Alumni Bulletin

INDIANA UNIVERSITY SCHOOL OF DENTISTRY

AUGUST, 1959
INDIANAPOLIS, INDIANA

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Contents

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A free and non-profit bulletin issued by Indiana University School of Dentistry, Indianapolis, Indiana, for the purpose of keeping its alumni informed of the activities and progress of the School.

Relationship between Occlusion, Occlusal Equilibration and Crown & Bridgework and Partial Denture Prothesis

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Graduate Student in The Dept. of Crown & Bridge & Partial Denture Prosthesis

INTRODUCTION

Occlusion has been a controversial subject since the day man found he could use a natural tooth or an artificial one to replace a lost member of the dental arch. This controversy or confusion started when the Phoenicians made the first dental bridge by replacing the lost teeth with natural teeth connected to the remaining teeth by gold bands and wires, and it has continued until the present time. Many fields of dentistry, including operative or restorative, orthodontia, prosthodontia, and now periodontia, recognize the importance of occlusion, and are concerned with it. Various or numerous devices, gimmicks and theories throughout the years have been devised to cope with the associated problems.

Schwartz[1] says, "the interest in occlusion has grown out of the need to do something —the need to place artificial teeth in such an arrangement on full dentures that stability and efficiency could be increased." Now the need is to position and contour the natural teeth and artificial replacements, as in fixed bridgework and removable partial dentures, in such a manner that the supporting structures are preserved in a normal healthy state through harmonious distribution of forces.

Definition of Terms

I feel that before a topic can be discussed thoroughly the terms to be used should be defined.

Occlusion is a static anatomical relationship of the teeth when the jaws are closed. Schweitzer[2] in his book, *Oral Rehabilitation,* gives the following definitions:

1. "Normal occlusal force may be defined as the innocuous distribution of the stress or stresses exerted upon the teeth in their various contact relationships."
2. "Forces of occlusion are those factors which cause teeth to assume and maintain their position in the line of occlusion."
3. "Functional occlusion is such arrangement of the teeth as will provide the highest efficiency during all of the excursions of the mandible which are necessary to the function of mastication."
4. "Articulation is the dynamic anatomical relation of the teeth in every possible contacting position. Articulation is generally understood as the relation of the teeth to their opponents during the chewing motions. This relationship may be either correct or incorrect."
5. "Balanced occlusion is the static relation of teeth at a given stage of articulation which makes contact between their opposing anatomically related parts."

Importance of Occlusion

The importance of occlusion lies in the fact that it is one of the factors controlling movements of the mandible. Schuyler[3] states, "all movements of the mandible are motivated by the muscles of mastication. The direction of movement of the mandible when the teeth are not in occlusal contact is controlled by the muscles of mastication and the temporomandibular articulation, but when the opposing teeth of the natural dentition come into contact, the guiding inclines of the teeth immediately assume almost complete control of the direction and extent of movement of the mandible."

It is important also to remember that when the occlusion is not balanced to bring about a healthy distribution of force throughout the entire remaining dentition, periodontal or supporting tissue breakdown may occur. An example of an unbalanced occlusion in a young female patient caused by steep cusp planes and malposition of teeth is shown in Fig. 1. Fig. 2, a photograph of a radiograph of same area (shown in Fig. 1.), shows resorption of bone, as evidenced by the radiolucency in the interproximal areas, and beginning periodontal breakdown. It is because of this last factor being overlooked that so many fixed bridges and removable partial dentures have failed and resulted in the collapse of the remaining dental arches. Therefore, the first step in crown, fixed bridge, and removable partial denture construction should be a thorough study of the occlusal problems of the patient, and an elimination of these problems by occlusal equilibration. Wasser[4] writes, "harmony of occlusion is best established prior to construction of fixed dentures." If these factors are observed before fixed bridge and removable partial denture construction, prosthesis may be constructed to a balanced occlusion, thereby minimizing the complications of traumatic occlusion. Badanes[5] says that, "the functional efficiency of a restorative appliance depends mostly on a balanced occlusion which is of prime significance not only to the dental tissue but to the general health and well being of the patient."

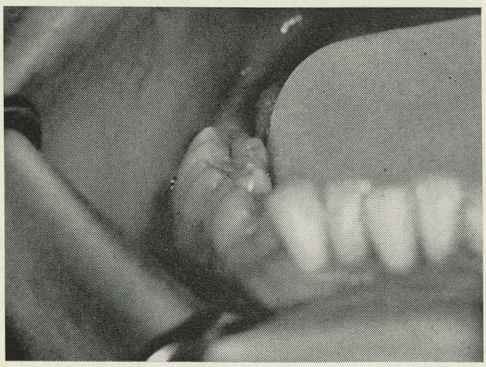


Figure 1

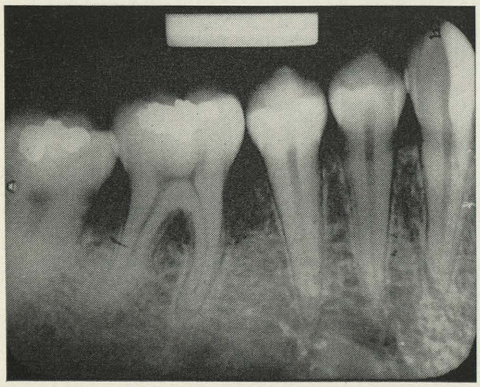


Figure 2

"Occlusal co-ordination and equilibrium are important factors in the health of teeth where none are missing and where each tooth has only its own labor to perform. Where natural teeth are missing and artificial ones are taking their place, the work of carrying them must be assumed by the remaining natural teeth. In such a case there is a direct burden beyond the natural to the teeth calling for the elimination of any avoidable over stresses. To avoid traumatic occlusion, abutment inlays or crowns and also the occlusal surfaces of bridge pontics must never be made overfull or left appreciably higher than the occlusal surfaces of the remaining teeth."

Harmony of Occlusion

Harmony of occlusion is an important consideration because it signifies that the forces exerted on the natural dentition, to the abutment teeth and the artificial replacements are distributed to the supporting structures in such a way that no destruction of these tissues occurs. The forces exerted in pounds to the supporting structure is quite high. Boos[6] reports, "during mastication, the forces delivered to and through the supporting structures sometimes reach 250 pounds." Shanahan[7] points out that "functional and nonfunctional occlusal movements should be in harmony with the occlusal curvature and the occlusion to preserve the health of the tooth supporting tissues." Johnston[8]

states that "while we strive for harmony of form, it may be modified. The normal anatomy may be altered in the case of a pontic and sometimes in a crown to reduce occlusal stresses and in the pontic to increase its self-cleansing qualities." Fig. 3, shows a photograph of a radiography of an upper left second bicuspid to be used as an abutment for a partial denture. Mouth preparation necessitates the placement of a full veneer gold crown on this tooth. Careful examination of Fig. 3 will reveal that there is no thickening of P.D.M. or bone loss. Fig. 4, a photograph of a radiograph of same area some months later, shows thickening of P.D.M. and bone loss. Fig. 5, a photograph of the same case, shows that occlusal stress on the distal-lingual aspect of the lingual cusp of the upper second bicuspid has been produced due to over extension of the occlusal tables in a bucco-lingual diameter. Fig. 6, a photograph of the lower arch, shows the area of occlusal stress in the same patient shown in Fig. 3, 4, and 5. This condition possibly could have been helped if the lower molar had had its buccal-lingual diameter reduced so that more of the occlusal force could have been dissipated in that manner.

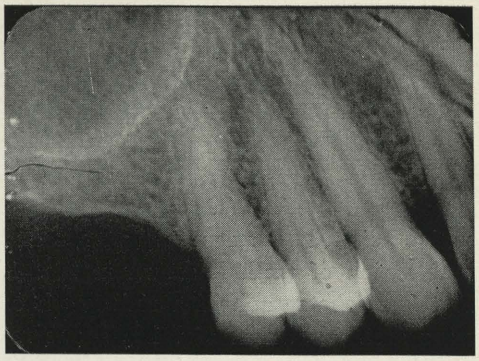


Figure 3

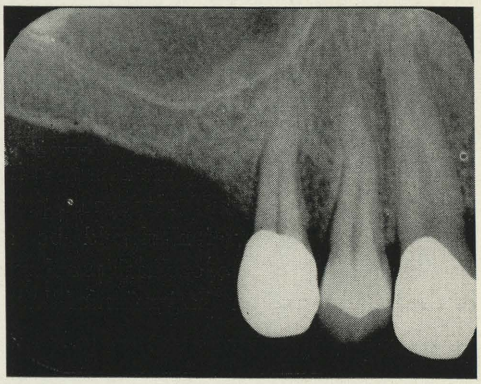


Figure 4

Occlusal Equilibration

In order that fixed and removable partial dentures may be constructed to meet the biological demands of the supporting tissues of the teeth, the occlusion of the remaining natural teeth should be balanced and put in harmony with their supporting tissues before construction of the appliance is begun. In order to keep this harmony, the bridge and removable partial denture should be balanced from time to time to keep up with the natural wear of the natural teeth. Miller[9] states, "each patient's dentition should be equilibrated at the time the mouth is prepared for prosthesis." This harmonious balance can be obtained and maintained by careful occlusal equilibration. Wester[10], quoting Benoist, points out that "in establishing proper occlusion three main objectives must be kept in mind: (1) the load of mastication must be distributed to as many teeth as possible; (2) the forces of occlusion must be delivered so that they are borne as much as possible by the long axes of the teeth; (3) the occlusal contacts should be in a point-to-point or point-to-surface contact in centric and eccentric ranges of occlusion."

Before starting occlusal equilibration, roentgenograms and study models, accurately mounted, should be studied.

The first correction to be made concerns premature contact in centric relation. Therefore, the study models should have been mounted from a centric relation transfer of zinc oxide eugenol paste, or one equally accurate. If the models are mounted from a centric occlusion relationship, intercuspal contact would produce a registration of the patient's present occlusal habit and not a registration of the

centric relation of the maxilla to the mandible. This centric relation mounting should then be checked against a centric occlusion relation. This will show the operator the patient's eccentricities and premature contacts, thereby indicating where to grind when working in the mouth. This should then be checked in the mouth with articulating paper or 28-gauge green wax and the prematurities marked before grinding.

Centric occlusion must be accurately established and all premature contacts removed before eccentric equilibration can be begun, by studying function of the cusps throughout the eccentric excursions of the mandible. If the cusp is traumatic in both centric occlusion and eccentric position, the height of the cusp should be reduced. However, if the cusp is traumatic in centric occlusion only, the opposing fossa should be deepened. This procedure is repeated until all prematurities are eliminated. There may be several and may be revealed in succession just after a previous one has been removed.

In order that the stresses of mastication be distributed over the greatest possible area and the maximal number of teeth be made to share this function, it is necessary to bring the cusps of the opposing teeth into contact during the excursion of mastication at the bottom of the stroke of the chewing cycle. The works of Anderson and Picton[11], Brudevold[12], and Jankelson, et al[13], show that the teeth during mastication come in contact only at the end of the chewing stroke. Proper centric and vertical dimension must be maintained at the same time. This procedure may be accomplished by following the B.U.L.L. rule, careful spot grinding of the buccal cusps of the upper posterior teeth, and the lingual cusps of the lower posterior teeth described by Dr. Bennett, and also by reducing the steepness of the planes upon which the cusps function until the cusps of the other teeth in the area come into function.

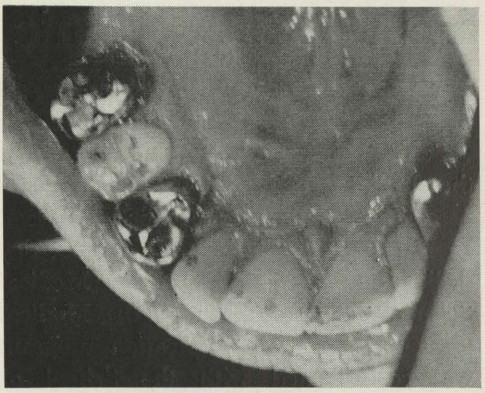


Figure 5

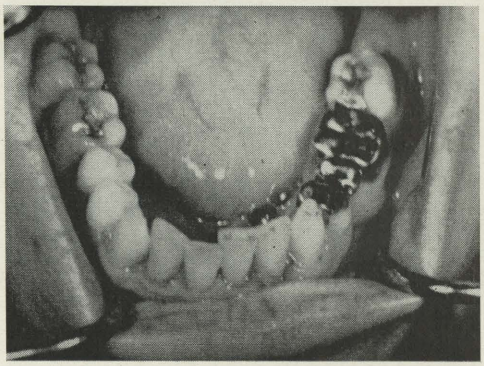


Figure 6

Until recently teeth were equilibrated in lateral excursions to bring all cusps in contact on the working side and out of function on the balancing side. This procedure had been proposed by Schuyler, Glickman and others.

Today, however, it has been found that this is not the proper relationship in the natural dentition. In lateral excursion, the cusps of the posterior teeth should be equilibrated to be in contact throughout the first ½-1 mm., then the cuspid on that side provides the "cuspid rise" and takes all posterior teeth out of contact on the so-called working side. The cusps on the balancing side are also out of contact. This was found to be the normal functional relationship in anthropologic studies by D'Amico[14]. Contrary to what was once believed, the cuspid teeth are not in traumatic occlusion and are anatomically

(Continued on page 36)

First Senior Clinic Day Held

by H. Wm. Gilmore, D.D.S., Instructor of Dental Materials

Senior Clinic Day, sponsored jointly by the Indiana University Dental Alumni Association and the Junior American Dental Association climaxed the three-day dedication program of the Medical Science Building. Held on the Medical Center campus, the dedication program was co-ordinated with the School of Medicine and the School of Nursing, which included lectures and panel discussions on pre-professional education, admissions testing, trends in medical and dental education, internships and residences and scientific exhibits.

The dental program included guest lecturers as well as panel discussions by members of the faculty. Dr. Shailer Peterson, Secretary, Council on Dental Education gave an interesting presentation on "Trends In Dental Education". Possible changes in dental curricula and problems which have occurred in dental education were discussed as well as other points of interest.

Dr. George Teuscher, Dean, Northwestern University School of Dentistry, spoke on "Trends In Dental Specialties". The present number and grouping of dental specialties as well as their present status was explained. Dr. Teuscher gave the definition of a dental specialty and its obligation to the dental public. Some information was given about the plan for the Council on Dental Education of the American Dental Association to adopt standards for the dental specialties. This would include a new grouping and the administering of board examinations.

Dr. Ralph McDonald, chairman of the department of pedodontia, moderated a panel, "Recent Developments in Dental Practice". Members of the panel were Dr. Drexell A. Boyd, Dr. John F. Johnston, and Dr. Harry J. Healey. Included in the discussion was the philosophy of time and motion and its relationship to the practice of operative dentistry. Some of the more recent technics in dentistry were given which included the porcelain fused on gold technic. As a climax to the morning program, Dr. Healey explained the organizational structure and function of the American Dental Association.

The afternoon program was headed by Dr. Francis A. Arnold, Director, National Institute of Dental Research of the United States Public Health Service. Dr. Arnold spoke on "Future Developments in Dental Research". Facts were given about research past and future, the research center at Bethesda, Maryland, and the training grants sponsored by the National Institute of Dental Research.

Professor Ralph W. Phillips was moderator for a panel on "Developments in Dental Science". Panel members were Dr. William G. Shafer, Dr. David F. Mitchell, and Dr. Martin Dworkin. Data were given as to the incidence and prevalence of disease in Indiana, funds for dental research and the number of people actively engaged in dental research. Some information was given about the research that is in progress at Indiana University School of Dentistry.

Members of the junior and senior classes, including second year dental hygiene students, presented 45 table clinics. The clinics were on a competitive basis and judged by faculty members as well as members of the alumni association. Faculty judges were Dr. Ralph McDonald, Dr. Drexell A. Boyd, Professor Ralph Phillips, Dr. David F. Mitchell, and Dr. Roland Dykema. Alumni judges were Dr. Williard Damm, Dr. J. W. Huckelberry, Dr. Paul Asher, and Dr. Forrest Paul.

Mr. Donald Arens was the senior class member judged for the best table clinic. The prize was an expense-paid trip, courtesy of the T. M. Crutcher Dental Depot to the centennial meeting of the American

Dental Association. Mr. Arens will present his table clinic with exhibitors from all over the United States. The title of the clinic is "A Method of Constructing an Inexpensive Incubator for Endodontic Purposes".

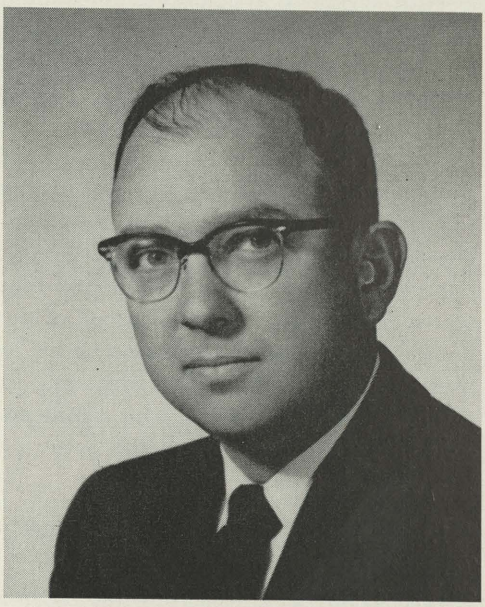
Junior class winner was Richard Henry, with a clinic on "A Comparison of Casting Machines and Their Results". Mr. Henry also won an expense-paid trip to the centennial meeting, courtesy of the Dentists' Supply Company. Mr. Henry's clinic will be given at the centennial meeting and judged on a competitive basis with other dental students. The trip also includes a tour of the Dentists' Supply Company.

A banquet at the Student Union Building, with 300 people in attendance, completed the activities of the day. The after-dinner speaker was Dr. Gerald D. Timmons, Dean, Temple University School of Dentistry, who talked on the responsibilities of the dentist to the population. Figures were given illustrating the rapid growth in population and a decrease in the ratio of the practicing dentists. A charge was made to the senior class to be prepared to meet the challenge and accept the responsibilities offered by the dental profession. Dr. Timmons, Speaker of the House of Delegates of the American Dental Association, urged the interest and support of organized dentistry and stressed its growing importance in future years.

Many students were gratified with the chance to present a table clinic. This nurtures a dental education in many ways; such as making decisions, becoming expertly informed by a recent technic or process used in dentistry and familiarizing it to the public. This dissemination allows the practicing dentist to evaluate the technic for himself and possibly include it in his own line of treatment.

In the future if experiences such as this are met with enthusiasm, surely both parties will be benefited—the dental student and dental practitioner.

Dr. John P. Frush to be Headline Speaker



Dr. John Frush who will be the main speaker at the alumni meeting September 25-26.

The program for the annual alumni meeting on September 25 and 26 is rapidly being completed. It promises to be an outstanding event and the invited main speaker is to be Dr. John P. Frush from Los Angeles. Dr. Frush is an internationally known lecturer and has conducted over 100 seminars on dental esthetics . He will appear twice on the program. The first day will be a presentation of the principles of a complete esthetic concept for dentistry. The physiologic structure for full denture esthetics and its interdependence with functional movement of the mandible. The second day will consist of a presentation of comprehensive esthetic techniques and analytical procedure for office use in constructing all types of dental prosthesis.

The plans call for Miss Mary Linko to be the speaker for the women's luncheon. She is making a trip through Russia this summer and will discuss her experiences.

Faculty Publications

With a view to acquainting our alumni of the scope of the research activities going on at the dental school, the following abstracts have been prepared. The faculty publications for the 1958 calendar year have been accumulated along with a brief summary of the purpose and conclusions for each study. Although it is not all inclusive, it does cover the major portion of our published research. It is hoped that you will find this of interest and all of the departments would be more than happy to discuss these investigations with you in detail. We would welcome your comments concerning the desirability and your interest in this type of information.

1. Standish, S. M. and Shafer, W. G.: The lateral periodontal cyst. J. Perio, 29:27, 1958. Five cases of the lateral periodontal cyst have been presented, all of which occurred in the mandibular cuspid-bicuspid area. The lateral periodontal cyst arises from epithelial cell rests commonly found in the periodontal membrane although in this series the stimulus for the epithelial proliferation was not obvious. Points of differentiation of the lateral periodontal cyst from the gingival cyst, atypical apical periodontal cyst and complicated lateral abcess have been emphasized.

2. Gregory, G. T. and Shafer, W. G.; Surgical ciliated cysts of the maxilla. J. Oral Surg. 16:251, 1958. The purpose of this paper is to report the occurrence in several patients of a type of lesion which apparently has not been recorded previously in the literature. The particular lesion to be reported is a type of cyst arising in the maxilla. In each patient the cyst developed after previous surgical entry into the maxillary sinus during a Caldwell-Luc operation. Histologically, the cyst appears to be derived from the epithelial lining of the maxillary sinus which apparently has been trapped in the wound during closure of the incision and subsequently begins to proliferate.

3. Muhler, J. C. and Shafer, W. G.: The relationship of thyroid activity to the dental caries experiences in mice. J. D. Res. 37:451, 1958. The administration of thiouracil to weanling mice, in the same amounts used in experiments showing an increase in caries in rats, did not induce dental caries. The addition of sucrose, fine corn meal or ground corn which contains particles of varying sizes, also did not result in dental caries in the mouse.

4. Shafer, W. G., Clark, P. G., Bixler, D. and Muhler, J. C.: Salivary gland function in rats. II. Effect of thyroid function on salivary flow and viscosity. Proc. Soc. Exper. Biol. & Med. 98:245, 1958. We determined the effects of thyroid gland dysfunction on salivary flow and viscosity in the rat. Results indicate that propylthiouracil and radiothyroidectomy reduced salivary flow and increased salivary viscosity. This can be reversed and function restored by administration of thyroxine. Testosterone partially restores salivary flow. These data provide one explanation for the mechanism of alteration in dental caries incidence in the rat following disturbance in thyroid function, although the relationship is probably far more complex than this.

5. Shafer, W. G., Beatty, R. E. and Davis, W. B.: Effect of dilantin sodium on tensile strength of healing wounds. Proc. Soc. Exper. Biol. & Med. 98:348, 1958. Systemic administration of dilantin sodium produces a dramatic increase in tensile strength of healing wounds in rats. This is probably a function of increased collangenization, the same basic reaction which accounts for the undesirable sid-reaction of gingival hyperplasia in epi-

leptics receiving this drug, although the mechanism is unknown.

6. Shafer, W. G., Clark, P. G., Bixler, D. and Muhler, J. C.: Salivary gland function in the rat. I. Flow, viscosity and pH in the normal and duct-ligated rat. J. D. Res. 37:848, 1958. The salivary flow, viscosity and pH have been studied in groups of rats at varying ages. Flow was found to increase with advancing age while both viscosity and pH decrease from weanling to adulthood. Selective salivary gland duct ligation results in diminution in flow of varying proportions depending on the ducts ligated and whether this was a unilateral or bilateral procedure. A significant reduction in salivary viscosity occurred when the submaxillary-sublingual ducts were ligated bilaterally thus blocking flow of the mucous saliva from the sublingual gland. No differences in the pH of saliva from different glands were noted. Total extirpation of the major salivary glands revealed that the accessory glands in the rat contribute very little to the total salivary flow.

7. Brewer, H. E. and Muhler, J. C.: Alteration of blood flow to the teeth. II. Its effect on dental caries and relation to salivary gland structure and function in the rat. J. D. Res. 37:1069, 1958. In vivo experiments have shown that bilateral interruption of the arterial supply to the molar teeth of weanling rats results in increased dental decay. Additional study has shown that the major salivary glands are unlikely to be related to the increased dental caries experience observed, since no changes in salivary gland function or structure were found to result from ligation of the arteries to the teeth. The necessity of investigating the relationship between the vascularity of the pulp, and enamel and dentin permeability is discussed.

8. Wagner, M. J., Stookey, G. K. and Muhler, J. C.: Deposition of fluoride in soft tissues following skeletal saturation. Proc. Soc. Exper. Biol. & Med. 99:102, 1958. Administration of 1 mg. F daily for 90 days to weanling rats failed to demonstrate any increase in fluoride content or concentration of heart, liver or kidney, even as fluoride saturation of the skeleton was approached. Fluoride content of the carcass, femur and sternum increased markedly with fluoride ingestion but rate of retention decreased throughout the experiment, particularly after attainment of skeletal maturity. Although no increase in soft tissue fluoride was demonstrated, the toxic effect of this level of fluoride (1 mg. per rat day) was demonstrated by the decreased weight gain of the fluoride animals when compared to the control group.

9. Gish, C. W., Howell, C. L. and Muhler, J. C.: Stannous fluoride vs. sodium fluoride—a progress report. J. Dent. Child. Third quarter, p. 177, 1958. At the end of three years a single application of a freshly prepared 8 per cent solution of stannous fluoride, applied once each year, has been shown to be significantly more effective in reducing dental caries in children than a series of four applications of a 2 per cent sodium fluoride solution applied at the beginning of the three-year study period. These clinical results again indicate a marked advancement in topical fluoride treatment for use in preventive dentistry due to a saving in clinical time, cost, convenience to patient and parent, as well as an increase in clinical effectiveness.

10. Wagner, M. J. and Muhler, J. C.: Influence of inorganic ions on fluoride retention in the rat. Proc. Soc. Exper, Biol. & Med. 98:496, 1958. (1) The whole carcass retention of fluoride by rats receiving a fluoride drinking water containing a combination of Ca^{++}, Mg^{++}, Fe^{++} and PO_4^{---} ions was significantly less than in rats drinking a chemically pure fluoride water containing no additional inorganic ions. (2) In contrast, studies of

the individual ions at various concentrations show only small fluctuations in the proportion retained. No significant influence on retention was noted when any of the ions were studied singly. (3) The decrease in retention seen in rats ingesting the water containing a combination of ions suggests that the influence of the ions may be additive or synergistic. This may be important since most natural waters contain a group of several inorganic constituents. More attention should be placed on inorganic composition of the communal water supplies before fortifying them with flouride. It is possible that if the combination of major inorganic constituents of natural waters exceeds a yet-to-be determined concentration, optimal fluoride concentration would need to differ from the now accepted level of 1 ppm in order to produce maximum anticariogenic benefits.

11. Buttner, W. and Muhler, J. C.: The retention of fluoride by the skeleton, liver, heart and kidney as a function of dietary fat intake in the rat. J. Nutrition 65:259, 1958. The effect of feeding different dietary fats at a 5 and 20 per cent level in the presence or absence of fluoride has been studied in order to determine if either the amount or type of fat is associated with increased retention of fluoride in the skeleton, liver, heart and kidney in the rat. Increasing the dietary fat from 5 to 20 per cent results in more fluoride retention in the whole carcass, femur and soft tissues when 2 mg. of fluoride is fed daily. Neither the dietary fats nor the presence of the fluoride at the levels used in those studies was associated with a decrease in body weight gain.

12. Buttner, W. and Muhler, J. C.: The effect of feeding calcium phosphate salts with different solubilities on dental caries, the composition of the saliva, and the femurs of rats, J. D. Res. 37:860, 1958. The administration of either 1 or 5 per cent dicalciumphosphate dihydrate or calcium pyrophosphate as a constituent of the daily diet of rats did not reduce their dental caries experience or significantly modify the calcium content of the saliva. However, the feeding of the 2 calcium-phosphate salts did increase the phosphorus content of the saliva, as well as significantly increasing the calcium and phosphorus content of the femurs, when evaluated on a percentage of ash-weight basis.

13. Buttner, W. and Muhler, J. C.: Relationship of fluoride and dietary fats to serum and cholesterol in rats, Proc. Soc. Exper. Biol. Med. 98:620, 1958. Serum cholesterol level was determined in 5 series of rats receiving either different fats in their diets or different fats plus fluoride to determine whether the use of fluoride is associated with an increased serum cholesterol level. After administration of 2 mg. of fluoride daily throughout a 10 week period there was no significant change in serum cholesterol level of rats regardless of their dietary fat source or the presence of fluoride. Comparison of body weight gains of the various group fails to suggest that any of the rats used resulted in increased fluoride toxicity.

14. Bixler, D., Webster, R. C. and Muhler, J. C.: The effect of pilocarpine on the submaxillary gland of the rat, J. D. Res. 37:649, 1958. Pilocarpine, when given to adult male rats, had its most pronounced effect upon the acinar portion of the submaxillary salivary gland 2 to 5 hours after administration. This effect was an increased intensity of the periodic acid-Schiff reaction and a spreading out of the methyl-green pyronin (RNA) reaction in the cell cytoplasm. Prolonged administration of pilocarpine (daily for 12 weeks) produced no apparent pathosis in the submaxillary gland, although gross observations revealed that the drug regularly stimulated a profuse and voluminous flow throughout the entire experimental period.

15. Marshall, T. D., Spear, L. B. and Muhler, J. C.: Effect of roentgen-ray irradiation from a modern dental X-ray unit on the red and white blood cell count and on growth in the rat, J.A.D.A. 57:665, 1958. In order to gain more knowledge concerning the effects of roentgen-ray radiation produced by a dental X-ray unit, a study of the total red and white blood cells of rats before and after exposure of the head to roentgen rays was conducted. Each of the experimental rats was exposed to a total dose of 2,016 r during a period of 72 weeks. Red and white blood cell counts, which were measured at each irradiation period, indicated no significant differences between the irradiated group and the control group values.

16. Gish, C. W., Muhler, J. C. and Howell, C. L.: The effect of topically applied potassium fluorostannite on the dental caries experience in children II. Results at the end of two years, J. D. Res. 37:417, 1958. Two years following the initial topical treatment of children with a 4 per cent potassium fluorostannite solution there were 47.5 and 38.5 per cent less dental caries as evaluated by the DMFT and DMFS indices, respectively, when compared to a similar control group which received distilled water. These 2-year data indicate that there was no significant loss in effectiveness when compared to the 1-year results.

17. Muhler, J. C. and Bixler, D.: The effect of pilocarpine in single or divided daily doses on the incidence of dental caries in the rat, J. D. Res. 37:410, 1958. The same amount of pilocarpine was given to rats either once a day, 3 times a day, or in the diet which was fed ad libitum and the dental caries experience compared to control animals receiving no pilocarpine. The data indicated that all 3 groups receiving the pilocarpine had a significant reduction in dental caries. The anticariogenic effect of pilocarpine does not seem to be related to frequency of ingestion, but instead may be related to differences in the chemical composition of the saliva following pilocarpine administration.

18. Bixler, D. and Muhler, J. C.: The The relationship of food consumption and salivary flow to the incidence of dental caries in the rat, J. D. Res. 37:407, 1958. The cariogenic influence of desalivation and the anticariogenic effect of food restriction has been demonstrated. A combination of influences resulting from restricting the food intake of desalivated rats suggests that the absence of saliva is a more pronounced cariogenic factor than diet restriction is an anticariogenic factor. However, these data are not convincing in regard to the individual effects of desalivation and food restriction, since the data obtained, when both factors are combined, indicate a decrease rate of caries formation and not a reduction in the incidence of caries.

19. Buttner, W. and Muhler, J. C.: The effect of a diet composed of barley and fish meal on dental caries in rats, J. D. Res. 37:419, 1958. Diets composed of ground barley and fish meal were studied for their effect on dental caries in the rat. It was shown that a diet composed of 50 per cent barley, 25 per cent fish meal, and 25 per cent sucrose was significantly less effective in initiating dental caries than a similar diet with only 5 per cent fish meal but to which 20 per cent corn grits had been added. The presence of sucrose, in the absence of initiating factors in the diet, did not increase the dental caries experience. The effect of adding 10 per cent yeast to the barley-fish meal diet was not associated with a significant reduction in dental caries.

20. Buttner, G. and Muhler, J. C.: The solubility of intact dental enamel surfaces treated with potential anticariogenic agents, J. D. Res. 37:412, 1958. A technic in which the acid solubility of human

modify the surface solubility has been presented . The results indicate a superiority for stannous fluoride over sodium fluoride and calcium zirconium fluoride. Sodium oxalate, sodium dehydroacetate, sodium-N-palmitoyl sarcosinate, and stannous sulfate were ineffective at the concentrations used in significantly inhibiting the acid solubility of the intact enamel surface.

21. Muhler, J. C.: The effect of a modified stannous fluoride-calcium pyrophosphate dentifrice on dental caries in children, J. D. Res. 37:448, 1958. A stannous fluoride-calcium pyrophosphate dentifrice containing in addition 1 per cent of a calcium sequestering agent, insoluble sodium metaphosphate, has been clinically tested. When used by 6 to 15-year-old children for 1 year the reduction was 25 and 23 per cent, respectively, when the DMFT and DMFS indices were used. Both reductions were statistically significant.

22. Muhler, J. C.: The effect of a single topical application of stannous fluoride on the incidence of dental caries in adults, J. D. Res. 37:415, 1958. The effectiveness of a single topical application of a 10 per cent stannous fluoride solution was evaluated for its ability to reduce the dental caries experience in adults. One year following the topical treatment with stannous fluoride, there were 24 per cent less dental caries when evaluated by the DMFT index and 16 per cent less when the DMFS index was used when compared to a similar group receiving a single topical application of distilled water. These reductions were significant at the 0.04 and 0.08 level of confidence, respectively.

23. Muhler, J. C.: Effects of fluoride and nonfluoride containing tin salts on the dental caries experience in children, J. D. Res. 37:422, 1958. The anticariogenic effectiveness of solutions of stannous sulfate (2 per cent) and stannous chlorofluoride (4 per cent) has been compared with distilled water when applied topically to children. The stannous chlorofluoride significantly reduced new caries development whereas the stannous sulfate was ineffective. The results of in vitro and in vivo animal studies using higher concentrations of stannous sulfate suggest that the failure of stannous sulfate to reduce dental caries in this study was a result of the low stannous ion concentration.

24. Buttner, G. and Muhler, J. C.: Fluoride placental transfer in the rat, J. D. Res. 37:326, 1958. A total of 7 groups of rats received different amounts of fluoride in the drinking water during pregnancy and lactation. The skeletal fluoride storage of the pulps was determined. These data indicate that drinking water at a concentration of 10 ppm F must be received by the mother before any appreciable increase in carcass fluoride is found in the pups. Data are presented which indicate a mammary gland transfer, especially at higher fluoride levels.

25. Muhler, J. C.: The effect of varying levels of fluoride on dental caries in salivaria denectomized rats, J. D. Res. 37:170, 1958. In 2 separate studies, stannous chlorofluoride and stannous fluoride have been shown to reduce significantly the dental caries experience in salivaria-denectomized rats. Increasing the amount of fluoride in the drinking water, as sodium fluoride, decreases the dental caries experience while a similar increase in the fluoride concentration of the drinking water, furnished as stannous fluoride, had no effect on caries. These data may be explained by the study designed to compare the anticariogenic effectiveness of 2 stannous fluoride preparations. Analysis of the data indicated pronounced differences in fluoridated water intake and minor differences in food intake. At a level of 100 ppm fluoride in the drinking water as stannous fluoride, there was approximately a 40 per cent reduction in water consump-

tion when compared to a group receiving 10 ppm fluoride in the drinking water. It is suggested that food intake, water intake, and feeding habits be carefully controlled in experimental dental caries studies.

26. Muhler, J. C.: Topical treatment of the teeth with stannous fluoride—single application technique, J. Dent. Children 25:306, 1958. A description of the technique of making and applying stannous fluoride in clinical practice for the control of human dental caries in children and adults.

27. Mumford, G. and Phillips, R. W.: Dimensional change in wax patterns during setting of gypsum investments, J. D. Res. 37:351, 1958. A technique for measuring the change in dimension and distortion of invested wax patterns was developed. By this means the effects of setting and hygroscopic expansion of the investment on the mold was investigated. All investing techniques (two hygroscopic and conventional technics) produced distortion of wax patterns. The least distortion was produced by an experimental investment of very low setting expansion. Distortion began within one minute after the initial set of the material and reached its maximum within one hour.

28. Phillips, R. W.: Elastic impression materials—a second progress report of a recent conference, J. South. Calif. D. A. 26:150, 1958. This is a summary of a seminar held by the Committee to Investigate Elastic Impression Materials. This conference, attended by technical representatives from dental manufacturers, the dental profession, dental schools and the National Bureau of Standards, was devoted to an analysis of the current knowledge of the newer elastic impression materials. The conclusions of the conference were that the better brands of reversible hydrocolloid, Thiokol and silicone impression materials are of the same general accuracy and thus selection of a particular material would depend upon ease of manipulation and the amount of direct work being done. With rubber materials the importance of employing a minimal and uniform bulk of material adequately bonded to the tray was emphasized. Batch alterations are occurring with the silicones in an effort to provide better shelf life, less tackiness and more body to the material.

29. Schnell, R. J. and Phillips, R. W.: Dimensional stability of rubber base impression materials and certain other factors affecting their accuracy, J.A.D.A. 57:39, 1958. The purpose of this paper was to evaluate the accuracy of rubber base materials as a group and to determine the influence exerted by certain variables such as storage time, storage media, bulk of material and use of a double mix technic. The results indicated none of the rubber base materials to be dimensionally stable. The degree of distortion increased with storage time although the type of storage medium seemed to exert little influence. Accuracy decreased as the bulk of material in the tray was increased or when there was an uneven distribution of material. There was less distortion when a double mix technic was used. Over-all the accuracy of all brands tested was satisfactory, results being comparable to or better than that of reversible hydrocolloid.

30. Mumford, G. M. and Phillips, R. W.: Measurement of thermal expansion of cristobalite type investments in the inlay ring—preliminary report, J. Pros. Dent. 8:860, 1958. A test method for measurement of the thermal expansion of dental investments confined by a casting ring was developed and the thermal expansion of Cristobalite investments were studied. It was found that the thermal expansion of investment is restricted by the ring and that when a single asbestos liner is used, the expansion of Cristobalite is only 0.5 per cent in some areas of the ring. Expansion is greater in areas of the

(Continued on page 38)

Senior Honor Day Awards

The Dental Honors Day program was held in the Student Union Building at the I.U. Medical Center on Sunday afternoon, June 7. The program, honoring the 66 dental seniors and the 24 dental hygiene graduates, was directed by Dean Maynard K. Hine and was attended by the families and friends of the two classes. A reception followed the ceremony.

Graduates with high distinction, James Beck, Indianapolis and Laurence Hodge, Richmond, and the graduates with distinction, Joseph L. Bigelow, Valparaiso, David Bixler, Indianapolis, W. Joe Hilton, Indianapolis, Samuel Miller, Indianapolis, Kent E. Wilson, Elkhart, and dental hygienists Carol Gutwein, Rensselaer and Nancy Hammel, Monon, were presented fourrageres.

Mr. Beck also received first place in the cancer research essay contest, honorable mention in the senior essay contest, showed an outstanding scholastic record for four years of dental study at Indiana University School of Dentistry and was elected to membership in Omicron Kappa Upsilon, national dental honor society.

Dr. Rolando Bernui, Carhuaz, Peru, received the certificate for proficiency in dental medicine, and the American Academy of Gold Foil award was presented to Gerald E. Nickens, Evansville. Certificates of merit from the American Society of Dentistry for Children were awarded to Stanley C. Herman, Indi-

Newly elected members of Omicron Kappa Upsilon . Top row—Hilton, Beachy, Wilson, Beck, Hodge. Bottom row—Dr. Samuel Patterson, president of local chapter, Miller, Bigelow, Bixler, Hirschman.

anapolis and Robert J. Walden, Indianapolis, and the Robert A. Botkin award went to Robert Hirschman, Indianapolis, senior class president.

Dr. George Stratigos, Piraeus, Greece, won top honors in both the radiology diagnosis contest and the senior essay contest, and the student showing most improvement since freshman year was James F. Grimes, Michigan City, who also placed second in the senior essay contest. The certificate for proficiency in roentgenology went to Robert Radcliff, Fredericksburg, while Dr. Peter Sturzenberger, Schweinfurt, Germany, received awards for his outstanding work in crown and bridge and for third place in the radiology diagnosis contest.

Miss Nancy Porter, Greenwood, received an award for proficiency in dental hygiene and was elected to membership in Sigma Phi Alpha, honorary dental hygiene sorority. Miss Fisk conducted the dental hygiene pinning ceremony, and wives of the dental seniors were presented "P.H.T." certificates by their husbands as recognition of their "pushing husbands through" four years of dental school.

AWARDS AND RECIPIENTS

Fourrageres:
- for high distinction—
  - James Beck, Indianapolis
  - Laurence Hodge, Richmond
- for distinction—
  - Joseph L. Bigelow, Valparaiso
  - David Bixler, Indianapolis
  - W. Joe Hilton, Indianapolis
  - Samuel Miller, Indianapolis
  - Kent E. Wilson, Elkhart
  - Carol Gutwein, Rensselaer, dental hygiene
  - Nancy Hammel, Monon, dental hygiene

C. V. Mosby Awards for proficiency:
- dental hygiene—Carol Gutwein, Rensselaer
- prosthetics—Clayton Dunton, Indianapolis
- oral diagnosis—Laurence Hodge, Richmond
- endodontia—Ronald P. Scheele, Indianapolis
- dental materials—Samuel J. Miller, Indianapolis

Omicron Kappa Upsilon Radiology Diagnosis contest:
- 1st—Dr. George Stratigos, Piraeus, Greece
- 2nd—Theophilos Michaelides, Indianapolis
- 3rd—Dr. Peter Sturzenberger, Schweinfurt, Germany

Cancer Essay Contest (U. S. Public Health Service) awards:
- 1st—James O. Beck, Indianapolis
- 2nd—W. Joe Hilton, Indianapolis
- 3rd—Charles B. Clayton, Dale

Senior Essay Contest:
- 1st—Dr. George Stratigos, Piraeus, Greece
- 2nd—James F. Grimes, Michigan City
- 3rd—Marvin Nattel, Indianapolis

Omicron Kappa Upsilon (national dental honor society) memberships:
- Larry L. Beachy, Goshen
- James O. Beck, Indianapolis
- Joseph L. Bigelow, Valparaiso
- David Bixler, Indianapolis
- W. Joe Hilton, Indianapolis
- Robert B. Hirschman, Indianapolis
- Laurence K. Hodge, Richmond
- Samuel Miller, Indianapolis
- Kent E. Wilson, Elkhart

Sigma Phi Alpha, (dental hygiene honorary sorority) memberships:
- 1959—Nancy Hammel, Nancy Porter
- 1958—Ann Buche, Carol Guthrie
- 1957—Marilyn Hall Smith, Belva Whaley
- 1956—Phyllis Wolf Rhodes, Judith Patterson Hodge
- 1955—Mary Sheets Sanders, Carolyn Tucker
- 1954—Geraldine Bailey, Joan E. Robinson
- 1953—Mary Anne Keenan, Elizabeth Gilchrist Keck
- 1952—Gloria Horn Nuxoll, Pauline C. Revers

Indiana State Dental Laboratory Association, awards for:
complete denture—Horace E. Lyon, Brownsburg
partial denture—James F. Grimes, Michigan City
crown and bridge—Larry L. Beachy, Goshen

Robert A. Botkin Memorial Award:
Robert Hirschman, Indianapolis

Interfraternity Council, scholarship, plaque:
1st—Xi Psi Phi (Dr. Tarplee)
2nd—Psi Omega (Dr. Hohlt)

Hamilton Discussion Club award for outstanding work in crown and bridge:
Dr. Peter Sturzenberger, Schweinfurt, Germany

American Academy of Periodontology awards:
James Grimes, Michigan City
Max L. Schaeffer, Angola

American Academy of Oral Roentgenology proficiency award:
Robert Radcliff, Fredericksburg

Alpha Omega (national chapter) award for outstanding scholastic record:
James O. Beck, Indianapolis

American College of Dentists, award to student showing greatest improvement since freshman year:
James F. Grimes, Michigan City

Sophomore with outstanding record in freshman year:
David H. Sawyer, Sidell, Ill.

Indiana Society of Oral Surgeons award:
Dr. George Stratigos, Piraeus, Greece

American Academy of Dental Medicine award for proficiency:
Dr. Rolando Bernui, Carhuaz, Peru

American Academy of Gold Foil award:
Gerald E. Nickens, Evansville

Indiana State Dental Hygienists Association proficiency award:
Nancy Porter, Greenwood

American Society of Dentistry for Children certificates of merit:
Stanley C. Herman, Indianapolis
Robert J. Walden, Indianapolis

Graduating class repeats dental hygiene oath. Miss A. Rebekah Fisk, director, conducts ceremony at annual honor day program.

Dean Hine reports that...

Congratulations are due to 66 senior students who were graduated from Indiana University School of Dentistry on June 8, 1959. From this class 41 went into private practice, 14 into the Armed Forces, 9 took internships or went into graduate study, 1 into education and research and 1 into industry.

Special commendation is due to Dr. James O. Beck and Dr. Laurence K. Hodge since they were graduated with "high distinction" and to Drs. Joseph L. Bigelow, David Bixler, W. Joe Hilton, Samuel Miller and Kent E. Wilson, who were graduated with "distinction".

Progress in the addition to the dental school is noticeable but discouragingly slow. Firm dates for its completion and occupancy are not yet established but it appears likely that it is at least another year away. We are taking advantage of the summer months to connect the addition with our present building so most of our days are accompanied now with the sound of air hammers, mallets and saws. Connecting the two buildings requires the demolition of part of the wall of our present dental building, and we are hopeful that the accompanying noise, dust and inconvenience will be over by the time school begins in the fall.

Work on our present building recalls the remodeling which was done to our present dental school building about ten years ago. At that time we were overcrowded with students and this coupled with the noise and shifting around of classes, etc., made teaching—and learning—more difficult. We were interested to note, however, in talking with a student who attended school at the height of our remodeling program, that he had not been particularly aware of the handicaps that were imposed upon him due to the remodeling. Perhaps we worry too much about occasional outbursts of noise or shifting around of classes!

We are pleased to announce that Dr. Paul Starkey, a graduate of 1943, has agreed to join the faculty in the Department of Pedodontics as a full time teacher this fall. Dr. Starkey is a diplomate of the American Board of Pedodontics and is a well-respected practitioner from Dayton, Ohio. Several other men have agreed to join the faculty on a full or part-time basis but details of many of the appointments have not yet been worked out.

Reports from the Council on Dental Education recently received indicate that in the past ten years graduates of Indiana University School of Dentistry have made a fine record in passing State Boards. The percentage of failures of recent graduates has been considerably below the national average. Also, the group of graduates of Indiana who have been in practice for a few years and then decided to take other State Board examinations had a higher percentage of success than the national average.

Postgraduate activities at the dental school continue to expand; details of the program for next year are announced elsewhere and we hope that many dentists in Indiana will attend these courses. It is generally accepted that the dental school has a responsibility to provide opportunities for graduate dentists to keep up to date, and that the dental practitioner has an obligation to his patients to keep informed.

The freshman class of 1959 has been selected and as in the past few years is completely filled. The class average will again be a low "B" with an average of 110 hours completed. At the present time it appears that the class will include two women students and 83 men, all but seven from Indiana.

M. K. Hine, Dean

Dental Hygiene

A. Rebekah Fisk, Director

The 1959 graduation festivities started with Honors Day in the Student Union Building on Sunday, June 7. Carol Gutwein received a certificate for a book which was the Mosby award for high scholastic average. Nancy Patterson received a year's membership in the American Dental Hygienists Association and the Indiana State Dental Hygienists Association for clinical proficiency awarded by the Indiana State Dental Hygienists Association. Nancy Hammel and Nancy Porter were elected to Sigma Phi Alpha honorary sorority and were presented their certificates of membership. Nancy Hammel and Carol Gutwein received fourragere cords for high scholastic average. All members of the class received their class pins.

The graduation ceremony and presentation of certificates in Bloomington the following day culminated the festivities. Everyone then returned to Indianapolis to take the last hurdle—the State Board Examination. All graduates had definite plans for the future. Carol Arnold and Edna Railey will continue their education to complete requirements for a Bachelor of Science degree with a major in health education. Linda Swihart will also continue in school to complete a Bachelor of Science degree with a major in anatomy and physiology. On successful passage of State Board Examination the following will be associated with dentists in private practice. In Indianapolis, Jean Bushong will be with Dr. Betty Koss, Sondra Cleeter with Drs. Edwin Pollack and Gerald Epstein, Tamara Clift with Dr. R. E. Clift, Deanne Conrad with Dr. William Crawford, Nancy Hammel with Drs. Willard Stamper and Robert Tarplee, Karen Hueston with Dr. Gordon Abbott, Karen Lucus with Dr. Leon Berger, Jolene Richetta with the Penn Dental Group, and Carol Temme with Drs. Jack Carr and Philipp Bly. Lynn Hamrick will join the staff of the Dental Division of the State Board of Health. In Lafayette Carol Barton will be with Dr. Dale Harvey, Ruth Cadle with Dr. R. B. Price and Josephine Snouwaert with Dr. Y. B. Hall. In Bloomington Kay Camp will be in the office of Dr. Robert Baugh and in Evansville Karen Drier will be in the offices of Drs. Eugene Brinker and Robert Shellenberger. Carol Gutwein will be associated with Dr. William Border in Monon, Norene Martin with Dr. W. E. McCloughan in South Bend, Judith Shank with Dr. Edwin Errington of Fort Wayne and Myrtle Starr with Drs. George and Jack Price in Anderson. Sandra Klein will return to her home in Scranton, Pennsylvania where she will be associated with Drs. Frank and Dan Gardner and Nancy Porter will go to Danville, Illinois where she will be associated with Dr. Donald Carpenter.

As this section of the next issue will be devoted to news of our alumnae, we would like to hear from you.

Postgraduate Courses 1959-60

CLINICAL ORAL PATHOLOGY AND ORAL MEDICINE

The course will be given by Drs. William G. Shafer and S. Miles Standish, department of Oral Pathology, on four consecutive Wednesdays, and the dates are September 23, 30, and October 7 and 14. This is specially designed for the general practitioner in order to keep him abreast of current developments and to act as a refresher course. Emphasis will be placed on the more common oral diseases, but suf-

ficient time will be devoted to other conditions to assure understanding of both systemic and local complications of the less common diseases.

Fee, $60.00

OPERATIVE DENTISTRY

The department of Operative Dentistry will be giving a course October 19-22. The course will cover basic concepts, techniques and new information which is pertinent to the routine practice of Operative Dentistry. A highlight of the course will be a full-day symposium on Wednesday, October 21. Guest lecturer, Dr. John Mosteller, Mobile, Alabama, and faculty will present practical office procedures for amalgam, gold foil, impression materials and full-mouth restorative procedures.

Fee, $60.00

CHILDREN'S DENTISTRY

A participation in pedodontics will be given November 9, 10, 11, and 12. Designed for the general practitioner who includes children in his practice, the course will consist of lectures, demonstrations and clinical participation. Emphasis will be on child management, diagnosis and treatment planning, economics, clinical procedures, space maintenance and pulp therapy. All instruction will be from the staff, Department of Pedodontics.

Fee, $60.00

PARTIAL DENTURE

There will be a one-day symposium December 2 on "Partial Denture Design and Construction". Guest lecturer will be Dr. Walter Hall, Jr., School of Dentistry, Loyola University, New Orleans, Louisiana. In addition to this, the Crown and Bridge Department will present two prostheses and stress the importance of surveying and case planning. Correlated with this will be mouth preparation, tooth form and arrangement, equilibration, post delivery service and prescription writing. Laboratory service will also be covered. There is no fee for this course.

ORAL SURGERY

The Department of Oral Surgery will present a course "Dentistry in the Hospitals" on five consecutive days, December 7, 8, 9, 10, 11. This is limited in attendance to general practitioners having a formal hospital appointment of "courtesy staff or above". A symposium on Wednesday, open to all dentists and dental students, will be a highlight of the week. This will be a refresher course for hospital decorum, surgical procedures and techniques. There will be no charge for the symposium, but $75 if the entire course is taken.

DENTAL ASSISTANTS

A two-day course for Dental Assistants will be given February 24, 25. Given by members of the faculty, the course will include lectures and demonstrations on office management, impression materials, metalized dies, child control, care of handpieces and instruments, investing, casting, soldering, flasking and relining partials. Also included will be lectures on amalgam, cements, staining and glazing facings and shade selection.

ORTHODONTICS

The Orthodontic Department is giving a one-day symposium March 9 on "Interceptive Orthodontics". Given for general practitioners, the morning session will include presentations on serial extractions, intercepting malocclusions, and simple appliance therapy. The afternoon will include a panel discussion on the management of pernicious habits by a pedodontist, pediatrician, orthodontist, and psychiatrist. There will also be discussion on space maintenance and the proper handling of materials during appliance fabrication. All speakers and panelists will be from the local area.

CROWN AND BRIDGE

There will be a course on Crown and Bridge Construction on four consecutive days, April 11, 12, 13, and 14. This will

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Library

Statistics, acquisitions and services — *Mrs. Mabel Walker, Librarian*

With the Annual Report just completed it is interesting to compare the activities of 1958-1959 with those of 1957-1958. The increase in circulation the past year is identical to the increase the previous year with regular circulation showing an increase of 1000 and overnight reserves more than doubling those of last year. This is accounted for by the continued growth of the graduate and research programs, the additional number of scientific papers produced through the latter as well as additional student papers required by faculty and the increased reference use of the library required by the faculty.

The total additions of cataloged and processed material show an increase of 50 per cent over those of last year.

Current periodicals received total 364 with the following subscriptions added during the year:

Animal Care Panel, Proceedings
Archives of Oral Biology
Helvetica Odontologica Acta (Switzerland)
Oklahoma State Dental Association, Journal

Users of the library increased one fourth over those of the previous year.

A long needed file of bibliographies was established this year. It currently contains 76 bibliographies consisting chiefly of those compiled by seniors when writing award essays and those compiled by freshmen when writing papers for their nutrition course and including those compiled by the library staff for the use of patrons as well as printed bibliographies in pamphlet form. Many more are waiting to be processed as time permits. It is hoped this file will save much time for both students and faculty when making exhaustive subject searches. The new file is a vertical one and will replace the old 3x5 card file of bibliographies of student papers.

Gifts of books and periodicals have been received during the year from the following members of the faculty: Dean M. K. Hine, Dr. R. L. Bogan, Dr. D. A. Boyd, Dr. D. M. Cunningham, Dr. J. F. Johnston, Dr. D. F. Mitchell, Dr. Richard Norman and Dr. Henry Swenson.

Other book and periodical donors have been:

Baylor University, College of Dentistry
College of Medical Evangelists
Indiana State Board of Health
Lilly Research Laboratories
Loyola University, School of Dentistry
Medical Library Asociation Exchange
Mr. Richard Scott
Dr. R. D. Smiley
Dr. C. E. Worth
University of California Medical Center
University of Pittsburgh, School of Dentistry
Western Reserve University, School of Dentistry

The largest gift from the library the past year was a total of 205 single issues of periodicals sent to the University of Korea, School of Dentistry.

The library staff the coming year will be composed of three full-time persons and two part-time student assistants. The past year the library hours were from 8 a.m. to 5 p.m., Tuesday, Wednesday and Friday and 8 a.m. to 8 p.m., Monday and Thursday. Consideration is being given to additional hours the coming year.

The following selected new books have been added to the library the last few months and are available for loan to alumni:

Austin, Kenneth P.; Lidge, Ernest F., Jr. — Partial dentures. St. Louis, Mosby, 1957.

Berke, Joseph D. — The linked arch appliance. New York, Charles Press, 1957.

Berlove, Ira Jay — Dental-medical emergencies and complications. Chicago, Year Book Publishers, 1959.

Blass, J. Lewis — Motivating patients for more effective dental service. Philadelphia, Lippincott, 1958.

Bohr, Niels Henrik David — Atomic Physics and Human Knowledge; New York; Wiley, 1958

Brauer, John Charles — Dentistry for Children, 4th ed.; New York, Blakiston Division, 1958.

Bunting, Russell Welford — Oral Hygiene. 3rd ed. Philadelphia, Lea & Febiger, 1957.

Caplow, Theodore — The academic marketplace. New York, Basic Books, 1958.

Cecil, Russell LaFayette — A textbook of medicine. 9th ed. Philadelphia, Saunders, 1955.

Cheraskin, Emanuel — Dynamics of oral diagnosis. Chicago, Year Book Publishers, 1956.

Ciba Foundation — Ciba Foundation symposium on bone structure and metabolism. Boston, Little, Brown, 1956.

Coolidge, E. D. & Hine, M. K. — Periodontology. 3rd ed. Philadelphia, Lea & Febiger, 1958.

Dahlin, David C. — Bone tumors. Springfield, Thomas, 1957.

Denton, George Bion — The Vocabulary of Dentistry and Oral Science; Chicago; American Dental Association, 1958.

De Sanctis, Adolph George et al. — Handbook of pediatric medical emergencies. 2d ed. St. Louis, Mosby, 1956.

Eastman Kodak Company — How to make good movies; a non-technical handbook. Rochester, N. Y., 1938.

Engström, Arne, et al. — Bone and radiostrontium. New York, Wiley, 1958, c1957.

Evans, Francis Gaynor — Stress and strain in bones. Springfield, Illinois, Thomas, 1957.

Gabel, Arthur Bertram — The American textbook of operative dentistry. 9th ed. Philadelphia, Lea & Febiger, 1954.

Gehl, Daniel H.; Dresen, O. M. — Complete dental prosthesis, 4th ed. Philadelphia, Saunders, 1958.

Gershkoff, Aaron — Implant dentures. Philadelphia, Lippincott, 1957.

Glickman, Irving — Clinical periodontology, 2d ed. Philadelphia, Saunders, 1958.

Henderson, Isabella Ferguson — A Dictionary of Scientific Terms, 6th ed.; Princeton, New Jersey; Von Nostrand, 1957.

Hine, Gerald J., ed. — Radiation Dosimetry.; New York; Academic Press, 1956.

Illingsworth, Ronald S. — The normal child. 2d ed. Boston, Little, Brown, 1957.

Jaffe, Henry Lewis — Tumors and tumorous conditions of the bones and joints. Philadelphia, Lea & Febiger, 1958.

Jawetz, Ernest, et al. — Review of medical microbiology. 3d ed. Los Altos, Calif., Lange Medical Publications, 1958.

Jones, Madison. Dow, Thomas Davidson, comp. — History of the Tennessee State Dental Association. Nashville, Tenn. D. A., c1958.

Karlstrom, Sam — The Pontostructor method for the construction of fixed bridges, crowns and inlays. Stockholm, 1955.

Lammie, George Alexander — Full dentures. Oxford, Blackwell Scientific Publications, 1956.

Lichtenstein, Louis — Bone tumors, 2d ed. St. Louis, Mosby, 1959.

Martell, Arthur Earl	Chemistry of the metal chelate compounds. New York, Prentice-Hall, 1952.
Mayer, David McCullagh	Anomalies of infants and children. New York, Blakiston Division, 1958.
Miller, Samuel Charles	Oral diagnosis and treatment, oral medicine. 3d ed. New York, Blakiston Division, 1957.
Moorrees, Coenraad F. A.	The Aleut dentition. Cambridge, Harvard University Press, 1957.
Moyers, Robert F.	Handbook of orthodontics. Chicago, New Book Publishers, 1958.
Nagle, Raymond J.	Dental prosthetics; complete dentures. St. Louis, Mosby, 1958.
Neuman, William Frederick; Neuman, Margaret W.	The chemical dynamics of bone mineral. Chicago, University of Chicago Press, 1958.
Patton, Edwin Fritz	Pediatric index. St. Louis, Mosby, 1958.
Pennes, Harry Harvey, ed.	Psychopharmacology; Pharmacologic Effects on Behavior, New York, Hoeber-Harper, 1958.
Peterson, Shailer Alvarey, ed.	Clinical dental hygiene. St. Louis, Mosby, 1959.
Peyton, Alice B.	Practical nutrition. Philadelphia, Lippincott, 1957.
Scott, James Henderson	Introduction to Dental Anatomy, 2d ed. Edinburgh, E. & S. Livingstone, 1958.
Shackleton, Alberta Dent	Nutrition manual for nurses. Rev. ed. Ithaca, New York, 1957.
Shore, Nathan Allen	Occlusal equilibration and temporomandibular joint dysfunction. Philadelphia, Lippincott, 1959.
Smith, Richmond W., et al, eds.	The hypophyseal growth hormone, nature and actions. New York, Blakiston Division, McGraw-Hill Book Co., 1955.
Stafne, Edward C.	Oral roentgenographic diagnosis. Philadelphia, Saunders, 1958.
Stanier, Roger Y., et al.	The microbial world. Englewood Cliffs, N. J., Prentice-Hall, 1957.
Stoll, Frances A.	The dental hygienist; a professional career for women. New York, Dental Hygienists Alumnae Association, Columbia University, 1957.
Strang, Robert Hallock W.	A text-book of orthodontia. 4th ed. Philadelphia, Lea & Febiger, 1958.
Tanner, James Mourilyan	Growth at adolescence. Springfield, Illinois, C. C. Thomas, 1955.
Turner, William Patrick	A history of dentistry in West Virginia, 1907-1952. Morgantown, West Virginia, 1952.

Alumni Notes

by Mrs. Cleona Harvey, Recorder

Once again Alumni Bulletin publication time has rolled around; seems as though it has been no time since I was extending "late" Christmas greetings to all of you!

This has been the usual busier-than-busy spring with us, what with graduating one class and selecting another!

I wish to reiterate that it is my earnest desire to serve you through this column, and I do sincerely thank you for the many notes, changes of address, etc., that you have sent in. I am sure that your classmates appreciate hearing news of you, also!

And since this is the 50th anniversary of the Class of 1909, we shall begin our "gleanings" with news of that class! An asterisk (*) before the name indicates we did not receive a reply to our letter; if you know of the adddress of those for whom we have none, we shall appreciate hearing from you!

Class of 1909

In response to letters sent out to the members of the class, we have received the following addresses and news items:

James F. Applewhite
Deceased

Harley L. Bish
129½ South Main Street
Peru, Indiana
"Retired"

Edward H. Blake
Deceased

Frederick Bridges
Deceased

*James Lee Brown
Address unknown

*Inlow I. Burton
Address unknown

H. G. Cain
Deceased

John Roscoe Carnahan
Deceased

Harry W. Cawley
5231 Hohman Avenue
Hammond, Indiana
"I have reduced my working hours about one half—am feeling fine and hope to continue a few more years."

*I. M. Coogle
Address unknown

Walter L. Cowan
Deceased

*C. W. Doyel
Address unknown

James K. Duff
Deceased

William E. Garritson
Deceased

Samuel J. Grossnickle
403 Anderson Bank Bldg.
Anderson, Indiana
"I have considered all my instructors in dental school as wonderful friends since graduation."

*J. W. Hardwick
Address unknown

*Victor H. Hilgemann
2902 Fairfield Avenue
Fort Wayne, Indiana

Frank E. Hill
Deceased

Ova E. Hite
Deceased

Robert H. Hopkins
Deceased

Rolla M. Hubbard
Deceased

Douglas J. Hunter
Deceased

Everett M. Hurst
Deceased

*John C. T. Johns
Address unknown

A. R. Killian
720 South 12th
Lafayette, Indiana
"Have been retired since 1945"

Joseph H. Kraning
118 Court Street
Monticello, Indiana
"Victor Hilgemann of Fort Wayne, who is retired now is our class president. Our class had had a meeting each year for five years at the Columbia Club. Walker Woodrum of Pueblo, Colorado, was present this year."

Jacob A. Kreutzer
Deceased

Rolla N. Luse
Deceased

*W. L. McMurray
Address unknown

Carl M. Magnuson
Deceased

Edward B. Martin
Deceased

Harry G. Mayer
Deceased

Charles A. Meeks
Deceased

David W. Montgomery
1722 Binney Drive
Fort Pierce Beach, Florida
"Since retiring I have moved to Florida, address as above. I would be glad to have classmates call on me."

*Charles E. Morgan
1005 Odd Fellow Bldg.
Indianapolis, Indiana

*Erma C. Oberdorf
Address unknown

Raymond H. Richardson
228 Walnut
North Vernon, Indiana
"I am at present employed at Muscatatuck State School five days a week and in my office on Saturdays."

Edmond F. Riddell
Deceased

*Paul J. Ritchie
Address unknown

Claud W. Rodger
112 West Fourth Street
Sedalia, Missouri

Pearl Lillian Russell
Deceased

Frederick W. Seidel
6381 Hollywood Blvd.
Hollywood, California

George J. Smith
Deceased

Harold Stephens
Deceased

Harry C. Tolliver
Deceased

George E. Weir
Deceased

Walter J. Wilson
612 Main Street
Petersburg, Indiana
"In one location since 1913 and have enjoyed every day of my practice. With best wishes and respects to all of '09 Class."

*William W. Woodrum
Erickson Block
Pueblo, Colorado

E. E. Young
Deceased

Class of 1890

Dr. George W. Tainter, 130 McDonough Street, Saint Charles, Missouri, drops us a note saying "44 years same address and still going strong!"

Class of 1892

We are sorry to have to report the death of Dr. A. A. Powell; he passed away June 11, 1958, but we were not informed of this until early this year.

Class of 1936

Dr. Frank L. Loskot sends us a change of address:
264 Broad Street
Bloomfield, New Jersey

Class of 1942

We have been informed that Dr. Robert Pickard, Hathcock Building, Fayetteville, Arkansas, was appointed a member of the Arkansas State Board of Dental Examiners last year.

Class of 1948

Dr. R. D. Avery, Room 412, Warren Bldg., Michigan City, Indiana, writes that he "was with state penal departments for almost six years; however, with four young ones getting to the size they are, the wife and I both felt that I should spend a little more time at home" and so sent us the above change of address.

Class of 1949

Dr. Wigand Kenter, 218 East Kirkwood, Bloomington, Indiana, has been ill; we are pleased to report that he is much improved.

Class of 1950

Dr. H. T. Risley, 117 South Sixth Avenue, Goshen, Indiana, says it doesn't seem like it has been nine years since his graduation from dental school!! How do the rest of you feel?

Class of 1954

Dr. Robert Blu, 4141 Claredon Avenue, Chicago 13, Illinois, wrote a very interesting letter to Dr. Johnston on December 21, 1958 in which he said, "Our tour of duty at Staten Island lasted only one year . . . we came here to the P. H. S. Hospital last July and are enjoying it thoroughly. I am deputy chief of the dental service and will be promoted to Dental Surgeon (Major) the first of the year. You may remember that John Ames served his internship here a couple of years ago. His performance reflected great credit on old I.U. We are enjoying good health and our little Philip will be 14 months old on Christmas Day . . . We have seen the McCloughans and Szakalys several times this past year."

And then on March 29 I had the pleasure of receiving a nice letter from Dr. Blu myself, saying he is now Dental Surgeon, which is equivalent to a Major in the Army. He continues, "I am deputy chief of the dental service at the USPHS Hospital in Chicago. You will recall that John Ames interned here; he made a very fine record and is remembered kindly by those who knew him. We have a huge apartment on the hospital grounds and a grand play area for the children. As you know, we now have four youngsters. They do not want for playmates here, for there are something like thirty children living on the station.

"This is a most enjoyable assignment; my professional associations are of the highest order and the equipment is excellent.

"I hope to be able to attend the May meeting in Indianapolis so I will see you all then."

Class of 1955

Dr. Delmar R. Miller, 1047 Michael Road, Daytona Beach, Florida, wrote us this spring saying, "I am enjoying my work with the Florida State Health Department. I live in Daytona Beach and operate dental clinics in this city and in Deland. My work is exclusively with children. I was happy to have met Dr. McDonald at a recent meeting of pedodontists in Miami. Indiana faculty members seem to be highly regarded here; also, Indiana University School of Dentistry commands the respect of Florida dental people."

Class of 1956

We have learned that Dr. and Mrs. John Austin, 1313 North Second Street, Phoenix, Arizona, are going "around the world with the SS Flying Hawk." They were due to leave New York on July 17 and return to San Francisco on October 5; they will visit such fascinating places as Beirut, Alexandria, Port Sudan, Singapore, Hongkong, Pusan, Yokohama.

Dr. E. J. Fiedler, 1038 South Glendora Avenue, West Covina, California, writes "I have been in practice here in California for one year in the town of West Covina and have a fine practice in a new office. Sue, my wife, is practicing hygiene in two offices here also. . . . We have a boy 1½ years who is doing fine. Hope to have one or two more!

"If any of the fellows have a yen to come to Los Angeles way for a vacation please look us up since we are very easy to find; the West is fine country that you just cannot get out of your blood."

Dr. David Lehman, 5015 West Jackson Blvd., Chicago 44, Illinois, writes,

"I am now completing my residency in oral surgery at Cook County Hospital and it's been quite an experience. As I look back on these past three years, I'm amazed at all phases of pathology, diagnosis and treatment that I've been fortunate enough to see. I think supervised clinical training *after* graduation has great advantages, not only in oral surgery but in all phases of dentistry."

Dr. James L. Pittman, sent us the following address: 121 West William, Apartment 3, Ann Arbor, Michigan,

Dr. George B. Robinson, 1122 Fifteenth Street, Bedford, Indiana, writes that he has been discharged from the Navy and practicing general dentistry in Bedford. He and Mrs. Robinson are parents of three girls (one set of twins) born while he was a Navy dentist.

Class of 1957

Captain Richard N. Myers, AO 3077232, 3913th CS Sp, APO 127, New York, New York, is going to England, taking his family along. He will be stationed 70 miles out of London.

Dr. J. L. Stamper, 117 South Elm, Toppenish Washington, writes us, February 12, 1959:

"About two years ago this time I was anxiously looking forward to graduation. Now my wife, daughter and I are looking forward to the completion of my military duty. We have spent our time with the Yakima Indians in the beautiful Yakima Valley of Washington State. We have enjoyed our stay here because it has been much like private practice and I have practiced a great deal of pedodontia. I am sure that I am better prepared for general practice after the many experiences I've had while here."

Class of 1958

We have received the following address for Dr. Robert B. Erwin:

25 East McKenzie Road, Greenfield, Indiana.

Dr. William Hart sent us the following address: 423 Cherry Ridge Drive, San Antonio, Texas.

Mrs. Walker, our librarian, has received letters from Dr. S. L. Mangi and Dr. Alegria Zita, giving her the following address:

Dr. S. L. Mangi
91, Jail Road
Indore (M. P.) India,
Dr. Alegria C. Zita
1357 Felina, Paco
Manila, Philippines

Dr. Zita told Mrs. Walker that she is teaching in two schools in the afternoons and two mornings a week does private practice in her office. She says her mother is also a dentist, but she is gradually turning her practice over to Dr. Alegria Zita.

Dr. Zita reported to Mrs. Walker that she had a most enjoyable trip home, visiting England, France, Switzerland, Spain, Italy, Bangkok and Hongkong on the way; she says she spent more than a month visiting in these places.

And here are the addresses of our latest graduates—

The Class of 1959

Wayne O. Abbott
690 S. Main Street
Martinsville, Indiana

C. William Able
Sullivan State Bank Bldg.
Sullivan, Indiana

Donald E. Arens
6400 West 10th Street
Indianapolis, Indiana

Larry L. Beachy
Westwood Shopping Center
U. S. 33
Goshen, Indiana

James O. Beck
1121 W. Michigan Street
Indianapolis 2, Indiana

Rolando Bernui
c/o Hirschell Malott
R. R. # 1
Bargersville, Indiana

Joseph L. Bigelow
1121 W. Michigan Street
Indianapolis 2, Indiana

David Bixler
1121 W. Michigan Street
Indianapolis 2, Indiana

Harold E. Brewer
620 N. Walnut Street
Seymour, Indiana

William J. Brown
907 N. Webster Street
Kokomo, Indiana

Donald L. Christy
1121 W. Michigan Street
Indianapolis 2, Indiana

John K. Clark
2101 Winton Avenue
Indianapolis, Indiana

Charles B. Clayton
191 W. Harrison Drive
Seymour, Indiana

Jerry W. Daubenspeck
Jonesboro, Indiana

Raymond L. Dennany
R. R. # 2
West Terre Haute, Indiana

Clayton E. Dunton
2110 Alabama Avenue
Fort Wayne, Indiana

Anthony Dziamski
Gen. Hospital Extern Qtrs.
Indianapolis, Indiana

Gilbert Eberhart, Jr.
1121 W. Michigan Street
Indianapolis 2, Indiana

David S. Eberly
310 Edgewood
Indianapolis, Indiana

James A. Evans
4447 Broadway
Gary, Indiana

James C. Felder
1222 S. Rush
South Bend 18, Indiana

Jerrold Goldsmith
4318 West Washington
Indianapolis, Indiana

Robert M. Gordon
9 N.W. Second St.
Evansville, Indiana

James F. Grimes
403 Warren Bldg.
Franklin Street
Michigan City, Indiana

John L. Grutsch
1525 Spring St.
Ft. Wayne, Indiana

Gene F. Hedrick
209 N. Main
Salem, Indiana

Stanley Herman
1121 West Michigan Street
Indianapolis, Indiana

Verlin G. Hile
R. R. # 4
Round Lake
Columbia City, Indiana

W. Joe Hilton
108 N. Euclid
Indianapolis, Indiana

Joseph C. Hippensteel
4745 Baring Avenue
E. Chicago, Indiana

Robert B. Hirschman
1121 W. Michigan Street
Indianapolis 2, Indiana

Laurence K. Hodge
8204 Westfield Rd.
Indianapolis 20, Indiana

Donald E. Jennings
2301 S. Vine Street
Muncie, Indiana

William D. Kimbriel
5852 N. New Jersey Street
Indianapolis, Indiana

H. Edward Lyon
Bloomfield, Indiana

James Mast
2250 Wabash Avenue
Terre Haute, Indiana

Bruce T. Meyer
Flora, Indiana

Theophilos Michaelides
c/o James Giatas
10 Islington
Alston 34, Massachusetts

Samuel J. Miller
315 Park Avenue
Mishawaka, Indiana

Robert N. Modlin
87th Medical Detachment
APO 696
New York, N. Y.

Donald G. Moon
1121 W. Michigan Street
Indianapolis, Indiana

William S. Mull
916 E. Broadway
Logansport, Indiana

Adolph M. Nattell
347½ Limestone St.
Indianapolis, Indiana

Jo Ann Hearn (Nichols)
1414 College
Santa Ana, California

Gerald E. Nickens
106 N. Oakland Avenue
Evansville, Indiana

Chris G. Nikias
60-38 83rd Place
Elmhurst 73, N. Y.

D. R. Noelke
601 N. St. Joe Avenue
Evansville, Indiana

J. Leo Parson
430 E. Wylie
Bloomington, Indiana

Jerry L. Pollard
Box 233
Westfield, Indiana

Robert B. Purdy
Belle Fountain Med. Center
R. R. # 1
Hamilton, Indiana

Robert E. Radcliff
803 20th Avenue West
Bradenton, Florida

Lawrence F. Reinking
R. R. # 1, Adams Lake
Wolcottville, Indiana

Walter F. Rigdon
1609 N. Lynhurst Dr.
Speedway, Indiana

Paul B. Risk
706 Bexley Road
W. Lafayette, Indiana

Max L. Schaeffer
20th Tac. Hospital
APO 120
New York, N. Y.

Ronald P. Scheele
2901 Lillie St.
Ft. Wayne, Indiana

John H. Schulz
2803 Shelby
Indianapolis, Indiana

Ronald Sherck
403 N. 7th Street
Goshen, Indiana

George T. Stratigos
Lincoln Hospital
East 141st St. and Concord Avenue
New York, New York

Otto P. Sturzenberger
Dental Research
2762 Breezy Way
Cincinnati 31, Ohio

James R. Vest
228 S. 10th
Richmond, Indiana

Charles C. Vieck
314 Busseron
Vincennes, Indiana

Robert J. Walden
998 N. Ellenberger Pky. W. Dr.
Indianapolis, Indiana

Robert C. Walls
1802 Sharon Avenue
Indianapolis, Indiana

George J. Wessar
Van Ness Clinic
Summitville, Indiana

K. E. Wilson
233 Kenyon Avenue
Elkhart, Indiana

Walter J. Zabek
805th Medical Corp. S. A. C.
Whiteman Air Force Base
Knob Naster, Missouri

Please, if you—any of you—receive new addresses for this class, REMEMBER to drop us a card, since WE depend upon YOU to keep us informed of the whereabouts of our graduates!

In accordance with our custom, we are recording here for your information the the latest addresses we have received, as well as tidbits of news, from the

Class of 1928

An asterisk before the name indicates we did not receive an answer to our letter; if you know of the address of those for whom we have none, we shall appreciate hearing from you!

Samuel R. Antle
3631 Decoursey
Covington, Kentucky

*Norman G. Ballam
P. O. Box 972
Welch, West Virginia

*William R. Bane
457 Clifford Street
Corpus Christi, Texas

Maurice G. Baum
618 Hulman Bldg.
Evansville, Indiana

Rollie A. Bennett
517 Anderson Bank Bldg.
Anderson, Indiana

Leon W. Berger
723 Main Street
Beech Grove, Indiana

Evelyn Kroot Berger
723 Main Street
Beech Grove, Indiana

*Daniel W. Bieker
114 Lake Shore Drive
Culver, Indiana

Samuel L. Bloomberg
3628 Main Street
East Chicago, Indiana

Geo. S. Bogardus
7 Vehslage Bldg.
Seymour, Indiana

Warder H. Castle
642 Bankers Trust Bldg.
Indianapolis, Indiana

*Jack E. Cheney
608 Bankers Trust Bldg.
Indianapolis, Indiana

Lewis L. Clark
Coker Bldg.
Winter Haven, Florida

Robert T. Colvin
Newburgh State Bank Bldg.
Newburgh, Indiana

Leo V. Commiskey
New Castle State Hospital
100 Van Nuys Road
New Castle, Indiana

Lewis F. Compton
42 West 56th Street
Indianapolis, Indiana

Thomas L. Cooley
3521 Broadway
San Antonio 9, Texas

Joseph S. Crislip
960½ Kenmore Road
Akron 14, Ohio
"Retiring October 12, 1959!"

Delmar D. Curry
660 East 42nd Street
Indianapolis, Indiana

William K. Damron
Box 266
North Manchester, Indiana
"Real estate and farming; specialty, Orthodontia."

Lewis M. Davis
100 South Meridian
Winchester, Indiana
"Just returned from West Indies cruise"

Harold W. Duncan
Deceased

Louis E. Ebersperger
Deceased

Howard Egloff
Deceased

Harold A. Gampher
Deceased

*Joseph M. Ganon
10509 Euclid Avenue
Cleveland, Ohio

Clinton H. Glascock
445 North Pennsylvania No. 804
Indianapolis, Indiana

G. T. Gregory
505 Hume Mansur Bldg.
Indianapolis, Indiana

Chester H. Huff
Deceased

Oscar S. Hufnagel
Deceased

Paul C. Hulse
Deceased

Joseph F. Hunger
803 West Columbia Street
Evansville 10, Indiana

Francis A. Jones
216 North Fourth Street
Lafayette, Indiana

Frank W. Jordan
866 Starks Bldg.
Louisville 2, Kentucky

Clement J. Kincaid
757 West 79th Street
Chicago 20, Illinois

George T. Knapp
Deceased

*Henry D. Kornblum
510 East Minnesota
Indianapolis, Indiana

Paul K. Losch
300 Longwood Avenue
Boston 15, Mass.
"Harvard - Pedodontia."

Lawrence E. McCulley
Kenmore, North Dakota

John R. McGeorge
200 South Washington
Hagerstown, Indiana

*Edwin H. McShay
1002 North Bosart Avenue
Indianapolis, Indiana

Emery McVay
Deceased

*Dwight Mathis
4350 11th Avenue
Los Angeles, California

Robert J. Meyers
104 East 13th Street
Indianapolis, Indiana
"Have five daughters, one boy. Three married, and three unmarried. Ten grandchildren."

Aubrey D. Miller
5655 West Morris Street
Indianapolis, Indiana

Edwin Mork
104 South Broadway
Linton, North Dakota

Donald A. Musselman
Denver, Ind.
"Part time private practice"

*William Y. O'Hara
P. O. Box 372
Waipahu, Hawaii

John H. Oldham
118 South Court Street
Sullivan, Indiana

*Joseph A. Paukstys
4253 Archer Avenue
Chicago, Illinois

James D. Pearson
94 West Market Street
Wabash, Indiana
"I am starting from Erie, Pennsylvania with my 69-foot sailboat for Florida, next week."

Russell W. Powers
Lyons, Indiana

Paul F. Ream
Deceased

*Ronald L. Reynard
404 Wysor Bldg.
Muncie, Indiana

Dillon M. Routt
1006 Union Central Bldg.
Cincinnati, Ohio
"Oral Surgery Specialty."

*Fred Albert Rush
Address unknown

Albert M. Russell
414 9th Street
Columbus, Indiana

William F. Ryan
321 Court Street
Pekin, Illinois

Russell L. Scholl
972 A. East Blackford Avenue
Station C, Box 1002
Evansville 13, Indiana
"Built a small C.B.S. home in Marathon, Florida on the Gulf Beach last winter and spring. Landscaped same in tropical palms and flowers. Winter address is Box 858, Marathan, Florida."

Earl V. Schulz
2803 Shelby Street
Indianapolis, Indiana

*John V. Shellman
312 Professional Bldg.
Elgin, Illinois

William R. Shideler
2804 Highway Avenue
Highland, Indiana

Seth W. Shields
Seymour, Indiana

Virgil G. Shonkwiler
Community State Bank Bldg.
Huntington, Indiana

Victory V. Skinner
1418 Good Hope Road
Washington 20, D.C.
"Specialty—Oral Surgery"

Lester B. Slenker
Pierceton, Indiana

*Roy J. Sloan
21 North 7th
West Terre Haute, Indiana

Harry H. Smith
512 Boyle Bldg.
Little Rock, Arkansas

*Ward W. Smith
320 West Oak
West Lafayette, Indiana

James F. Smith
Deceased

*William H. Smith
113 North Holland
Edinburgh, Indiana

*Harold H. Stahlhut
232 West Wayne
Fort Wayne, Indiana

*Earl F. Sutherland
228 West Washington Street
Rensselaer, Indiana

Dean O. Taggart
8212 Midnight Pass Road
Sarasota, Florida

Emery C. Thorne
Deceased

Roger L. Trueblood
Chief, Dental Service
VA Hospital
Marion, Indiana

Everett R. Tullis
223 South Court Street
Crown Point, Indiana

*Emmett Tully
1003 Harmer Street
Fort Wayne, Indiana

*William A. Vanarsdall
553 Citizens Bank Bldg.
Anderson, Indiana

*Ralph L. Van Voorhees
Box 904
Phoenix, Arizona

Nicholas E. Vlassis
Deceased

Richard H. Wade
521 Conkey Street
Hammond, Indiana

*Clinton I. Wasson
202 Rose Court Bldg.
Muncie, Indiana

John C. Werner
117 High Street
Elkhart, Indiana
"Specialty—Pedodontia"

*Andrew L. Wessar
208 Williams Bldg.
Anderson, Indiana

*Raymond W. Whitman
Address unknown

Clinton H. Wilkin
10½ South Range
Oblong, Illinois

Vesper C. Williams
1859 Dorr Street
Toledo 7, Ohio

In closing, we thought you might be interested in the following comment, received from Dr. Milton W. Boyer, a graduate of Washington University in 1957:

"I wish to express my sincere thanks to members of your staff and student body for the wonderful assistance and hospitality I received during the recent State Board examination. The tremendous help made it a pleasure to be taking an examination at your school.

"Incidentally, you might well be proud of your dental school. It is certainly a beauty!"

Needless to say, we are grateful to Dr. Boyer for his kind remarks.

Class and Fraternity Notes

JUNIOR CLASS

Since September we have been confronted and have mastered many new techniques, experiences, and facts which occurred during our first year of clinical dentistry. We have gradually progressed from the more simple aspects to more technically complex problems of dentistry.

We have gained experience in such phases as operative, prosthetic, endodontic, crown and bridge, partial denture, oral diagnosis, oral surgery, and radiology. Although our experiences have been necessarily limited in some of the above areas, other areas have been stressed.

The year seemed altogether too short to accomplish what seemed to us a large amount of work. At the beginning of the year the class had its annual election of its officers:

President—Monte O'Conner
Vice Pres.—James Myer
Treasurer—Donald Oljace
Secretary—George Bulfa

Little time was found for organized social activities this year; however, Ransom and Randolph Company presented an address by Professor Herbert F. Schwomeyer, Dean of Men of Butler University followed by table clinics and discussions. The holiday season was noted by a December dinner-dance held at the

Hawthorn Room in Indianapolis. Some members of the class participated on the basketball team representing the dental school in the city's leagues.

We are now looking forward with anticipation toward the coming Senior year and hope that with the knowledge we will obtain from this year to better prepare ourselves for our individual practices.

George R. Bulfa

DELTA SIGMA DELTA

Vacation time greetings to all Delta Sig alumni. I hope you are enjoying your summer. Now is the time to go out and hit the old golf ball around; drop the fishing line in a cool lake; or just relax out in the backyard under a shade tree with a dental journal in one hand and a cool . . . ice tea(?) . . . in the other.

The dental school is a little quieter now with most of the students away vacationing: digging ditches, painting houses, feeding rats, etc.; but the school is not without activity. There are a few daredevil students battling the heat and the construction in an attempt to catch up or get ahead.

The past school year has been a productive one for our undergraduate chapter—socially, structurally, but not scholastically. We are holding down third place this year! We initiated the "cream of the crop" from the freshman class this spring in the presence of a notable number of alums whom we were happy to have present. A good time was had by all. Our new laboratory still works fine, the furnace almost kept us warm, and the reupholstered furniture really looks great. Continuing our face lifting of the fraternity house, this summer we are giving the outside of the place a new coat of paint. Watch out for the owl; it's going to be white with red eyes! The last of our three wishes is for a new rug for the living room. Thanks to the support and backing of the graduate chapter, these improvements were possible.

Here is one last interjection. Did you know that we will have only two single Delta Sigs left in the senior class when the school doors swing open this fall? One of them is engaged and the other one is still looking. Looks like there will be some new faces in the Delta Sig Wives Club.

Well, I guess that's it for now except to tell you that there's no lock on the door for our alumni. You are always welcome, so drop in.

See you in the next issue.

Richard W. Henry

XI PSI PHI

Officers of the Xi Psi Phi Alumni chapter were elected during the annual business meeting May 18, 1959. Elected were, Dr. Walter J. Dean, president; Dr. Byron Deakyne, vice president; Dr. Paul Oldham, secretary-treasurer; and Dr. Robert Tarplee, secretary of building fund.

Dr. Walter Dean plans to call additional meetings for the year, the dates of which will be announced later. Officers of the active chapter are: Leroy Kochert, president; Paul Lew, vice president; Tom Winans, secretary-treasurer; Jim Hurst, rush chairman.

Future plans call for renovation of the laboratory to make it the finest laboratory available for students. This work is to be completed by fall. Also plans for the fall rush are being made. Final programs and dates will be announced when the list of new freshmen is available.

The first semester social program is taking shape. Present plans include rush program, initiation, dances and stag parties. Efforts are being made to have the dances at the ISTA building again this year.

PSI OMEGA

Summer has rolled around here at Psi Omega and already the effects are showing. We actives at the house are saddened yet quite happy for our graduating Seniors. We feel that they have done a lot for the house in the past three years and we'll miss them very much.

Presently there is a skeleton crew of juniors, less sophomores, and one freshman living at the house. Our plans for improvement are quite large this year. We hope to install new showers upstairs and downstairs, retile both men's rooms, install new floor to ceiling lamps for the living room plus other pieces of furniture, replaster the dining room ceiling and improve the laboratory facilities, along with various other repairs around the house. Our first project has already been completed in improving the grounds outside the house.

Since our last report we've initiated 20 new men into the bonds of Psi Omega. We had a very nice senior banquet honoring our graduating seniors. The scholarship award was given to Laurence K. Hodge, achievement award to Gene Brewer, and the Dr. J. William Adams award to David Bixler. We would like to recognize our graduating seniors:

Wayne O. Abbot
Charles S. Able
David Bixler
Harold E .Brewer

William J. Brown
Raymond L. Dennany
James Felder
Joseph W. Hilton
Jerry Hippensteel
Robert S. Hirschman
Laurence K. Hodge
Robert N. Modlin
Donald R. Noelke
Robert B. Purdy
Walter Rigdon
Max Schaeffer
Ronald Scherk
John Schulz
Robert Walden
Robert C. Walls
Kent E. Wilson
Walter Zabek

As the summer gets further along we again will begin to plan our Rush program for the incoming freshmen. We hope that through the summer if any of our alums happen to be visiting or passing through Indianapolis, they will stop by long enough to say "Hello".

W. Richard Leyda

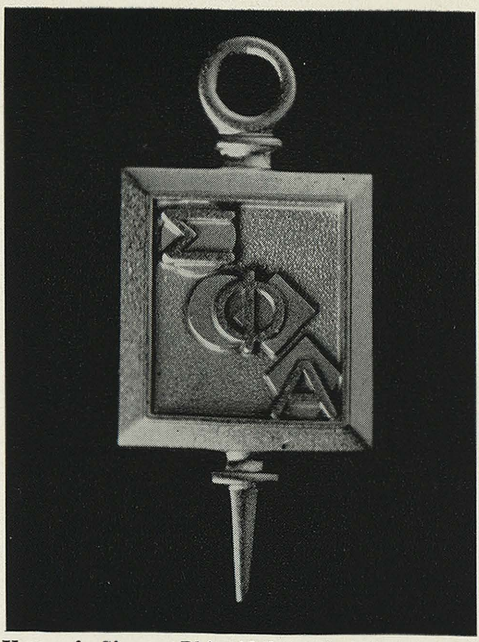
SIGMA PHI ALPHA

Included in the Honors Day Program was the presentation of the charter for Theta Chapter of Sigma Phi Alpha to Dean Hine and the presentation of certificates to those who had been elected to membership from the present and the previous graduating classes.

Those who received certificates were:

1959—Miss Nancy Hammel, Miss Nancy Porter
1958—Miss Ann Buche, Miss Carol Gutherie
1957—Mrs. Marilyn Hall Smith, Miss Belva Whaley
1956—Mrs. Phyllis Wolf Rhodes, Mrs. Judith Patterson Hodge
1955—Mrs. Mary Sheets Sanders, Miss Carolyn Tucker
1954—Mrs. Geraldine Bailey, Miss Joan E. Robinson
1953—Miss Mary Anne Keenan, Mrs. Elibeth Gilchrist Keck
1952—Mrs. Gloria Horn Huxoll, Miss Pauline C. Revers

The charter and the certificate, bear the insignia of the organization which is the traditional key bearing the Greek letters of the organization. Sigma is superimposed on a ball to show that there are many aspects to every question. A wise man analyzes all aspects before making a decision. This is the essence of wisdom. Phi is superimposed on a circle co-



Key of Sigma Phi Alpha, dental hygiene sorority. Theta chapter is now established at the dental school .

joined by lozenge. The circle represents the individual, the lozenge the physical, mental, spiritual and emotional aspects of human relations, one or all being involved in philanthropy or aid to others according to need. Alpha is superimposed on a pentagon to symbolize five cardinal virtues: prudence, fortitude, temperance, justice and faith.

RELATIONSHIP BETWEEN

(Continued from page 7)

shaped and biologically supported to accept these stresses.

In protrusive excursion also the old belief that it is desirable to have as many teeth in functional contact as possible is erroneous. The posterior teeth should be in contact about only the first ½ to 1 mm., then the six anterior teeth should assume control to provide the anterior or "protrusive rise." The six anterior teeth, however, should share an equal distribution of this load. This is produced by selective spot grinding until all anterior teeth are in maximum contact maintaining centric and vertical relationships. Broad areas on the labial of the mandibular incisors should be avoided and when present

should be reduced to the minimum that will maintain functional relationship and centric occlusion.

After the remaining natural dentition has been equilibrated, fixed bridgework (fixed partial dentures) and removable partial dentures can be designed and constructed to maintain the same plane of cuspal or incisal inclinations as possessed by the remaining natural teeth.

After the fixed or removable prosthesis is completed and in place in its position in the arch, the last step in equilibration and stress distribution can be carried out by elimination of plunger cusps and the equilibration in differences in height of marginal ridges. The area of occlusal contact is reduced to a minimum. Excessive bucco-lingual dimensions of bicuspid and molar crowns and pontics are reduced so that a smaller food table is produced. The triangular ridges of the bicuspids and molars should be sharpened, the natural grooves deepened, and others placed through the marginal ridges. The buccal and lingual grooves should be opened to act as sluiceways for the escape of the comminuted bolus.

These last operations will effectively reduce the stresses of mastication received by each individual tooth, and forces distributed through the fixed bridge or removable partial denture to the abutment teeth.

Summary

1. Definitions of some terms have been given.
2. Occlusion is important for two reasons.
   a. It is one of the factors controlling the movements of the mandible
   b. Inharmonious occlusion produces breakdown of the supporting structures.
3. Harmony of occlusion has been discussed.
4. Technique for occlusal equilibration to be used before and after fixed bridge and removable partial denture construction has been presented.

Conclusions

In order for fixed bridgework (fixed partial dentures) and removable partial dentures to be biologically acceptable to the oral tissues and serve the patient without causing breakdown of the supporting structures, the remaining natural teeth should be equilibrated to balanced occlusion before fixed or removable partial denture construction is begun and also after the finished prosthesis is permanently placed. Regular checks and occlusal adjustments to coordinate normal physiological wear of the natural teeth will keep the fixed bridge in normal function and preserve the supporting structures. In addition, relining will be needed to accomplish the same ends with the removable partial denture.

I would like to express my appreciation to Dr. D. Cunningham and Dr. H. Swenson for the photographs used in this paper.

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FACULTY PUBLICATIONS
(Continued from page 15)

mold not directly connected to the ring by a mass of investment. Quartz control powder influences expansion only in areas which can expand freely.

31. Gilmore, H. W., Phillips, R. W. and Swartz, M. L.: The effect of residual stress and water change on deformation of hydrocolloid impression materials, J. D. Res. 37:816, 1958. The individual effects of change in water content and release of internal stress on the dimensional stability of hydrocolloid impressions was investigated. Employment of technics to increase residual stress in irreversible hydrocolloid impressions resulted in greater distortion of these impressions than observed in similar control specimens where the same water change occurred. It is thus suggested that the two factors, release of internal stress and water fluctuation, may be of equal importance in distortion of hydrocolloid impressions during storage. Work with irreversible hydrocolloid indicated the water fluctuation of these materials to be slightly less in some media than observed with reversible hydrocolloid.

32. Swartz, M. L., Phillips, R. W. and El Tannir, M. D.: Tarnish of certain dental alloys, J. D. Res. 37:837, 1958. The chemical nature, in vivo, of tarnish of dental amalgam was studied. The effect of certain variables on tarnish of amalgam, gold and gallium alloys was investigated by in vitro methods. X-ray diffraction patterns indicated sulfide compounds to be the predominating constituent of clinical tarnish of the amalgam alloy. In the in vitro studies the greatest discoloration of amalgam was seen after storage in sulfide solutions, with lesser degrees being observed in chlorides, synthetic saliva and water. Neither the rate nor degree of tarnish was influenced by residual mercury content or the absence of zinc from the alloy. Although the gallium alloy did not discolor in sulfide solutions, a high degree of tarnish was incurred by sodium chloride, hydrogen peroxide and distilled water. A light tarnish of low karat gold alloys was induced by sulfide. High karat gold exhibited no discoloration in any of the media tested.

33. Swartz, M. L. and Phillips, R. W.: Effect of certain restorative materials on solubility of dentin, J. D. Res. 37:811, 1958. The effect of silicate, restorative resins and zinc phosphate cements on the solubility of both intact and powdered dentin was investigated. The solubility was reduced after contact with silicates. Silicates which contained fluoride produced greater reduction than those which did not. Resin materials which contained fluoride also reduced dentin solubility. Zinc phosphate cements, even those to which fluorides were added, did not lower solubility.

34. Phillips, R. W. and Schnell, R. J.: Electroformed dies from Thiokol and silicone impressions, J. Pros. Den. 8:992, 1958. Several methods of metallizing and pating Thiokol and silicone impressions were evaluated. Although no plated die reproduced the original as well as did stone dies, silver plating of Thiokol impressions resulted in clinically acceptable metal dies. Copper dies prepared by plating silicone impressions were more accurate than silver dies prepared from this type of impression. However, the accuracy of results obtained by plating silicone impressions did not compare favorably with those obtained from plated Thiokol impressions.

35. Phillips, R. W.: Amalgam. Symposium on Dental Materials, D. Clin. N.

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36. Burstone, C. J.: The integumental profile, Am. J. Ortho. 44:1, 1958. Modern orthodontics implies not only occlusal excellence, but also the positioning of teeth to produce optimal facial harmony for the individual patient. The soft-tissue veneer covering the teeth and bone varies so greatly that the study of the dentoskeletal pattern may be inadequate in evaluating facial disharmony. A method of direct integumental analysis was presented, employing angular readings that describe profile components to the skull as a whole (inclination angles) and to each other (contour angles). These readings were made from oriented lateral headplates exposed to show hard and soft-tissue detail. The average morphology and variation of acceptable profiles was described, based on the Herron sample (a group of good faces picked by a panel of artists). The hypothesis was explored that average inclination, contour, and proportion is related to profile excellence. Graphic comparison to the Herron sample by use of the integumental profile grid expedites the analysis of malocclusion deformity and the study of soft-tissue changes occurring during growth and treatment.

37. Mitchell, D. F. and Shankwalker, G. B.: Osteogenic potential of calcium hydroxide and other materials in soft tissue and bone wounds, J. D. Res. 37:1157, 1958. Calcium hydroxide, when implanted in small pellets in the connective tissues beneath the skin of rats induces the formation of heterotopic bone around the pellets. Of 11 other materials studied in this way, only magnesium hydroxide and plaster of Paris show a similar tendency. Calcium hydroxide, "Osteogen" (a despeciated bone paste) and anorganic bone did not hasten or improve on the healing of surgical bone wounds in monkeys.

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41. Dworkin, M. and Foster, J. W.: Experiments with some microorganisms which utilize ethane and hydrogen, J. Bact. 75:592, 1958. An investigation was made of microorganisms capable of growing at the expense of ethane gas. The physiology of these organisms was studied. Certain ethane utilizing mycobacteria were found to be capable of growing autotrophically on hydrogen gas and carbon dioxide. This situation was examined. The taxonomy of this group of microorganisms was discussed.

42. Dworkin, M.: Endogenous photosensitization in a carotenoidless mutant of Rhodopseudomonas spheroides, J. Gen. Physiol. 41:1099, 1958. The lethal effect of visible light on certain mutants of photosynthetic bacteria was studied. The photosensitization process was examined and a mechanism of action was suggested.

43. Dykema, R. W., Johnston, J. F. and Cunningham, D. M.: The veneered gold crown, D. Clin. N. Amer., W. B. Sounders Co., November 1958, p. 653. Satisfactory acrylic veneered gold crowns can be constructed if a standardized procedure is employed. Success is dependent upon tooth preparation, the form of the wax pattern, the subsequent casting, and the manipulation of the veneering material. Some of the less desirable physical properties of acrylic have served to stimulate research in the field of fused porcelain veneers. While there is still much to be learned about this particular use of porcelain, it is now possible to produce a usable restoration which is mechanically superior to a restoration veneered with acrylic resins. This paper describes, step by step, the methods to be employed for optimum results.

44. Redish, C. H. and Ping, R. S.: Ethinamate (valmid) in dentistry, Oral Surg. Oral Med. & Oral Path. 11:742, 1958. In an effort to provide preoperative sedation for dental patients without the incoordination and confusion that often follow the use of barbiturates, a new drug has been discovered, ethinamate (Valmid). This drug is unrelated to barbiturates and is a snythetic, fast-acting, short-duration agent. This double-blind study compared ethinamate (500 mg.) with a placebo when given to unselected patients prior to oral surgery. Both the patient's and the instructor's evaluation of the effectiveness of the tablet were recorded. Most of the patients receiving ethinamate felt that it was of definite help while few placed the placebo in that category. The results of the instructors' evaluations were very similar. The report's summary stated that ethinamate was felt to be of definite value by both patients and operators.

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POSTGRADUATE COURSES

(Continued from page 21)

include building a bridge by the staff and lectures and demonstrations on indications, abutment preparations, pontic design and construction, assembly, seating and post delivery care, indirect impression technics, veneered and jacket crown construction and prescription writing.

An added attraction is a full-day symposium Wednesday, April 13, on Porcelain Jacket and Porcelain Veneered Gold Crowns. Guest lecturers will be Dr. George Moulton, chairman, Department of Crown and Bridge, Atlanta-Southern Dental College, Emory University; and Mr. John Pettrow, ceramist, of the Dentists Supply Co. There is no charge for the symposium, but a $75.00 fee for the entire course in Crown and Bridge Prosthodontics.

PROSTHETICS

A course on Complete Denture Construction will be given on five consecutive Wednesdays, June 15, 22, 29, and July 6 and 13. This will be a participation course presented by staff and guest lecturers. Included will be lectures and demonstrations on the theory and practice of producing the maximum in denture service. This course is definitely above the undergraduate level. Subjects related to denture construction will be discussed; such as, denture base materials, diagnostic factors, impression procedures, jaw rela-

tion records, influence of periodontal and nutritional disorders, radiograph findings, allergies, occlusion and immediate dentures.

Fee, $75.00

PARTIAL DENTURE

Two courses will be given, which are identical in content. The subject is "Partial Denture Design and Construction." The dates are on four consecutive days, July 11, 12, 13, and 14; or, four consecutive Thursdays, June 23, 30, July 7 and 14. By doing this, it is the purpose to give a course in which everyone will have available time to come.

Two prostheses will be built by the staff. Surveying and case planning, mouth preparation, impression materials and technics, design, duplication, casting, polishing, tooth form and arrangement will be included in the course. There will also be lectures on equilibration, post delivery service, prescription writing and laboratory service will be covered. There will be a guest lecturer on July 14.

Fee for the course is $75.00.

There will be a course on July 25, 26, 27, and 28 for laboratory technicians on Partial Denture Design and Construction. Lectures will stress what to look for on the model or impression, surveying, design compatable with the survey and prescription, clasp forms and their indications. Included will be information on waxing, casting, polishing, tooth arrangement and prescription writing. At least two hours will be devoted to a discussion of what the technician should expect from the dentist and also their mutual responsibilities. Guest lecturer will be Mr. Joseph Ficaro, dental technician, from the Ney Co.

Fee for the course is $75.00.

Dr. Walter Crum, president of local section, presents award from the American College of Dentists to James F. Grimes as the student who showed the greatest improvement since the freshman year. Picture taken at Senior Honor Day Program.

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