsidizing Scientific Research

The final lecture, "Subsidization of Scientific Research: Official Financial Grants and Manner of Procuration" was by Dr. James A. Bain, Director of Basic Health Sciences, Emory University, Atlanta. He indicated that the financial support for medical and health-related research has so burgeoned in recent years that in 1963 it

reached a figure in excess of 1.5 billion dollars. There has been almost an 18-fold increase over the last fifteen years and nearly a doubling in the last three. The amounts available from the various public and private sources have been increased in absolute terms from each source.

These are very substantial sums of money, but they still represent a relatively small percentage of total expenditures for research and development. For example, during the period 1947-1963, federal expenditures for health-related research represented only 6 per cent of the total federal research and development expenditures. Similarly, health-related research and education expenditures by foundations represented only 16 per cent of their total expenditures.

A large share of the above monies is used to support research in universities and other non-profit institutions. Nearly three-fourths of the federal support goes to such institutions, with about one-fourth being expended in federal installations *per se* and only about one-tenth going to industrial contractors. Much the same distribution is found in foundation expenditures except that research supported in industrial installations is less than 1 per cent. Eighty-five to ninety per cent of the total public and private expenditures for support of health-related research are concentrated in the so-called life science disciplines, with the remainder being distributed broadly among the the physical, social, and behavioral sciences.

The federal government is the largest source of support in the field of health-related research. The largest expenditures are made through the Department of Health, Education, and Welfare's Public Health Service. About 80 per cent of the total $973 million is budgeted and justified as such for medical research support. About 20 per cent represents funds supporting research directly related to human health but furthering agency objectives in other fields.

Expenditures by the Public Health Service are made primarily through the National Institutes of Health. Considering only research grants, as distinct from grants for facility construction, in 1963 $430.9 million was expended through NIH with an additional $18.8 million being expended by the Bureau of State Services. Relatively smaller amounts were disbursed through such divisions as the Bureau of Medical Services.

The voluntary health agencies are also important contributors to the support of health related research. For example, in 1960 nine

major agencies expended $32.2 million in support of research on various disease categories. This represented 20 per cent of the $165.2 million raised by them during the period 1959-60. The balance of the funds raised by these agencies after deduction of an average of 13 per cent for fund raising costs went for such purposes as treatment, education, and community services.

Since World War II the private foundations, because of the growing federal support in established research fields, have been able to shift their support to relatively neglected or newly emerging fields. The private foundation has always enjoyed the great advantage of flexibility in the use of its funds in contrast to federal agencies whose flexibility is limited by many factors. Hence the private foundations have provided on many occasions, support for high risk projects, or projects where the lines of demarcation between research and education were not clear, or projects which would not necessarily have contributed to the mission of a governmental agency, or the product development orientation of industry, or the category direction of the voluntary health agency. In many ways the foundations, once almost the sole supporters of health-related research, play an equally invaluable role in these days of generous federal support. In 1960 a survey of 272 foundations revealed that out of a total program of $437 million, about $47 million was spent in support of health-related research.

The major sources of direct support for health-related research consist of the federal government, voluntary health agencies, and private foundations. State and local governments also contribute some direct research support. A major source of support for health-related research, is the indirect support which is contributed by universities and other institutions in the form of faculty and staff salaries, space, facilities, and even some direct support derived from institutional endowment, tuition, income, state or local government appropriations, or other basic resources.

Members of the staffs of the various federal agencies which have intramural research programs will ordinarily appeal to their immediate superior who should know the channels through which research allocations from the intramural budgets are made. The Veterans Administration, for example, spends $29.4 millions each year in support of its various research activities. As a general rule employees of one federal installation or agency may not apply for or re-

ceive funds from another agency. One exception to this rule may be found in the case where the individual investigator holds an appointment on the staff of a university as well as in the federal agency. In this case he may apply for funds and conduct research under the auspices of the non-federal institution. This is most commonly done in collaboration with a full-time member of the non-federal institution.

Dr. Bain discussed at great length the various factors involved in evaluating the "scientific merit" of research grant applications and projects. The criteria used, and the weight which is subjectively assigned to each, vary from instance to instance and from reviewer to reviewer, but there are basic similarities between systems of comprehensive editorial review applied to grant applications and those applied to manuscripts submitted for publication in a scientific journal.

Every effort is made to be fair, and great care is exhibited by staff and consultants to insure that the review of applications is carried out in the fairest and most objective fashion possible. It is to be expected that mistakes will be made, both in the positive and negative sense. On rare occasions, personal bias does influence decisions. This is unavoidable in instances such as this where subjective judgment is so heavily involved, just as it is in editorial reviews of manuscripts. But malfunctions of the system are held to a minimum.

Dr. Bain concluded his excellent presentation on a cautious note. He emphasized the observation that, up to now, no established investigator with a sound program being carried on in a reputable institution was likely to be without a source of support for his research. The support may not have been as generous as the investigator would have liked, and his programs may not have been pursued as vigorously as they might have been with more substantial funds, but minimum support has been available for the majority of worthy projects. The tremendous increase in support, particularly at the federal level, has been responsible for this favorable situation. However, it appears that we now are entering a period when the level of support for research probably will plateau, and the competition for all types of research support at the national level will increase. The intensity of competition will also be augmented by the increase in the number of investigators which should result from the activity of the research training programs which have been established in recent years. If the situation becomes acute and if it is apparent that present

support sources are saturated with worthy programs and that some good programs are unsupported, then perhaps increased funds will become available. If the indicated plateau does materialize and persist for any length of time, undoubtedly some worthy research programs are going to find themselves without support. This will serve to emphasize even more strongly the significance of quality in the evaluation of research grant applications.

In a meeting that was as selective as this one, it was heartening to find a respectable number of persons in the audience, and also to find these persons consistently alert and interested in what was being discussed. There were more than 100 registrants at the comprehensive symposium, and these included physicians, dentists, veterinarians, nurses, dietitians, research scientists, engineers, and graduate students.

There was general agreement on the useful and timely services accomplished and the competence of the participants. It is anticipated that other facets of the topic will be explored in the near future.

LOST CONSONANTS

Lost consonants in the United States have no reward outstanding for the finding. Our citizens search for uranium, gold, the underprivileged, and for cases of rare diseases. They don't look too hard for lost consonants. They don't even hear them.

They have need to look but they will not find them any closer than England, old English movies or on BBC.

Here in the U.S.A., even our radio announcers have lost some of their consonants. In twenny ciddies in the United States you could loog and loog for the bess conzonan and never fine id. Id just don ex is in the eas, the wes or the midwes; or in our schools.

Perhaps we are just senimenal about the ol English language, but weed luv ta here id spokin almos annywhere with consonnans.—*Worcester Medical News,* May, 1964, p. 8.

Influence of Organized Dentistry On Practice

WILLIAM HERBERT JOLLEY, D.D.S.

From the beginning of the modern era of dentistry in the nineteenth century, the members of the profession have not been content to entrust the future of the profession to an erratic fate. The earlier dentists sought to communicate with each other, and organize into groups for the advancement of the practice of dentistry and the improvement of the health of their patients. They, as we are doing today, attempted to look into the future and determine the path they should follow, in order to achieve their goals. Generations of dentists have followed this same pattern, and as a result, the practice of dentistry has achieved the status of a highly skilled and highly respected art.

Today, we find ourselves members of an extremely well organized profession. Considering the growth in population, the increase in membership of our professional groups, the complexity of living, and many other factors, organized dentistry must of necessity constantly expand if we are to meet the challenge of future practice.

We normally think of our local dental societies, our state associations, and the American Dental Association *as* organized dentistry. These societies *do* form the core or heart of organized dentistry, and yet we have many other groups that are a part of the overall organization. The dental schools, the military services, the Public Health Service, our own American College of Dentists, and many other groups, are integral parts of organized dentistry. These organized groups, directly or indirectly, contribute to the advancement of dentistry and influence the practice of our specialty.

The American Dental Association, through its legislative body, executive branch, administrative group, councils, and committees is dedicated to studies and long range planning. These efforts are di-

---

Presented at the meeting of the Tri-State Section of the American College of Dentists, Memphis, December 14, 1963.

Dr. Jolley is Associate Dean and Professor of General Dentistry, University of Tennessee College of Dentistry.

rected to determine the path we should follow in order to advance the practice of dentistry and promote better health for the people. The state associations and local societies, as well as other groups, are following the same course of action.

As an example of the influence of these studies and planning, a recent study made by the Council on Dental Education of the American Dental Association may be cited. In 1958, the Trustees of the American Dental Association, aware of the increasing problem of dental manpower shortage and the undesirable trends in other countries of the world, directed the Council on Dental Education to make a study of the possible expansion of duties of auxiliary personnel.

In 1960, the Council reported the results of their study, together with their recommendations, to the Board of Trustees. As a result, many dental schools are conducting experimental programs in the various uses of the auxiliaries. The University of Tennessee College of Dentistry is one of these schools. Also, many state associations are conducting programs designed to inform the dental practitioner of the advantages of the proper use of auxiliary personnel. In addition, they are considering enabling legislation in anticipation of a greater use of these persons. In January, 1964, the workshop to be sponsored by the Tennessee State Dental Association will devote two days to the study of the use of auxiliary personnel.

Workshops at the state and local level are fine examples of organized dentistry in action, studying and planning for the future. In these sessions, the results of studies and planning made by other groups is passed on to the practicing dentist. Probably more important, the practicing dentist can make known his needs and the needs of his patients. Here, he is able to express his opinions and in turn be influenced by the opinions of his colleagues. Here, the practicing dentist, by making known his needs and expressing his opinions, initiates studies and long range planning and is in turn influenced by the results of these studies.

If dentistry is to profit from the efforts of studies and planning, the results must be applied at the local or "grass roots" level by the practicing dentist. Dental schools are educating students in these findings, but this approach is much too slow to meet the problems facing the profession. Continuing education must be provided for the practicing dentist. The old custom of the dentist occasionally attending a

postgraduate course at a dental school is no longer adequate. Continuing education at the local district society level is a necessity. Fortunately, organized dentistry is aware of this need and the influence it will have on future practice. It is responding to the challenge in every way possible. The American College of Dentists is participating in this effort.

The parent universities of our dental schools are realizing the university's responsibility for continuing education, and as a result, the continuing education programs of the dental schools are rapidly expanding. At Tennessee, the school is presenting programs at the district level across the state, as well as increasing the number of "on campus" courses. In 1962, the Tennessee Workshop instigated the formation of a Committee on Continuing Education with subordinate committees in each district of the state. This committee is responsible for determining the needs of the practicing dentist and securing programs that will satisfy these needs. The committee also has the responsibility for providing facilities, scheduling meetings, and recruiting dentists for these programs in continuing education.

In July, 1963, largely through the efforts of the Dental Director of the Tennessee Public Health Department, the University of Tennessee College of Dentistry was awarded a grant by the United States Public Health Service to conduct a state-wide program in oral cytology. In addition to the College of Dentistry, the program is being sponsored by the Dental Division of the Tennessee Public Health Department and the Continuing Education Committee of the Tennessee State Dental Association. To date, eighteen training sessions have been conducted in the eight districts in the state. The dentists have responded enthusiastically, as evidenced by a 40 per cent enrollment and approximately 300 smears and biopsies submitted for diagnosis. Twelve malignancies have been discovered by the smear technique and nine of these have been confirmed by biopsies. All three sponsoring groups have participated fully in this endeavor. This is a fine example of several groups within organized dentistry co-operating and achieving results that no single group could have accomplished alone. It is a good example of how organized dentistry, through studies and long range planning, has been able to promote a program that will definitely influence future practice and one that answers the health needs of the people.

We, the faculty of the College of Dentistry, are a part of organized dentistry. We are continuously conducting studies and long range planning that will influence future practice. In addition to studies involving such areas as research, methods of teaching, and curriculum advancement, we are particularly interested in recruitment and admissions. We are seeking to graduate an individual who is not only well trained in the skills and knowledge of dentistry, but who will become a useful and integral member of community life, and thus a credit to himself and the dental profession. Consequently, every effort is being made to recruit well qualified, highly motivated and "high caliber" young men and women for the study of dentistry and the auxiliary programs. Studies have shown that the practicing dentist is the best recruiter for this type person. As a result, our plans for recruiting are being designed to assist the dentist in his recruiting efforts, as well as keeping him fully informed about dental education. In addition, the requirements for admission are being constantly studied and standards raised. The graduates of today will begin influencing the practice of dentistry as they assume their responsibilities in the community and in organized dentistry. Therefore, our studies and planning must be thorough.

Although my topic has been presented in a brief fashion in this paper, we should be able to see that future practice is, and should be, determined by organized dentistry. We have shown by our willingness to organize, our desire to study, plan, and work together, and by our unselfish dedication to our profession and the furtherance of the health of the people we serve, that we are capable of determining our own future. As long as we continue in this manner, the people of this country will entrust their future to us.

Dental Practice: Impact on Curriculum

GRANVILLE SHERMAN, JR., D.D.S.

There has been, and certainly there shall always be, a direct relationship between the practice of dentistry and dental education. In fact, this is a reversible process, and what influences one influences the other. You have already realized this from your own experience as a practitioner.

We can all look back over the years and see how dentistry has improved—scientifically as well as clinically. Yet we all can see, too, that there is still much to be done. None of us here should be satisfied with the accomplishments of today. There is a responsibility on all of us—not just educators—to see dentistry that goes forward on every front, tomorrow and all the days ahead.

Gone are the four years devoted to *only* basic science and clinical knowledge, important as they are. Dental education today *must* include the additional knowledge of how to manage or administer a practice.

All of us remember our day of graduation. The struggle to master the difficult courses and acquire the technical skills necessary for success were over. The only thing facing us was the mere formality of renting office space and opening the door to the public. You know the rest of the story. . . . Where to rent that office space? What equipment to buy? How to pay for it after it was bought? What fee to set for the various types of services rendered patients? The solving of these and all the other problems connected with a dental practice were left to trial and error, advice from a friend, or the dental supply house.

Today, dental practice is having its greatest impact on curriculum in this area. Call it practice administration, practice management, community dentistry, or whatever. The term we are using at the University of Tennessee is practice implementation. This designa-

---

Presented at the meeting of the Tri-State Section of the American College of Dentists, Memphis, December 14, 1963.

Dr. Sherman is Associate Professor and Acting Chairman, Department of Pedodontics, University of Tennessee College of Dentistry.

tion has been given to a program which we feel will be broader in scope and depth than any one particular facet of dental practice. Everything concerning the establishing of a dental practice is taught. Not only the dental student but also his wife is a part of this new program; even prospective wives of dental students are encouraged to take part. Since so many students are married when they enter dental school, or marry while in school, it is our responsibility to send both members of the "dental family," or if you prefer, the "dentist and wife" into a community with the soundest knowledge regarding the practice of dentistry it is possible to teach.

This program of practice implementation is begun at the very onset, the first quarter, and it is continued throughout the entire curriculum until graduation. No longer do we think of a student as enrolling for only a stipulated period of time, but enrolling for a life time of education. Unless the student is made to realize early the need for constant study and self-improvement throughout his dental career, he may well wake up some morning to find his privilege to continue in practice has been taken away. None of us can become smug in the fantasy that all knowledge is ours. As one person has said: "to be satisfied with one's accomplishments is actually a step backward." This we cannot afford to let happen.

At present, a total of 278 hours out of approximately 4,800 are devoted to this program. This is just short of 6 per cent of the entire course of study. The latest figures available on the subject, from the *Survey of Dentistry,* reveal that other schools range from a low of 12 hours to a high of 109, with a mean of 60 hours.

In addition to this, all clinical students are taught the utilization of auxiliary personnel. Didactic instruction and clinical demonstrations are given to students in the proper use of chairside dental assistants. Senior students are assigned time in the special area of private operatories where they actually carry on their clinical practice in an atmosphere of a private practice. Here they have a trained chairside assistant and a roving assistant to whom they can delegate certain duties. The student is still a student, but he is called Doctor by the assistant and is made to feel that he is running the show.

By the time a student graduates he has had 55 hours of experience in working with an assistant. This has been in the areas of operative dentistry, crown and bridge, oral surgery, and pedodontics. We are increasing and expanding this part of our program as rapidly as pos-

sible, for not only does this show the student how much more can be done for a patient in a given amount of time, but also that a better quality of dental service can be rendered.

This has created a need for another aspect of the program: as students graduate and go into practice they are increasing the demand for dental assistants. Trained dental assistants are at a premium, there being only 2,000 graduates a year from about 30 schools. It has been estimated that in 1975 there will be 110,000 practicing dentists, and they will require approximately 100,000 dental assistants, as compared to the 62,000 employed today.

There is every reason to believe that these minimum requirements for 1975 are not minimum at all, but gross under-estimations. The need for trained dental assistants in the future will be even greater because, through programs such as at the University of Tennessee and at other schools, the dental profession will become increasingly aware that future dental practice will depend more on the effective utilization of auxiliary personnel.

Another program, which has resulted from the student working with an assistant and ultimately placing an overwhelming demand on this type of personnel—and the figures quoted show the demand cannot be met—has led us to formulate a unique version of our present plan. That is, to teach students the methods of selecting and training their own dental assistant.

There never will be enough formal educational facilities for the training of dental assistants, and dentists will be forced to continue to find their own ways of training them. With the short period of time that the assistant normally stays at her position; with the increased need for the dentist to spend all available time treating patients; and with no relief in sight for finding the trained assistant, it becomes increasingly apparent that the student should not only be taught how to utilize a dental assistant, but also be taught how to go about training his own assistant in a minimum length of time and with the least amount of personal effort. We feel that there is a need for a program of this type since none exists in any dental school. Students will actually interview, select, train, and work with new personnel in an environment which will be the most modern time-and-motion arrangement that it is possible to devise. An area within the dental school has already been selected and plans are now on the drawing board for this to come about in the near future.

As mentioned previously, the wives of students are very much in the thinking and functioning of this program. At the present time 105 wives are now taking part in a concentrated 15 hour course given in the evenings, twice a month. This includes such topics as terminology, office procedures, fundamentals of dental assisting, manipulation of materials, child behavior, etc., with particular emphasis, as we do with the dental students, on the professional and social aspects. The professional aspect is concerned with organized dentistry and the responsibility of the husband to continue his dental education. The social aspect considers citizenship and active participation in the life of the community. Wives have also been encouraged, and many do, to go on field trips with their husbands as part of the public health and preventive dentistry portion of this program.

Up to this point not much has been said about preventive dentistry as it relates to the overall picture; it is not intended as any slighting of this important role in practice. Certainly, prevention of disease is the fundamental aim of a profession, dentistry or medicine. Throughout the curriculum, in numerous courses in all the different departments, many hours are devoted to prevention of every type of dental disease. It is difficult to determine the exact amount, but a conservative estimate could be made of some 50 to 100 additional hours used in this respect.

This brief discussion has tended to show the influences exerted by the private practice of dentistry on the curriculum at the University of Tennessee. If, as a health profession we are to continue to improve, then improvements *must* come from better dental education and better dental practice—both have a direct influence on one another.

Diagnosis and Treatment Planning: The Keystone

ROY M. SMITH, D.D.S., M.S.

Webster defines *keystone* as "something on which associated things depend for support." Certainly such a definition describes the relationship of diagnosis and treatment planning to the rest of dentistry.

Unfortunately, too much lip service is given to this phase of dental education and practice even today. Much of this inadequacy is due to a throwback to the dental curriculum of yesterday, when the only diagnosis taught consisted of a screening of patients for restorations and the only treatment planning was determined by the credit requirements of the individual student. According to the *Survey of Dentistry* (1), and others in the field of dental education (2, 3), there is still too much emphasis in the dental curriculum on technical procedures, with too little time being devoted to an understanding of oral diseases, their diagnosis and prevention.

Many departments evolved around a core of technics, and unfortunately, for various reasons, have dominated the curriculum all too often to the exclusion of other needed areas of emphasis. In dental education, the departmental structure and the associated responsibilities for areas of instruction are often rather arbitrary divisions in the spectrum of knowledge that must be disseminated to the student.

Since the principal objective of all dental educators should be to graduate a student well-grounded in the fundamental principles of the biological and technical aspects of dentistry, there must be considerable overlap in the material we teach; and yet this is not always the case.

The credit system, in use in many dental schools, regiments thinking along lines of "one tooth," or unit dentistry. Such a system, in effect, discredits the importance of a well-planned, scientifically oriented diagnosis and treatment plan. Such impressions often accompany the student into his private practice.

Presented at the meeting of the Tri-State Section of the American College of Dentists, Memphis, December 14, 1963.

Dr. Smith is Associate Professor of Oral Diagnosis, University of Tennessee College of Dentistry.

Technical excellence in the various treatment aspects of dentistry is desirable, even necessary, in the dentist of today. But it is even more important that he understands the fundamental biological principles involved, and be able to evaluate the problem in the light of this knowledge (4). The dentist must be technically capable, but *first* he must be biologically oriented (3). An individual so prepared is able to utilize his scientific knowledge to properly evaluate and treat his patient. If the scientific background is inadequate to cope with the problem at hand, then the best technical skills available may be of little use. Most of us have seen well-executed, technically perfect bridgework placed upon teeth incapable of assuming the added function because of advanced periodontal disease.

The statement has been made that:

> . . . there are some dentists who periodically become frightened for fear that the dental laboratory technician will take away a segment of his responsibilities. This is because these dentists have forgotten for the moment that they are not providing the skill and the knowledge that a dental laboratory technician performs when he fabricates an appliance. If the dentist really believes that the dental laboratory technician is providing exactly the same kind of service for the patient, then this dentist is admitting that he (the dentist) has allowed himself to become a technician and a mechanic, and he is not rendering the medical, dental, and health service for which he was granted a degree. If technicians ever offer a true threat to either the physicians or to the dentists, it is largely because the man who was educated to be a professional person has let himself become only a mechanic and a technician performing his functions like a robot . . . (5).

When technical courses dominate the curriculum, and when students or practitioners think of dentistry solely in terms of a technical science, then the tail wags the dog.

The field of diagnosis and treatment planning brings to bear the entire educational resources of the professional man, and distinguishes him from the technician. It is the application of acquired technical skills, guided by a knowledge of the biological sciences, that assures for dentistry the status of a profession.

Since our first objective in dental education is to produce a student who is biologically oriented, more of the curriculum should be spent in this endeavor. Technical excellence must be maintained, but technic courses that do not add materially to the student's knowledge and broaden his scientific background should give way to courses that do. In the light of advanced knowledge in the areas of prevention,

periodontics, pedodontics, and dental materials, curriculums must change to emphasize the new approach to dentistry. There is no need to require our students to execute outmoded procedures utilizing outdated equipment simply because we feel it will broaden their technical skills. The horse and buggy were excellent in granddad's day, but few of us choose to travel this way anymore. Since at least half of the teeth are lost because of periodontal disease, certainly any excess time can be better utilized in this and other preventive aspects of dentistry.

One of the problems created by our present curriculum is a lack of good correlation between the basic medical sciences and the clinical sciences. While this problem has been recognized for years, it still exists and defies remedy. Most of the basic medical sciences are taught by scientists with little knowledge of dental problems, and all too often the clinical teacher is ignorant or indifferent concerning the application of basic science to clinical dentistry. Fortunately, more dentists seeking a career in dental education are expanding their basic science background. This offers considerable hope to the solution of this problem. Dental educators, especially those in the clinical areas of instruction, must assume the major responsibility in the correlation of the basic science concepts with those of clinical dentistry. The clinical dental instructor, having received a background in the basic sciences and clinical subjects, should be most aware of the need for their correlation. Only by a conscious awareness of this need, followed by the application and discussion of the biological factors encountered in the clinical patient, can scientific principles be taught.

Like any subject so long overlooked or discounted, this phase of clinical instruction should be overemphasized or dramatized to the student if it is to receive the attention it deserves. No phase of dental education can do more to develop professionalism and scientific curiosity in the student than the emphasis of scientific principles in clinical practice.

As suggested by the *Survey of Dentistry,* oral diagnosis, oral medicine, nutrition, and oral pathology are courses in the curriculum which should serve well to correlate the biological sciences with the technical phases of dentistry. The Commission on the Survey of Dentistry points out that such courses should receive more emphasis,

especially oral diagnosis, which is referred to as "the most crucial area of dental practice." The Commission suggests that oral diagnosis "is the heart of the application on the basic biological sciences to dentistry," and stipulates that it must receive proper emphasis if correlation of the various aspects of dental education is to be achieved.

When the student is taught diagnosis and treatment planning, he is taught to consider the patient as a whole, first, then the masticatory mechanism as an entity, and lastly, the teeth and their immediate supporting structures. This approach necessarily includes a consideration of many factors, such as the patient's age, health, financial status, education, nutritional status, desires, etc. Based on a careful analysis of the entire oral problem as it affects the patient, a treatment plan can be devised that is best for each patient. In certain instances the treatment plan may not be considered "ideal" when subjected to the analysis of specialized fields of dentistry, but it will be the most practical and desirable plan from the standpoint of the patient. After all, we treat human beings and not manikins. Certainly no stereotyped treatment plan should be applied to any patient, but rather one designed to correct or prevent the pathology peculiar to that patient. A careful analysis of the problem, tempered by a sense of social consciousness and responsibility, should dictate the treatment.

As the keystone of dental practice, diagnosis and treatment planning bridge the gap linking the biological sciences with the technical skills so necessary to every dentist. Therefore, this area of dental practice can offer a challenge to broaden our knowledge in both aspects. Ability to diagnose is directly proportional to our knowledge of the biological aspects of the human body. This requires that we keep our knowledge current by continuous study. The importance of continued study has been emphasized by the following statement:

> A profession grows on the acquisition of new useful knowledge. Nothing is more important for the improvement of professional dental health service than discoveries of new facts about teeth and their supporting tissues, and about pathological states elsewhere in the body that affect or are affected by dental and oral conditions (6).

Far too many of us are complacent in the basic science knowledge obtained while in dental school; and after graduation we do little to expand upon it. It is not enough to promote our technical skills with-

out broadening our scientific background. A dentist who is content with improving only his technical ability has reached an intellectual dead end and cannot offer his patients the best in dental care. The fields of diagnosis, periodontics, endodontics, preventive dentistry, and oral medicine offer ample stimulus to continued learning in the area of the biological sciences. In fact, continued study in this area is necessary for proficiency in these fields.

At a time when the public image of dentistry could well stand a lift, we must utilize the avenues open to us to convince the skeptics and cynics that dentistry is a profession, not a trade. Such an avenue lies in those areas which emphasize the biological aspects of dentistry. The areas of dentistry previously mentioned offer us opportunities for the dissemination of scientific knowledge related to our profession. If these aspects of dentistry are placed in their proper perspective in the care of our patients, then the public cannot help but realize that dentistry is built upon scientific knowledge.

A local newspaper (7) recently carried an article by a syndicated columnist in which the writer asked if a "Do-It-Yourself Dental Kit" could be purchased for her husband who had a sixth grade education and was very good with his hands! Before you laugh, perhaps you should ask yourself how many people have such a picture of our profession. An article in the November, 1963, issue of *McCall's Magazine* (8) clearly indicated that this is our public image with a large segment of the population, and reminds us that as a healing arts profession we must strive to eradicate disease, and not be content with the execution of technically perfect restorations that succumb to the same ravages of dental disease that afflicted the teeth in the first place.

Many of our failures as a healing arts profession are attributable to an inadequate diagnosis of the patient's problem, and an insufficient treatment plan to cope with this problem. Indirectly, this may stem from a lack of knowledge in certain areas or fields of dentistry; but whatever the weakness, it becomes evident at the time of diagnosis or treatment planning, and is manifested in an inadequate treatment. If we analyze carefully the basis for such failures, can there be any question that the word "keystone" indicates fully the importance and position of oral diagnosis as it relates to the rest of the dental spectrum?

References

1. Survey of Dentistry. American Council on Education. Washington, D. C., 1961. pp. 258, 330-31.
2. Nagle, Raymond J. Technically capable. J. D. Educ. 27:174, 1963.
3. Greep, Roy O. Biologically oriented. J. D. Educ. 27:176-181, 1963.
4. More, Douglas M. The dental student approaching graduation—1962. J. Am. Col. Den. 29:121, Sept. 1963.
5. Personal correspondence of the author, letter from Dr. Shailer Peterson. Nov. 24, 1963.
6. Carr, Malcolm W. Dentistry an agency of health service. New York: The Commonwealth Fund, 1946. pp. 206-07.
7. Van Buren, Abigail. Husband seeking a dentistry kit. Memphis Press-Scimitar, Oct. 21, 1963.
8. Grafton, Samuel. Dentistry. McCall's Magazine, Nov. 1963. pp. 106-07, 219.

NOTES FROM "THE SURVEY OF DENTISTRY"

As one contemplates the future practice of dentistry and the direction in which dental education should move in the years ahead, it seems most appropriate that the dental schools should seek to develop curricula, by 1970 at least, which will educate dentists who are much more periodontically and biologically oriented than today's graduates. The graduate of 1970 should possess many abilities similar to those of the best-trained periodontists of today. Only by a positive, significant change in the philosophy of dental education to some concept of this type can the dental schools break from the traditional pattern of dental teaching and prepare students to make fuller utilization of the basic sciences.

. . . Probably the time devoted to periodontics would generally be increased, and the time used for complete denture prosthesis would generally be decreased. There would be more emphasis upon applied basic science courses, and the whole concept of teaching would allow the maximum correlation of the basic sciences with clinical dentistry.—pp. 420, 421.

The Role of Research in Continuing Education

JAMES FLOYD SMITH, D.D.S., Ph.D.

Dentistry may be divided into three major categories. The first and most important is the general practitioner and his colleagues, the specialists. The second group is the dental researcher. The last group is composed of those who dedicate their time and skills to the teaching profession.

Research can, does, and should affect all three groups. Let us consider how each group can be affected by the changing trends of research.

G. V. Black (as well as other early practitioners) combined an inquisitive mind with the necessary manual skill for a successful practice of dentistry. From the works of Black, a wide field of dental research evolved. Today men dedicate their lives to dental research. Government, recognizing the importance of oral health from experiences in world conflicts and general public health problems, has made available to promising men lifetime awards to enhance their work and allow them to engage solely in dental research. From this group of men have come notable accomplishments—the study of fluoridation, better restorative methods, a great deal of knowledge in preventive dentistry, and improved treatment of dental ills. This group continues to work, seeking vaccines to prevent dental caries, and the ever present search for treatment methods of a great number of dental ills ranging from caries to malignancy. These men in dental research must, of necessity, be highly trained and skilled in the basic fundamentals of research which require many years of work in addition to their basic dental school training.

The second group under discussion includes the educator who has dedicated his life and skills to educating the dental student, who then falls into one of the three major categories previously mentioned.

Presented at the meeting of the Tri-State Section of the American College of Dentists, Memphis, December 14, 1963.

Dr. Smith is Professor of Oral Medicine and Associate Professor of Pathology, University of Tennessee.

This teacher also will require a number of years of training and experience to be able to properly teach the undergraduate. The dental educator must constantly seek out new and advanced information to stay abreast of the times. No course within dental education, whether theoretical or practical, remains static. The everchanging demands of the times for progressive treatment and diagnostic methods require that the teacher must remain always a student. In this fashion the teacher must embrace a certain amount of research to enable him to foresee future problems in dental teaching and allow adjustment and advancement. The dental educator must attend advanced study courses and strive always to improve his teaching techniques and the material offered the dental student. This man usually has the greatest opportunity to become an example for the young practitioner of dentistry.

The third and major group is the general practitioner who composes the backbone, so to speak, of the dental profession. Without this man the researcher and the educator would not be necessary. It is the work of this man that is a responsibility of the research man and the dental educator. In other words all dental research and dental education strives for one goal—to improve oral health through the methods of the general practitioner. In many instances the general practitioner does not acquire the public acclaim that is sometimes given the dental educator and the researcher. However, he has the satisfaction of knowing that it is his duty alone to carry out those ideas and ideals advanced by the other two groups.

The general practitioner, whether in the small town or the large city, may make the statement that he feels that his duty is an unimportant function compared to the man in research or teaching. This is far from the truth in that as previously stated we make this man responsible for carrying out the principles of teaching and the ideas of research that have been discovered and advanced in the laboratory and in the teaching institutions. Many of our most important and beneficial discoveries have been made by the general practitioner in his own private practice. His ideas, suggested to those with advanced training in research, have been basic in many of the principles that later have been offered to those in the general field of dentistry.

Grants are available from both federal sources and private industry for those individuals who have a desire to investigate, on a minor scale, problems that arise in daily practice. Here in general

practice those problems which require further investigation from both those in education and research arise. Thus without the inquisitive mind of the general practitioner, there would be little need for the man dedicated to research.

I would suggest that research carries a most important function from the actual practice of dentistry through the field of education and finally to the research man himself. It behooves each of us then in our chosen group to improve and better ourselves in the field of research so that eventually many of those persistent problems seen in the practice of dentistry may be solved.

SPENDING FOR MEDICAL RESEARCH—$1½ BILLION A YEAR

Expenditures for medical research in the U.S.A. amounted to about $1,470 million last year, with an additional $99 million spent by the federal government on new buildings for research, the Health Information Foundation of the University of Chicago reported September, 1964. About two-thirds of the funds came from government and about one-fourth from the pharmaceutical industry. The remaining one-tenth was from private foundations and other private sources.

HIF also reported on recent trends in spending for medical research. In 1963 such spending was 74 per cent higher than in 1960, and about 1600 per cent higher than in 1947. If this trend continues, the HIF bulletin noted, annual national expenditures may reach $3.3 billion in 1970.

"As a proportion of the nation's total expenditures for all research and development, however," the bulletin pointed out, "medical research expenditures changed little." The $161 million expended for medical research in 1950 was about 6 per cent of the total for all research and development. By 1963 it had increased to 8 per cent of the national total.

HIF stated that the federal government has come to play an increasingly important role in medical research. Between 1947 and 1963, federal expenditures increased 34 times (from $27 million to $924 million).

George Bugbee, HIF Director, said, "Analysis of current research expenditures . . . seems to support the several expert committees appointed by government which have recommended a continuing increase in medical research expenditures."

How Persons Can Be Interested in Dentistry as a Career

KENNETH W. DURHAM, D.M.D.

There is a verse from Longfellow's "Tales of a Wayside Inn" which reads: "All things come round to him who will but wait." Perhaps this philosophical expression may have warranted some consideration when applied to the circumstances under which it was expressed. However, it is not applicable to the existing conditions of our present dynamic and competitive society. The dental profession can ill-afford to adopt a wait-and-see attitude concerning the problem of providing sufficient qualified personnel to meet the dental demands of the future.

A great deal of concern has been shown recently in relation to this problem. There is general agreement among members and organizations within the profession that if dentistry is to maintain its position as a healing art and health science, fulfill its obligation to the public welfare, and grow in status as a profession deserving public esteem, then it must now undertake the task of attracting its share of qualified persons into careers in dentistry. Provision of adequate personnel to meet the health needs of the public is a direct responsibility of the profession. Failure to meet this challenge will not only severely handicap the profession but also may well lead to a situation wherein the problem is resolved outside the profession. In the British Commonwealth, resolution of this problem by an agency outside of the profession is referred to as socialized medicine. In one manner or another, the public demands will be served.

This paper will attempt to show that dentistry is not now attracting its share of able students and that this situation can be alleviated by means of a unified recruitment program. To obtain a relative degree of success, any program undertaken would of necessity have to be a grass-roots campaign. Ideally, it would involve eventually every organization and member within the dental profession. It is going

---

Class of 1964, University of Oregon Dental School.

This essay was judged first in the 1964 Writing Award Competition of the American College of Dentists. A plaque and $500.00 were given to Dr. Durham.

to require a revival of interest in the difficult but highly rewarding work that constitutes the practice of dentistry.

The Problem at Hand

There are three principal reasons ascribed to the decline in interest in dental careers as reflected in the relative number and quality of applicants. They are: the high cost of a dental education, the length of time needed for it, and the rapidly developing opportunities in other scientific fields (1). The cost to the dental student is undeniably high. No doubt it is higher than the cost of any other type of advanced training. In addition, there are few scholarships available to the dental student. The demanding hours of the dental school curriculum leave little time indeed wherein the student may supplement his income by outside employment.

There is some assistance in sight. The United States Senate has recently approved the Health Professions Educational Assistance Act of 1963, part of which is intended to help train more physicians and dentists. This bill authorizes 61.4 millions of dollars for loans to students (2). Although the exact number of qualified students who were prevented from considering a career in dentistry because of a lack of available loan funds cannot be determined, this three-year program should have some effect on the number of future applicants. Undoubtedly, there are members of the profession who are opposed to this type of federal aid to dental education. Their objections are not without merit. Some think that any government support obligates the profession. Nonetheless, the funds are now available and we should make good use of them in light of our present situation. At the same time, we can help ourselves and perhaps prevent the necessity of seeking federal funds in the future.

In 1963, each member of the graduating class at the University of Oregon Dental School pledged $325.00 toward a student loan fund payable over a ten year period. Even though this project was on a strictly voluntary basis, there was a 100 per cent participation (3). Assuming all pledges will be honored, this amounts to $21,125. Other graduating classes in dental schools throughout the United States have made similar pledges. It is estimated that if all dental schools were to adopt such a program on the same voluntary basis, a sum in excess of $2,062,500 would be made available over the next

ten year period with only a 50 per cent participation.* Loan repayment interest would add to the overall total. Financial assistance to students through loan funds can be accomplished without federal aid and from within the dental profession, providing its members are willing to obligate some of the monetary gain which they anticipate as a practicing member of the profession.

Such student loan funds, when available, could be administered at the dental school level. Costs of administering such loans should be held to a minimum through this arrangement. Terms of repayment, including interest and total repayment period, would be arranged by the student loan fund committee.

We are consciously aware that there are dentists who seriously doubt, and some who even vehemently deny, that a shortage of dental personnel actually exists. An answer to this charge will not be attempted in this paper. Suffice it to say, *The Survey of Dentistry,* which was concerned by the projected increase in dentist-population ratio, points out that the dental profession is not keeping pace in providing sufficient qualified personnel to meet future dental demands (4).

This is not a denial that some discrepancies *do* exist in the geograpical distribution of dental health personnel. Larger metropolitan areas and more socially acceptable cities do not face an immediate shortage of practitioners, while less populated areas are still completely without available dental health service. With this in mind, serious consideration to the loan forgiveness clause (which was deleted from the original federal bill) might be mentioned. The original version of the bill provided for the cancellation of up to 50 per cent of the loan for recipients who practiced dentistry in areas with a shortage of such personnel (5). Independent student loan funds would enhance greatly any future recruitment program, and if a forgiveness clause could be incorporated into this program it would most assuredly aid in providing dental services to a broader segment of our population.

The possibility of shortening the length of time required for dental training so that it is comparable to the time required for graduate

* This amount was determined by prorating over a ten year period a pledge of $325 from one-half of all graduating dental students in the United States which was estimated to be 3,000 graduates per year.

accreditation in the other science fields is not too favorable. Conversely, the crowded curriculum schedule of most dental schools indicates that it is rapidly becoming more difficult to cover all basically vital material under the existing four year program. Without considering specialization, it would appear that we might anticipate an increase in the length of dental training rather than a decrease. However in all fairness, it should be pointed out that after training, an individual embarks on his career at a very high level of competency in the dental profession and also at a high level of earning power (6).

The increased competition for talented youths from recently created scientific fields is probably the most serious deterrent to dentistry's ability to attract its share of qualified personnel. In this relationship, dentistry suffers a distinct disadvantage. The very principles upon which the profession is established prohibits it from openly competing in the labor market. The young mind is impressed easily. Early youth is confronted with an array of chemistry sets, rocket launchers, and "doctor's and nurse's kits." The young adult may view weekly television series portraying highly dramatic episodes relating to certain scientific fields and the healing arts. Just how great an impact these conditions have on motivation toward a career in science cannot be evaluated. However, the fact that it is making the present-day youth more conscious of the ever broadening fields of scientific endeavor is quite evident. While dentistry does not possess all the dramatic facets and glamour of the relatively new scientific fields, it does offer a very rewarding career to those qualified.

In the not too distant past, dentistry as well as medicine occupied the enviable position of being able to fill their freshman classes from an extremely large number of top qualified applicants. Unfortunately, dentistry no longer enjoys this position. In a recent article by Hood (7), it is pointed out that while medicine is only beginning to be affected, dentistry is losing out badly in the quest for qualified personnel. This statement is based on a statewide study of high school junior students in Minnesota. Some provocative findings were presented. Only those students who were in the top half of their graduating class were studied. These students were grouped according to indicated choice of occupation. The average ability test score and average high school rank were found for each of these occupational groups with these alarming results: Only 84 students indicated a

preference for dentistry as compared to 255 for medicine; the group indicating preference for dentistry ranked 72nd among 106 preference groups in average scholastic aptitude test scores, and 62nd among 106 preference groups in average high school academic rank. If this is to be considered an indication of things to come, it is well past time that the dental profession engage in an all-out Project Talent Search. Merton (8) states, "What is considered occupational choice from the standpoint of the individual becomes the process of recruitment from the standpoint of the profession."

A Program of Recruitment: Individual Motivation

The entire perplexing situation of creating interest in dentistry as a career is ultimately related to individual motivation. It is an accepted truth that an inverse relationship exists between motivation and objection. That is, as stimulated motivation increases, the intensity of objection decreases. From the previous statements, it is apparent that the profession cannot completely eliminate all the objections that some otherwise qualified applicants might have when considering dentistry as a career. Rebuffed at this approach, we should then strive to concert our efforts toward motivation of individual interest. At the onset, an attempt should be made to determine just exactly what motivating factors influenced those individuals who have chosen dentistry as a career. Dentistry as a profession has some general features which are important in answering the needs of young people attracted to it. These are listed in *The American Journal of Sociology* by More and Kohn as prestige, financial earnings, human service, autonomy, and manual skill (9). As a group, these motivating factors are well balanced in the field of dentistry. However, these factors are not unique to our profession alone.

What then is the most influential factor affecting an individual's choice of dentistry as a career and at what age does this individual make such a decision? The answer to this question should be ascertained before the salient features of any recruitment program can be outlined. Parrish (10) reports that 241 out of 300 replies from freshman dental students at the Ohio State University indicated definitely that their dentist was a strong factor in influencing their choice of dentistry. More (11) corroborates these findings although his per-

centages differed somewhat. A report prepared by Mann and Parkin (12) not only substantiates these results but also points out that over half of the 1958-1959 applicants to dental schools had decided on dentistry as a career while still in high school. Another feature of that survey indicates that the high school counselor was an influence in only 6 per cent of those choosing dentistry as a career.

Bringing the full story of dentistry and its opportunities to the person of high school years—and doing this on a person-to-person basis —is essentially the foundation for a recruitment program. Pamphlets, brochures, and books alone do not fulfill the need for personal contact in orienting the qualified student toward dentistry as a career. High school students anticipating a career in chemistry, biology, physics, mathematics, etc., rarely, if ever, have an opportunity to meet and talk with a person in these fields. From this standpoint dentistry maintains a rather decisive advantage in that virtually all of these students have, at one time or another, had personal contact with a member of the dental profession. Whether this contact is to be an advantage or a disadvantage to our recruitment program is determined largely by the interest shown by the individual dentist in his own profession. It is time for the individual member to reflect on how much he has *received* from dentistry, and it is time that he now *give* to dentistry by taking an active part in recruitment.

Ascertaining the qualifications of applicants to professional schools is a science in itself. However, recognition of certain characteristics desirable in future dental personnel is relatively uncomplicated providing we keep these characteristics in mind. Parrish (10) outlines these characteristics as intelligence, manual dexterity, energy output, level of aspiration, emotional maturity, social competence, and sense of ethical conduct. The first two, intelligence and manual dexterity, are evaluated on predental course grades and on the dental aptitude tests that are given to applicants. The remaining characteristics can only be evaluated by strict observation. This is an area where the individual member of the profession can perform an important function. There are many ways that this can be accomplished, but perhaps the most effective method is to simply show a genuine interest in the future plans of any individual who exhibits the potentialities deemed desirable in a member of the dental profession. It is safe to assume that most high school students would be highly impressed by

thoughtful consideration about their future from someone for whom they have respect and admiration. In reality, this should not be a time-consuming process for the dentist. The name of the interested individual contacted should be submitted to the recruitment coordinator of the nearest dental school so that a personal letter and informational materials may be sent to the interested person.

The dental schools and the component societies have contributed immeasurably to the recruitment program in the past. A partial list of their current endeavors toward student recruitment would include the following:

1. Establishment of a Central Committee on Recruitment;
2. Provision of speakers for lay meetings not specially concerned with recruitment;
3. Participation in Health Careers Day;
4. Visitations to colleges offering pre-professional education;
5. Conducting open houses;
6. Distribution of printed materials to high schools and colleges in the immediate area;
7. Encouraging members to serve as judges and consultants to science fairs conducted by the public schools;
8. Consulting with high school vocational counselors and college predental counselors.

These efforts, and others too numerous to mention, are highly commendable. They exemplify the multi-faceted approach necessary for the recruitment of individuals to a major profession such as dentistry. The search for novel and unique methods of recruitment must continue, nonetheless. Several schools and component societies have initiated independent programs worthy of attention from the entire dental profession. It is hoped that in the future other dental schools and component societies might emulate these programs with some adaptations.

Axelband (13) describes a novel guidance program introduced by the First and Second District Dental Societies of New York in the high schools of New York City. This program could be duplicated and varied in almost any city without losing its effectiveness. The format is simple: A four member panel, of different age levels within the profession, takes part in a career program presented during an assembly period. The panel consists of (1) a senior at a college of dentistry, (2) a dental practitioner of about five years in practice, (3) a specialist in practice about ten years, and (4) a dentist in prac-

tice about twenty-five years. Although alumni were utilized in the New York City program, this would not always be possible in smaller cities. Each member of the panel speaks for six to eight minutes concerning his experiences in dentistry. The senior dental student can be most effective in stimulating interest in career dentistry since his experiences are well within the generation to whom he is speaking. To represent areas other than dental practice, educators, researchers, public health workers, dental hygienists, and dental assistants could be incorporated into the panel. It is evident that many variations in the program could be arranged in an effort to present the complete picture of career dentistry.

The University of Illinois College of Dentistry has had a Summer program in effect now for several years wherein superior high school and college students are invited to the school to work with faculty members during the Summer. In this stimulating environment unusual abilities needed in dentistry are given an opportunity to function. One gifted teen-ager worked on five separate projects with Dr. Maury Massler. Included in these projects were (1) to electronically wire extracted human teeth so dental students "treating them" would hear a bell when the pulp chamber was approached, and (2) to build a compact time-lapse camera for time and motion studies. Granted, this was an exceptional student but then dentistry can certainly utilize this type of individual.

Two years ago, a Dental Explorer Post was chartered at the University of Oregon Dental School through the Boy Scouts of America (14). This post is sponsored by the Multnomah County Dental Society and consists of high school boys who are presently interested in dentistry as a career. To further their knowledge of the profession, the Post meets twice monthly for a short business meeting, a presentation on some phase of dentistry by a faculty member or a dental practitioner, and a laboratory session. There are undoubtedly other examples of fine programs in other areas designed to interest persons in the dental profession. Reports of their activities should appear in the national dental journals in order that the entire profession can benefit and become aware of what is currently being done to meet the challenge of providing future dental personnel.

Finally, some notice should be given to the excellent efforts put forth by the national organizations. The Council on Education of the

American Dental Association has considerable literature available to aid the local societies in getting a recruitment program started at the local level. In addition to prepared speeches covering certain aspects of dentistry, they have available two movies that can be shown at local meetings. One is titled "Pattern of a Profession," and the other "A Career in the Profession of Dentistry." Also available are many pamphlets covering topics related to dentistry. The American College of Dentists has been one of the outstanding national organizations showing sincere interest in the recruitment problem. Their committee on Dental Education and Recruitment continues to provide leadership and advice in the quest for more effective recruitment methods.

Summary

The problem of how persons can be interested in dentistry as a career has been explored. The necessity of finding a solution to this problem has been pursued from at least one point of view. Some possibilities for meeting the personnel demands of the future within the profession have been presented for closer consideration. Our goal is not the mere filling of classes to establish capacity enrollment but to attract outstanding young men and women into the dental profession so that we may endeavor to not only maintain but also raise the standards of dentistry.

The gauntlet of challenge has been flung. In the past, the profession has always risen to the occasion with confidence. To do less would result in a disservice to our chosen profession and a half-service to the public which we serve.

References

1. Peterson, Shailer. Dentist needs for the future. Scalpel, 31: Winter, 1961.
2. Health Professions Educational Assistance Act of 1963, Public Law 88-129, 88th Congress, H.R.12, September 24, 1963.
3. Editorial. Caementum, 20: June, 1963.
4. Hollinshead, B. S. Survey of Dentistry. American Council on Education, Washington, D. C., 1961. pp. 281-82.
5. Editorial. J.A.D.A., 67:567, Oct. 1963.
6. Bulletin. The 1962 Survey of Dental Practice, Bureau of Economic Research and Statistics. American Dental Association, 1962.
7. Hood, Albert E. Recruitment for the dental profession. J.A.D.A., 67:186, Aug. 1963.
8. Merton, R. K., Reader, G. G., and Kendal, P. L. Eds., The student-physician. Cambridge: Harvard University Press, 1957, p. 68.

9. More, D. M. and Kohn, Nathan. Some motives for entering dentistry. Am. J. Soc. July, 1960, pp. 48-53.

10. Parrish, J. R. Recruiting top students for dentistry. Ohio D. J. 36:78, June, 1962.

11. More, D. M. Choice of a career in dentistry. J. Am. Col. Den. 28:30, March, 1960.

12. Mann, W. R. and Parkin, Grace. The dental school applicant. J. D. Educ. 24:16, March, 1960.

13. Axelband, Alan A. Novel guidance program for motivating young people to choose dentistry as a career. J.A.D.A. 65:517, Oct. 1962.

14. Terkla, L. G. Report: Section Representatives Meeting, American College of Dentists. St. Louis, Feb. 1963.

The author of this winning paper, Kenneth W. Durham, subsequently wrote to Secretary Brandhorst:

May I take this opportunity to express my sincere thanks and gratitude to the American College of Dentists for the beautiful plaque and also the check presented to me in the Writing Award Competition.

It is indeed an honor to be recognized by an organization which commands such great respect from the entire dental profession for its role and leadership efforts in maintaining and improving the standards of dentistry.

Due to the unfortunate and sudden death of my father, it was not possible for me to accept the award in person during the regular awards assembly. However, even in absentia acceptance, the plaque will serve as a proud reminder of the high-point in my thus far short dental career and it shall always occupy a prominent position in my dental office.

I share with you the disappointment which you must feel in the discontinuance of the contest due to a lack of interest in many areas. This is such an unfortunate situation and indeed points out one of the more serious problems facing the dental profession today—that is the lack of interest or "I can't be bothered" attitude which exists concerning dental education and profession but somewhat set apart by the fact that these projects have no immediate effect on day-to-day success. This attitude is easily carried on later into professional life making it difficult, if not impossible, to enlist participation in any worthwhile project outside of the dental practice.

You have my assurance that I will be more than happy to help in any way possible to assist Dr. Terkla in stimulating interest in the forthcoming writing contest among seniors at the dental school.

ACD Program—San Francisco, 1964

At the Sunday morning meeting, November 8, 1964, San Francisco, President Jack S. Rounds will present his President's Address. Following this, Secretary Otto W. Brandhorst will give the Indoctrination Address. A memorial tribute will be offered by the Necrology Committee. Several reports will be presented, including those of the Bylaws and Nominating Committees. Important amendments to the Constitution and Bylaws will be proposed. (See *The ACD Reporter,* August, 1964.)

The theme of the essay program is "Dental Health Service Around the World." Dr. Sandy C. Marks, Sr., Chapel Hill, North Carolina, will speak on "Impressions as a Dental Missionary in the Congo." Dr. B. B. Eraña, Manila, will discuss "Dental Health Conditions and Problems in the Philippines." Sir John Walsh, Dean of the Otaga Dental School, Dunedin, New Zealand, will conclude the morning session with a paper concerning "The Dental Nurse."

The luncheon speaker will be Chancellor J. B. de C. M. Saunders, the University of California. Dr. Saunders is a noted historian and will relate interesting episodes in the early development of dentistry and medicine on the Pacific Coast.

Highlighting the afternoon Convocation will be an address by Dr. Russell S. Poor, Director, Division of Nuclear Education and Training, U. S. Atomic Energy Commission, Washington, D. C. His topic: "Dentistry in the Scientific Era." The conferring of Fellowships and presentation of Awards will follow.

An informal reception will be held beginning at 6:30 P.M. Many members of the Federation Dentaire Internationale will attend; ACD Fellows and friends are urged to be present to greet these visitors from other countries.

Dinner at 7:30 P.M. will climax the day's activities. Several special features are planned in addition to the introductions and installation of officers. Incoming President Harry Lyons will give his Inaugural Address. A unique entertainment program has been arranged—"A Polynesian Festival" of song and music by The Paradise Islanders.

All sessions will be held in the Fairmont Hotel: the meetings in the Gold Room, the luncheon and dinner in the Grand Ballroom.

THE JOURNAL
OF THE
AMERICAN COLLEGE OF DENTISTS

Volume 31, 1964

Editor

T. F. McBride
College of Dentistry
Ohio State University
305 W. 12th Ave.
Columbus, Ohio 43210

Business Manager

O. W. Brandhorst
4236 Lindell Blvd.
St. Louis, Missouri 63108

The JOURNAL is a publication member of the American Association of Dental Editors.

For bibliographic references the JOURNAL title is abbreviated J.Am.Col. Den. and should be followed by the volume number, page, month, and year.

The Ovid Bell Press, Inc.
Fulton, Missouri

Contents

No. 1, January, 1964

EDITORIALS
THERE IS A CHALLENGE IN THE AIR, *T. F. McBride* 3
PINPOINT THE PURPOSE, *Jack S. Rounds* 4
THE COLLEGE AND THE TRAINING OF DENTAL RESEARCHERS, *T. F. McBride* 6
CHANGE IN SCHEDULE OF PUBLICATION 7
DENTISTRY—A PROFESSION AND A RESEARCH CAREER, *Francis A. Arnold, Jr.* 9
THE MISSION OF THE COLLEGE, *Philip E. Blackerby, Jr.* 22
BIGGER THAN OURSELVES, *Jack S. Rounds* 26
THE 1963 CONVOCATION:
PROGRAM 33
MINUTES 35
FELLOWSHIPS 42
HONORARY FELLOWSHIP 48
AWARDS 49
MINUTES, BOARD OF REGENTS, OCTOBER, 1963 52
OFFICERS AND REGENTS, 1963-1964 55
COMMITTEES, 1963-1964 56
LOOKS AT BOOKS 59
INSTITUTE FOR ADVANCED EDUCATION IN DENTAL RESEARCH, *O. W. Brandhorst* 62
THE JOURNAL AUTHORS—JANUARY 1964 63

No. 2, April, 1964

EDITORIAL
THE "SURVEY" SOURCES, *T. F. McBride* 67
AN INVENTORY OF DENTISTRY: 1963, *Willard C. Fleming* 69
HOPE FOR HEALTH, *Dan E. Waite* 83
CONTINUING EDUCATION FOR THE GENERAL PRACTITIONER, *S. Sol Flores* 88
INFORMED PROFESSIONALS MAKE AN ENLIGHTENED PROFESSION, *Milton Siskin* 91
THE GENERAL DENTAL SERVICE IN BRITAIN, *J. D. Manson* 96
PERIODICAL REFERENCES IN A GENERAL DENTAL JOURNAL, *John W. Howard* 104
THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, 1963 PROCEEDINGS, SECTION ND, *Seymour J. Kreshover* . . . 120
CORRESPONDENCE AND COMMENT,
Aaron B. Markowitz 123
John E. Gilster 125
Henry A. Swanson 126
LOOKS AT BOOKS 127

No. 3, July, 1964

EDITORIALS

TRAINING FOR DENTAL EDITORS, *Isaac Sissman* 131

THE IMAGE HAS IMPROVED, *T. F. McBride* 133

THE DENTIST: A CITIZEN, *Frank P. Bowyer* 135

CAREER GUIDANCE, *Nathan Kohn, Jr.* 143

SOME PERSPECTIVES OF DENTAL RESEARCH IN 1964, *George W. Burnett* 146

DENTAL EDUCATION IN DENMARK, *Jess Hayden, Jr.* 159

"THE SURVEY OF DENTISTRY"—RECOMMENDATIONS 170

BASE-LINES FOR GUIDANCE—IN CONSIDERING THE RECOMMENDATIONS 179

MINUTES, REGENTS AND SECTION REPRESENTATIVES, APRIL, 1964 . . 182

MINUTES, BOARD OF REGENTS, APRIL, 1964 185

LOOKS AT BOOKS 191

No. 4, October, 1964

EDITORIALS

UNDERSTANDING BY COMMUNICATION, *Jack S. Rounds* 195

TEACHING "SOCIAL DENTISTRY," *Walton J. Pelton* 196

CHANGES IN CONSTITUTION AND BYLAWS 198

THE LIBERAL EDUCATION OF THE DENTIST, *Leonard S. Stein* . . . 199

JOURNALISM IN THE HEALTH PROFESSIONS, *Clifton O. Dummett* . . 211

INFLUENCE OF ORGANIZED DENTISTRY ON PRACTICE, *William Herbert Jolley* 225

DENTAL PRACTICE: IMPACT ON CURRICULUM, *Granville Sherman, Jr.* 229

DIAGNOSIS AND TREATMENT PLANNING: THE KEYSTONE, *Roy M. Smith* 233

THE ROLE OF RESEARCH IN CONTINUING EDUCATION, *James Floyd Smith* 239

HOW PERSONS CAN BE INTERESTED IN DENTISTRY AS A CAREER, *Kenneth W. Durham* 242

ACD PROGRAM—SAN FRANCISCO, 1964 252

VOLUME 31, INDEX 253

OFFICERS AND REGENTS, 1963-1964 256

American College of Dentists

OFFICERS, 1963-1964

President

JACK S. ROUNDS
3875 Wilshire Blvd.
Los Angeles 5, Calif.

President-elect

HARRY LYONS
Medical College of Virginia
School of Dentistry
Richmond 19, Va.

Vice-President

CLARENCE W. HAGAN
7528 Graymore Road
Pittsburgh, Pa.

Treasurer

FRITZ A. PIERSON
1112 Federal Securities Bldg.
Lincoln 8, Neb.

Historian

HENRY A. SWANSON
919 18th St., N.W.
Washington 6, D. C.

Secretary

O. W. BRANDHORST
4236 Lindell Blvd.
St. Louis 8, Mo.

Editor

T. F. MCBRIDE
Ohio State University
College of Dentistry
305 West 12th Ave.
Columbus 10, Ohio

REGENTS

BERTON E. ANDERSON
4552 51st St., N.E.
Seattle, Wash.

ORMONDE J. MCCORMACK
499 South Warren St.
Syracuse, N. Y.

FRANK P. BOWYER
608 Medical Arts Bldg.
Knoxville 2, Tenn.

GEORGE S. EASTON
State University of Iowa
College of Dentistry
Iowa City, Ia.

FRANK O. ALFORD
1001 Liberty Life Bldg.
Charlotte 2, N. C.

STANLEY A. LOVESTEDT
Mayo Clinic
Rochester, Minn.

PERCY G. ANDERSON
Faculty of Dentistry
University of Toronto
124 Edward St.
Toronto 2, Canada

CARL J. STARK
1238 Keith Bldg.
Cleveland 15, Ohio

The Objectives of the American College of Dentists

The American College of Dentists, in order to promote the highest ideals of the dental profession, advance the standards and efficiency, develop good human relations and understanding with our patients, and extend the benefits of dental health services to the greatest numbers, declares and adopts the following principles and ideals as ways and means for the attainment of these goals:

(a) To encourage qualified persons to consider a career in dentistry so that the public may be assured of the availability of dental health services now and in the future;

(b) To urge broad preparation for such a career at all educational levels;

(c) To encourage graduate studies and continuing educational efforts by dentists;

(d) To encourage, stimulate, and promote research;

(e) To urge the development and use of measures for the control and prevention of oral disorders;

(f) To improve the public understanding and appreciation of oral health service and its importance to the optimum health of the patient through sound public dental health education;

(g) To encourage the free exchange of ideas and experiences in the interest of better service to the patient;

(h) To cooperate with other groups for the advancement of interprofessional relationships in the interest of the public; and

(i) To urge upon the professional man the recognition of his responsibilities in the community as a citizen as well as a contributor in the field of health service.

To give encouragement to individuals to further these objectives, and to recognize meritorious achievements and potentials for contributions in dental science, art, education, literature, human relations and all the other areas that contribute to the human welfare and the promotion of these objectives—by conferring Fellowship in the College on such persons properly selected to receive such honor.

This is the Preamble in the Constitution and Bylaws of the American College of Dentists.