Pressures on the Dental Care System in the United States

STEPHEN WOTMAN, DDS, AND HARRIET GOLDMAN, DDS, MPH

Abstract: A number of significant pressures are creating tensions in the dental profession and the dental care delivery system. These pressures may be categorized in five major areas: 1) regulation and deregulation pressures involve changes in the state dental practice acts, court decisions concerning antitrust and advertising, and the inclusion of consumers on State professional regulatory boards; 2) cost of services includes factors involving the out-of-pocket cost of dental care and the growth of dental insurance; 3) dentist-related factors include the increased number of dentists and the indebtedness of dental graduates; 4) the pressures of changes in the American populations include the decline in population growth and the increase in proportion of elderly people; 5) changes in the distribution of dental care are based on new epidemiologic data concerning dental caries and progress in the prevention of periodontal disease. Many of these pressures are inducing competition in the dental care system. It is clear that the dental care system is in the process of change as it responds to these complex pressures. (*Am J Public Health* 1982; 72:684–689.)

Introduction

"The best of times and the worst of times" clearly described a changing world during the French Revolution.[1] Almost two centuries later this phrase characterizes the situation of the health professions in the United States. For dentists, "the best of times" means the ability to prevent and treat major dental disease as a result of intensive biomedical research and the important technical advances of the last several decades, the achievement of high social status with personal rewards and the development of an oral health care system representing the full development of the principles of Gies[2] and Flexner.[3] These principles demanded a profession "trained to give the service not only of dental surgeons and engineers but of oral sanitarians and oral physicians as well, . . . to be an accredited agency for public service, open for public inspection, subject to regulation and subservient to public opinion." The "worst of times" is characterized by such disconcerting problems as reduction in the number of patients, competition from new forms of practice, and a startling decline in the number of people who wish to become dentists. Added to these are the conditions for whose description, analysis, and management a plethora of new terms and concepts is needed such as deregulation, cost containment, antitrust, the dental market, dental insurance, and the effects of changing patterns of dental disease. Although the professional care of patients has changed greatly in the 55 years since the Gies Report, the social and professional role of the dentist in society has been relatively constant. But today that role seems to be changing for the first time since the 1920s.

The dentist is being thrust from the pedestal of professionalism—where he has been separated from the day-to-day conflict of the marketplace—to a position in which it is explicitly acknowledged that his services are susceptible to such marketplace forces as competition, consumerism, and changing markets. These forces appear to be affected by developments in five major areas: 1) regulatory policies and practices of the state and federal government; 2) cost of services; 3) factors related to the numbers of dentists; 4) changes in the American populations; and 5) changes in the distribution of dental disease.

Regulation and Deregulation

The practice of dentistry and the dental profession are regulated by the states through state practice acts. These acts control entry into the professional workforce, the scope of practice (conditions which dentists alone are permitted to diagnose and treat), and the permissible forms of organization and ownership of practice.[4] The practice acts have been viewed as the attempt of the sovereign states to protect the public interest and safety as they are affected by the practice of dentistry.

A review of the practice acts of other licensed professions reveals a general similarity to the form of dental practice acts. Traditionally, regulation of the professions by the states involved the profession's permissible activities and reimbursement schemes for professional services. The former is a *sine qua non* of licensure/practice acts; the latter is exhibited in a number of insurance law provisions.

Dr. Wotman is Associate Professor of Dentistry (Public Health), and Assistant Dean for Academic Affairs, Columbia University School of Public Health, 600 West 168th Street, New York, NY 10032. Dr. Goldman is Associate Professor of Oral Medicine and Director of the Hospital Dentistry Program, New York University, College of Dentistry.

© 1982 American Journal of Public Health

Dental practice acts cover four major areas:

• First is the *definition of the practice of dentistry*. This definition is the state's formulation of what activities may be performed by those who are licensed. As a component of this definition or in a definition of "dental auxiliary," the statute usually addresses the issues of delegation and supervision of such activities, although in certain practice acts such issues are left to the interpretation of the courts or of the state board of dentistry.

• Second, *the requirements for licensure are specified*, and here the degree of detail varies greatly: certain statutes set out all the minutiae, whereas others provide a mere skeleton to be fleshed out by the board of dentistry's rules and regulations.

• Third, *the creation of a licensure board* is a major part of most practice acts. The acts usually define the board as the administrative organization that either directly develops the regulations promulgated under the statute or has a strong advisory input into their content. The board is also often the organization which is responsible for preliminary disciplinary procedures and for the initiation of formal disciplinary action.

• Finally, the practice act, or regulations promulgated thereunder in conjunction with the state corporation law, often specify *the permissible forms of organization and ownership of dental practices*. The provision that addresses this aspect of practice specifies the number of owners, types of owners, form of organization, and the number of organizations in which a dentist may participate. Practice acts also define the parameters, possibilities, and potential conflicts in coprofessional and paraprofessional education. They define what an individual may be trained for and who will control access into the field.*

Changes in patterns of regulation are taking place on several fronts. Recently, the Federal Trade Commission and the US Department of Justice have moved aggressively into the domain of licensure under the aegis of antitrust laws.** Although the "learned professions" were once viewed as immune to antitrust litigation, the US Supreme Court's ruling in *Goldfarb v. Virginia State Bar*[5] has appeared to call that assumption into question. Indeed, the Goldfarb ruling coupled with *Hospital Building Co. vs. Trustees of the Rex Hospital*[6] and *Bates v. State Board of Georgia*[7] has made the professions and their heretofore unquestioned activities vulnerable to antitrust activity.

The Bates decision concerning advertising by attorneys in Arizona was decided, not on the basis of the Sherman antitrust act but on first amendment guarantees of freedom of speech.[8] This decision led to the resurgence of advertising by professionals in many different fields. In dentistry aggressive marketing utilizing advertising has become important in the numerous new forms of practice described by Rovin and Nash.[9] The Goldfarb decision, concerning the fixing of legal fees by a state bar association, brought certain anticompetitive conduct by the professions under the jurisdiction of the Sherman Antitrust Act. At the same time the court "intended no diminution of the authority of the State to regulate its professions."[8] The case of *Hospital Building Co. v. Trustees of Rex Hospital, et al,* determined that anticompetitive activity by a hospital is the basis of a claim upon which relief can be granted under the Sherman Act, thus extending the antitrust doctrine into the health area.

The composition of state dental boards is changing. Several states, California being the prime example, have included consumers on their licensure boards. Such changes may well tend to shift policies dealing with educational requirements for licensure and practice patterns.

Several court opinions make statements concerning the ability of the professions to maintain quality of service independently of competitive forces.[8] In addition, concerns over regulation by the regulated—i.e., over the fact that members of state dental boards are economically affected by their decisions—have been raised by the courts and by consumer groups.

These developments are intensifying competitive forces in dentistry, thus sharpening the state regulation/protection of health and safety or competitive balance.

Cost of Services

A second important influence on the contemporary practice of dentistry has to do with increasing costs.[10] If wages do not increase as quickly as the inflation rate (as currently occurs for many), then less and less disposable income is available for dental services. For those who must pay for these services largely out of pocket, dentistry is becoming more expensive. Consequently, many families may be priced out of the dental care market even though dental fees are rising at the same rate as the cost of living. One mitigating fact in this situation is the increase in numbers of people covered by dental insurance limiting the out-of-pocket expenditure for dental care for an increasing segment of the population. Recent data suggest that 60 million people are covered by dental insurance, or about 18–20 per cent of the population.[11] Littleton projected that by 1990 half of the population may have some dental care paid for by third-party carriers.[12] If medicine provides an analogy, such a development would substantially increase the population's demand for care. In many instances the health benefits package negotiated by American labor with industry includes dental insurance. In the last few years industry has sought to reduce health benefit costs in order to enhance or maintain the competitiveness of its products and services. These pressures may slow the spread of dental insurance or prompt industry to self-insure, establish its own programs, or mass-purchase care to reduce overall cost. Examples of such possibilities are the entrepreneurial or closed-panel schemes described by Rovin and Nash.[9]

*See the "Practice Act Analysis" prepared by M. Ziegler, JD, Assistant Professor of Health Administration, Columbia University School of Public Health, in 1980.

**See A.K. Palmer's discussion, The Interplay of Government Regulation, Professional Responsibility, and Market Forces in the Health Care Field: An Antitrust Enforcement Agency's Perspective, presented at the meeting of the Association of American Medical Colleges, October 24, 1978.

Dentist-Related Factors

The actions of the federal government over the last 20 years supporting oral health care as part of its national health policy have resulted in at least three major accomplishments. The first is the facilitation, with the creation of the National Institute for Dental Research, of a firm scientific basis for dentistry. The second is the entrance of dentistry into a number of federal clinical health programs including both the prevention and treatment of oral disease. Most of these efforts have been directed at poor or disadvantaged populations and include Medicaid, Community Health Centers, Head Start Programs, and the National Health Service Corps. The third is the total rebuilding and expansion of dental education facilities and programs. For the 20 or so years after World War II, these programs had been operating in antiquated facilities and were also having difficulty redesigning their educational programs. In the absence of the federal policy defining dental schools as a national manpower resource and without federal financial support, many schools would have closed and the high level of effort which now characterizes dental education in the United States would not have been achieved.[13]

The federal aid for rebuilding and expansion of dental education facilities brought, as its price, increased enrollment: the number of first-year dental students almost doubled in the last 15 years—from 3,800 in 1965 to 6,000 in 1980.[14] This large outflow of young dental graduates appears to be the major factor in the rise of competition in dentistry. The changing dental market along with inflation has made it difficult to begin a traditional private practice in a middle-class neighborhood. Recent figures suggest that 85 per cent of those who are better educated and have above-average incomes already visit the dentist.[15] But with the narrowing of this market due to the increased out-of-pocket cost of dental services, it may be approaching saturation. There is, therefore, an increasing pool of young dentists who need employment and are readily available to the new dental entrepreneurs.

This situation is intensified by the indebtedness of dental graduates. Currently, students are graduating from dental school with debts ranging from $20,000 to $40,000; this year's class at Columbia University will average $30,000.*** These data, however, represent only the tip of the iceberg. As an example, the average student at Columbia contributes only $3,400 towards a $16,000 annual cost. Hence, current freshmen must be borrowing $10,000 to $15,000 a year. And since tuition, room, and board at Columbia will increase by 15–18 per cent during 1981, some students will borrow $15,000 to $20,000 a year if funds are available. Student debt, therefore, is probably mushrooming at an accelerating rate. This situation is typical of the private schools. Whereas students at state schools are less stressed financially, their indebtedness is at least half of that of students at the private schools. The more stringent rules for student loans, along with higher interest rates likely to result from the projected loss of federal guarantees, mean that both equity of access to dental education and the ability of young dentists to start professional careers and earn a reasonable return are in jeopardy.

A recent study of student indebtedness was conducted for the American Dental Association by researchers at the University of Pennsylvania.‡ The data used for this study were based on the 1976 academic year. Assuming a 7–12 per cent interest rate, the study suggests a young practitioner graduating in 1980 who borrows both educational and startup costs will practice for four years with little or no after-tax income. This practitioner will have to wait 11 years before his after-tax income is greater than the sum which the US Bureau of Labor Statistics currently estimates is expended by a high-income family on normal consumption items. In other words, a 1980 dental graduate would not be able to save or invest until he is 35 years old—the age at which the average American begins to provide for his children's education. The same model suggests that by 1987 a private school graduate who borrows all educational and startup costs will practice for eight years without significant consumption expenditures. The study concludes that the increasing indebtedness of dental students is an important component of the uncertainty that contributes to the current decrease in the pool of applicants to dental school, and that it will cause great distortion of professional roles, so that a public outcry for increased regulation and control of the profession is a likely outcome. The general implication of this analysis is that both the quality and the quantity of dental care may be severely affected for a 20–30 year period if steps are not taken to avert these outcomes.‡‡

The American dental student applicant pool seems to be changing radically. A few years ago four applied for each place. Last year there were 1½ applicants for each place and some schools had empty places at the start of the academic year.[16] (This change preceded the withdrawal of federal grant and loan support for the health professions proposed by the new Administration as part of its budget.) Although this decline in applicants may at first seem healthy from the supply-demand viewpoint, it must be remembered that the dental education pipeline is long: it will take at least five to seven years to see even the beginning of an effect of a reduction in numbers of young dentists. In the meantime, young dentists who are being trained for a severely strained delivery system run the risk of disillusionment and bitterness if steps are not taken to bring demand, need, and resources into balance.

***Personal communication from Anne Hummers, Director of Admissions and Financial Aid, Columbia University School of Dental and Oral Surgery, March 1981.

‡See the report by K.L. Kendis and J. Galbally, The Behavioral Implications of Dental Student Indebtedness in the 1980s, presented to the American Dental Association November 1, 1980.

‡‡The Columbia data cited above indicate that these estimates are too low. In addition, it must be noted that the Pennsylvania researchers' analysis was made before the advent of higher loan rates, as in the Health Education Assistance Loans (3½ per cent above the 90-day federal rate), and the proposal of reduced eligibility for federally insured loans.

The problems of indebtedness and dentist numbers have significance only in relation to the need and demand for dental care. Traditional methods of estimating dental manpower needs (population: dentist ratios) have been replaced with more sophisticated ones.[17] At present, demand and need are not congruent factors. In 1964, 28 per cent of the poor had not seen a physician in the previous two years as compared with 18 per cent of the non-poor. By 1977, however, only 14 per cent of the poor and 13 per cent of the non-poor had not seen a physician, a difference of only 1 per cent. In contrast, in 1964, 65 per cent of the poor and 40 per cent of the non-poor had not visited a dentist within two years, a difference of 25 per cent. In 1977, 53 per cent of the poor and 33 per cent of the non-poor had not visited a dentist for two years, a difference of 20 per cent.[18] These comparisons indicate that low income still presents a major barrier to dental care, and that significant groups of the population are not served by dentists. Recent efforts of the American Dental Association to formulate an Access Plan[19] have begun to address the need to increase demand for dental care in underserved dental populations.

Population Changes

The need for dental services is also affected by changes in the population. Although the rate of growth of the United States population has slowed, the absolute size of population is still growing. The growth rate of the population was 6.6/1,000 in 1977. Although this rate was in keeping with the low levels of natural increase that have prevailed since the early 1970s, it was 12 per cent higher than the 1976 rate. The Census Bureau projects a gradual rise in the rate of natural increase to 7.8/1,000 population by 1983. This rise is expected to result largely from the fact that large numbers of women are entering their childbearing years. By the year 2000, however, the rate of natural increase is predicted to reach a low of 3.9/1,000.[20]

At the same time people are living longer. Life expectancy at birth reached a record of 73.2 years for Americans in 1977, which was about five years longer than in 1950. In 1900, only 4 per cent of the population was over age 65, and in 1977 the figure increased to 10 per cent.[20] Older people are living longer than in previous years. By the year 2030, 17–23 per cent of the population is expected to be over age 65, and it is projected that 65–70 per cent of the average physicians' time will be spent with older Americans.[21]

The population is also shifting geographically. The northeast and industrial midwest are losing their younger populations to the south, southeast, and far west, the so-called Sun Belt and mountain states. Those left behind are the poor and non-affluent elderly groups least able to afford dental care.

The dental needs of special groups constitute another new pressure for the dental profession. Until now, dental disease was considered ubiquitous; there was no trouble in finding patients. With the changing perception of needs and demands, there is a new emphasis on special groups needing care—i.e., the institutionalized, the elderly, adolescents, the poor, and the handicapped, to suggest a few.

Changes in Distribution of Dental Disease

The demographic changes and evolving perceptions of need for dental care appear to account for a substantial portion of the changes in the distribution of dental disease in the population. The last comprehensive survey of dental needs was made in 1971–1974 as part of the National Health Survey.[22] This survey suggested that the population had widespread unmet needs. Several studies, as well as anecdotal information, suggest that efforts to prevent caries—fluoridation, fluoride toothpaste, and so forth—have significantly affected the patterns of this disease both here and abroad. Three studies presented at the 59th General Session of the International Association for Dental Research in Chicago in 1981 support this view. Bohanan, *et al,* in a national study of 25,000 children in grades 1–8 reported (DMF) scores for children in fluoridated areas to be half of those in nonfluoridated communities.[23] DePaola and associates compared the results of a dental survey of Boston school children to those of a statewide survey conducted 30 years ago. The results suggest that caries prevalence has declined 40–50 per cent in this period. They concluded that these differences cannot be attributed to water fluoridation alone and seem too large to be accounted for as trivial.[24] Glass, *et al,* compared examinations of children in Boston and Polynesia to those done 20 years ago. In Boston, each age group showed marked decreases (50 per cent or more) in DMF teeth, and fewer restorations are placed per patient now as compared to 20 years ago. Children in Polynesia showed a marked increase in caries incidence.[25] These studies are supported by others in Great Britain.[26] Anecdotal information from San Francisco, Philadelphia, and other major cities seems to support the view that the prevalence of dental caries has decreased significantly in the United States in both fluoridated and nonfluoridated populations.

In the United States the demand for orthodontic care has been influenced by the decrease in numbers of school age children. Orthodontists are actively cultivating an adult market for their services. These changes may have a profound impact on the need for some forms of dental care, both now and in the future. This is particularly so if Sheiham's views[27] are correct.

Asking whether there is not overtreatment, must also be considered, Sheiham contends, on the basis of work in Europe and the United States, that the six-month dental examination for caries may be totally inappropriate as it takes caries 2–3 years to reach the dentino-enamel junction. An examination schedule needs to be worked out for each patient based on an evaluation of caries risk, thus reducing overtreatment of the whole patient population. In addition, studies by Axelsson and Lindhe[28] suggest that regular professional prophylaxis at short intervals can prevent both caries and periodontal disease. Trial projects based on this information are being attempted in Scandinavia. Overall, the changes in distribution of dental disease are sure to reduce

the reservoir of unmet need in the population so that the dentist will have to actively find those individuals who have unmet needs requiring care.

Competition and This System

Competition has grown considerably in dentistry.[29] Consumers can now find aggressive competition among dentists instead of the more subtle forms seen before the rash of Supreme Court decisions. Dental commercial advertising is often seen in the press and on television. Benham suggested that similar competition by optometrists has reduced the cost of eyeglasses.[30] As a result of competition among dentists, the state boards of dentistry are pressured by dental societies to new regulations and rulings which might provide a basis for challenging previous practice. The boards are also being asked to restrict new practice forms or capitation schemes and strictly interpret regulations limiting expanded-duty auxiliaries, National Service Corps dentists, or others.‡‡‡ The pressures by consumers for more dentistry at lower cost are intensifying. This is illustrated by the recent experience in Oregon, where the electorate overwhelmingly voted to allow technicians to make dentures directly for patients. This result suggests that people will seek ways to get needed care at a potentially more affordable cost when that care is priced out of the market.

Competition is intensified between dentists and other providers of care. Hospitals, in the spin-off from their ambulatory care services, have become potential competitors with local dentists, as have dental schools. The advent of dental technicians providing dentures directly to the public, as in Oregon,[31] raises the question of independent practice for the other licensed dental professional—the dental hygienist. Competition among dentists and other providers seems a certainty.

Competition has entered dental education as well. In order to provide clinical experience for students as well as revenue, dental schools are beginning to compete in the market place for patients. With a shrinking applicant pool there is also significant competition for students. Emphasis on special programs and out-and-out recruiting are now prevalent in dental education. Two additional forms of competition appear certain to emerge: first, in a market unable to absorb them quickly and under pressure of indebtedness, there is likely to be fierce competition among recent graduates for salaried positions; and second, there is likely to be competition by dental entrepreneurs for capital. As dentistry becomes more productive, when its efforts can be targeted to expand the market for specific populations, when various practice forms can be linked by business enterprise (through changes in the practice acts), dentistry will begin to compete in the marketplace for capital, much as nursing home and private hospital corporations already do.

‡‡‡See the Memorandum of Law prepared for the Dental Society of the State of New York in the Matter of the American Dental Plan by Foley, Hickey, Gilbert, and Power in 1980.

The forces we have outlined seem to be pushing oral health care and the dentist in several different directions. The development of deregulation resulting in increased advertising presses the profession actively into the marketplace. However, the increasing out-of-pocket cost of dental care and the declining prevalence of oral disease are, along with other forces, causing the market to contract. An increasing number of elderly with periodontal and prosthetic problems forms a potential new market. The development of dental insurance is a way to increase demand for services, and the presence of a large number of recent graduates economically unable to wait extended periods to start traditional practice are potent forces for significant change involving heightened competition. This competition may or may not reduce cost to the consumer.

It does not seem possible to predict how these difficulties will be resolved. What is clear, however, is not that change is coming, but that it is already here. In the past, competition has been viewed as unprofessional and demeaning. Indeed, the actively competitive professional was always suspected of providing an inferior quality of care. It is important to find and nourish the positive aspects of the changes associated with the re-emergence of competition. These may include increasing access to care through improvement in consumers' knowledge and reducing the cost of care by recourse to more efficient techniques of practice and improved understanding of the relative effectiveness of various treatments; and diminishing pain and suffering by preventing dental disease. The ability to attract the best minds to the dental profession to deal with the oral health problems of society may depend on our ability to harness these forces for the public good.

REFERENCES

1. Dickens C: A Tale of Two Cities, 1850.
2. Gies WJ: Dental Education in the US and Canada. New York: Carnegie Commission, 1926.
3. Flexner A: Medical Education in the United States and Canada. A Report to the Carnegie Foundation for the Advancement of Teaching. Boston: The Merrymount Press, 1910.
4. The Council of State Governments' National Task Force on State Dental Policies, Background Paper 1, Licensing and regulation. J Dent Educ Special Issue, Part II, 1979; 43:59.
5. *Goldfarb vs. Virginia State Bar* (421 U.S. 733, 1975).
6. *Hospital Building Co. vs. Trustees of the Rex Hospital* (425 U.S. 738, 1976).
7. *Bates vs. State Board Georgia* (97 S. Ct. 2691, 1977).
8. Grad FP: The antitrust laws and professional discipline in medicine. Duke Law Journal 1978; 443:446–453.
9. Rovin S, Nash J: Traditional and emerging forms of dental practice. Am J Public Health 1982; 72:656–662.
10. Lipscomb J, Douglas CW: A theory of the dental care market. Am J Public Health 1982; 72:665–675.
11. Projections of National Requirements for Dentists 1980, 1985, 1990. DHEW Pub. No. (HRA) 78-70.
12. Douglas CW, Cole K: Cost and payment of dental services in the United States. J Dent Educ 1979; 43:330–348.
13. Galagan DJ: Back from the brink, how and why, US dental schools rebuilt. Dental Survey 1978; 54:14–18.
14. American Dental Association: Annual Survey of Dental Education, 1979–80. Chicago, IL: ADA, 1980.
15. A Decade of Dental Service Utilization, 1964–1974, USDHHS, PHS, ERA, HRP-09-02266 (Accession # NHS), 1980.

16. Graham J, Kinsey RB: An analysis of the decline in dental school applicants 1975–1978. J Dent Educ 1979; 43:107.
17. The Council of State Governments' National Task Force on Dental Policies, Background Paper #5, Manpower utilization. J Dent Educ Special Issue, Part 2, 1979; 43:83.
18. Health in the United States, Chartbook, Do the Poor Have Less Contact with Dentists that the Non-Poor? DHEW Pub. (PHS) No. 80, 1233, pp 32.
19. Prevention and Control of Dental Disease through Improved Access to Comprehensive Care, American Dental Assn., Chicago, 1979.
20. Observations on Geriatric Medicine, US DHEW Pub. (NIH) No. 79, 162, 1979.
21. New York Times: Goal of Retiring at 65 Recedes under Economic Pressure and Population Curve, March 9, 1981, pp 1.
22. National Health Survey: Decayed, Missing and Filled Teeth among Youths 12–17 Years, Vital Health Statistics Series 11, No. 144, DHEWHRA 75, 1626, 1966.
23. Bohanon H, Klein S, Leone F, Disney J, Graves R: Caries Prevalence in the National Preventive Dentistry Demonstration Program. J Dent Res, Program and Abstracts 60, Abst. #199, 1981.
24. DePaola PF, Sparker P, Allukian M, DeVelis R, Resker M: Changes in Caries Prevalence of Massachusetts Children over Thirty Years. J Dent Res, Program and Abstracts, 60, Abst. #200, 1981.
25. Glass RL, Scheinin A, Barmes DE: Changing Caries Prevalence in Two Cultures. J Dent Res, Program and Abstracts, 60 Abst. #202, 1981.
26. Palmer JD: Dental health in children, an improving picture. Brit Dent J 1980; 149:48.
27. Sheiham A: Is there a scientific basis for six monthly dental examinations? Lancet 1977; 2:442–444.
28. Axelsson P, Lindhe J: Effect of controlled oral hygiene procedures on caries and periodontal disease in adults. J Clin Period 1978; 5:133–151.
29. Cole LA: New York Times Magazine: A New Look at American Dentistry, April 5, 1981, pp 86–91.
30. Benham L: The effects of advertising on the price of eyeglasses. J Law and Econ 1972; 15:337–352.
31. Rosenstein DI, Joseph LP, Mackenzie LJ, Wyden R: Professional encroachment: a comparison of the emergence of denturists in Canada and Oregon. Am J Public Health 1980; 70:614–618.

XIII International Cancer Congress to Meet in Seattle

The 13th International Cancer Congress will be held in Seattle, Washington, September 8–15, 1982, under the auspices of the International Union Against Cancer. The scientific program has been designed to address the multifaceted needs of medical, scientific, and dental professionals, nurses, and allied health professionals working in the field of cancer research, and is organized into a number of events, including:

- Ten plenary lectures by distinguished researchers, covering clinical cancer, chemotherapy, carcinogenesis, endocrinology, cell biology, molecular biology, epidemiology, immunology, and the role of volunteer agencies;
- Nine general symposia in each of the three major areas of the Congress: preclinical, clinical, and allied sciences: these symposia will focus on areas of cancer research where significant progress has been achieved since the 1978 Cancer Congress;
- Forty-eight congress symposia will deal with each major subspeciality of cancer research; four of these will be devoted to the allied sciences, and over 20 will be interdisciplinary in scope;
- Twenty postgraduate courses (2.5 hours each) in current approaches to the management of the cancer patient;
- Twenty-one seminars on current, controversial topics in the field, in a format to permit audience participation during scheduled discussion periods;
- Thirty-one roundtable discussions to provide an opportunity for debate on provocative subjects; and
- Ten sessions on the role of voluntary societies and leagues in cancer control.

Many other activities are planned during the eight-day meeting. For further information, contact: Congress Operations Office, 13th International Cancer Congress, Fourth and Blanchard Building, Suite 1800, Seattle, WA 98121.

JHU Summer Course on Echocardiography

The Johns Hopkins Medical Institutions announces "Practical Echocardiography", a summer course to be held July 12–16, 1982 in Baltimore, Maryland. Registration fee is $475.

The course is intended to provide "hands-on" instruction for technicians and physicians in the technical skill of performing/interpreting echocardiograms, complemented by lectures on ultrasound theory, cardiac anatomy and physiology.

For further information, contact Program Coordinator, Turner 22, 720 Rutland Avenue, Baltimore, MD 21205. Telephone (301) 955-6046.