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Lodovici, O., Etiology of deformities secondary to cleft lip and palate. Lat -Amer. de chir. Plastica, 7, 164, 1963.

The surgical treatment of cleft lip and palate has gone through continuous evolution since its standardization in 1816 by Von Graefe, in order to prevent the serious secondary deformities caused by illadvised operation. It was only after 1949 that it was possible to improve the result considerably, though not enough time has elapsed to reach definitive conclusions. This progress was made due to the work of Graber, who analysed the deleterious effect of surgical intervention practiced until that time and to the work of Slaughter, Pruzansky, Brodie, and others who established criteria for surgery. Cephalometric radiography has also contributed a great deal toward our understanding of the underdevelopment of the middle third of the face. The present criteria of satisfactory results following surgical treatment of cleft palate are good phonation, preservation of hearing, and maintenance of the growth potential of the facial bones. Repair of the lip alone may interfere with the growth of the middle third of the face when it results in a tight lip. This is caused by excessive sacrifice of soft tissue, which depends on the technique used. It may also be attributed to fibrosis secondary to infection and traumatic surgical intervention. The effect of surgical trauma in repair of the cleft palate on the development of the maxillary bones is intimately related to the patient's age. Before the first year of life, no matter how minor the surgical injury, it constitutes a serious factor. When correctly carried out, the operation may be performed in stages between 12 and 24 months of age. There are many factors which inhibit the growth. Some of these have been proven experimentally, such as interference with vascularization of tissue, fibrosis resulting from undermining, possible injury of bony sutures of the face, periostal undermining, and fracture of bony structures. The author presents 32 cases of deformity secondary to cleft lip and palate. The cephalometric studies showed a considerable amount of underdevelopment of the maxillary area. The author considers that the deformities in the present series can be attributed to Veau's operation. This procedure, emploved in 27 cases of this series, endeavors to achieve the early closure of the cleft lip and anterior palate through extensive undermining of palatine and vomerian flaps. (Spina)

Oldfield, M. C., and Tate, G. T., Cleft lip and palate—some ideas on prevention and treatment, based on 1,166 cases. Brit. J. plastic Surg., 17, 1, 1964.

A series of 1,166 cases of cleft lip and palate are reviewed. In only $12\frac{1}{2}\%$ was a family history of the condition obtained and the authors discuss the many other possible causative factors which may produce the deformity during the first 12 weeks of pregnancy. Cleft palates have been repaired by the Kilner-Wardill procedure between one and a half and two years of age and the ancillary treatments, speech therapy, orthodontic correction, and ear, nose, and throat surgery are described. Of the total group, 79% subsequently obtained natural speech with all consonants produced. (Gibson)

Latham, R. A., and Burston, W. R., The effect of unilateral cleft of the lip and palate on maxillary growth pattern. Brit. J. plastic Surg., 17, 10, 1964.

The authors have carried out extremely interesting original work in attempting to clarify the pattern of maxillary growth in cleft palate cases. They indicate that in such cases there is an imbalance in facial skeletal growth which primarily involves the zygomatico-maxillary sutures so that there is accelerated development and bone apposition on the noncleft side while there is no comparable overgrowth on the cleft side. The influence of the deviated nasal septum in cleft palate cases on maxillary and palatal growth is discussed. The need for treatment to both maxillary elements and to the nasal septum is stressed. This valuable contribution followed dissection and microscopic examination of specimens from a one-day-old infant with unilateral cleft of the lip and palate and comparison with circum-maxillary sutures taken from a normal newborn infant skull. (Mac-Lennan)

Gorlin, R. J., Chromosomal abnormalities and oral anomalies. J. dent. Res., 42, 1297–1306, 1963.

Trisomy D Syndrome is a condition in which 47 chromosomes occur, with the extra autosomal in the 13–15 group. Bilateral cleft lip and palate and cleft of the tongue tip are among the constant clinical findings in this syndrome. (Luban)

Witker, C. J., Jr., Recent advances in dental genetics. J. dent. Res., 42, 1262–1275, 1963.

Patients with oral clefts are subjected to a considerable amount of diagnostic x ray and there is concern that this can increase the possibility of mutations. The suggestion is made that these patients be given duplicate sets of x rays to avoid unnecessary exposure. Modern medical and dental treatment increases reproductive fitness and this probably contributes more to the genetic load than the diagnostic radiation. A study by Rank of oral Wunderer, S., A method of cleft lip closure by using Z-plasty with varying triangular segments. Lang. Arch. Klin. Chir., 303, 303–312, 1963.

According to the author, the methods of Veau, Le Mesurier, and Trauner-Wirth for closure of single lip clefts have been dropped. The post-operative results were not completely satisfactory. Now the closure of the cleft is being done when the child is seven to nine months of age. A 'dynamic three-angle-plasty', a kind of Z-plasty, is getting better results. This is similar to the method of Millard where the cupid's bow is maintained uncut and unscarred. Because of the shortness of the remaining cupid's bow in cleft lips, the medial part of the cleft can be cut to only a short extent. To get the proper length of the lip one has to do a second incision-beginning at the vermilion and going through the muscular tissue-once in a more flat, once in a steeper angle to the opposite side. The incision has to be longer if the cut at the medial part of the vermilion is short. This incision will determine the later height of the lip. The cut of the lateral part of the cleft lip has to be at least as long as the cut at the medial part. If a short medial part occurs, the cut must be as long as the longer square medial incision. The necessary lateral incision—beginning at the lower cut of the lip-has to be as long as the square medial incision. This effects an equal-legged triangle, on the lateral side, fitting into the medial triangular gap. By varying the length of the sides and the degree of the angle, an experienced surgeon can adapt his technic to the kind of cleft. To shape the wing an incision is made in the vestibulum parallel to the margin of the wing, not injuring the lateral part of the ala-cartilage. If the child is strong enough, the bone gap can be closed between the alveolar stumps with rib bone. The author has closed 205 cleft lips (single and double) by this technic. The method requires considerable skill. It preserves the cupid's bow, but is injuring, to a great extent, to the fine structure of the philtrum (dimple and margins). (Schmid)

Mukhina, A. D., Orthopedic treatment of children with congenital cleft palate. *Stomatologia* (*Moskva*), 42, 79-81, 1963.

The cleft palate exercises an unfavorable influence on important biological functions of the child. It causes disturbances in digestion, respiration, and the condition of the nasopharynx. Thus, it produces some diseases and delays the physical development of the child. Normal development of the upper jaw is frequently disturbed by an early operation on the palate. On the other hand, delay of the operation and the temporary use of an obturator causes unnatural anatomic-physiologic relations in the mouth. In the last three years, the author observed 63 patients with various types of cleft palate. Among them, 49 presented various deformities of the jaw requiring treatment. In 37 cases, an obturator was constructed. Of these, 26 were of the floating type, as recommended by Case. The remaining 11 obturators employed various mechanical methods of anchorage. In three adult patients, a prosthesis was used to correct the defect after unsuccessful operations on the palate. In four cases, the palatal plate was used prophylactically to prevent post-operative deformity of the jaw. The author emphasizes the difficulty of making the correct choice of treatment in bilateral cleft lip and palate, particularly when complicated by the abnormal position of the premaxilla. In almost all complete clefts, some kind of an upper denture was necessary to complete and stabilize the upper dental arch. This improved occlusion, speech, and mastication as well as the appearance. The cleft palate patient suffers frequently from exaggerated dental decar. Thus, early and thorough hygiene is essential. The less valuable teeth may have to be extracted and substituted with artificial ones. A balanced orthodontic and prosthedontic treatment of the cleft palate patient is essential. (Karfik)

Zolotko, V. S., On the blood supply of the soft palate. *Stomatologia* (*Moskva*), 42, 24–27, 1963.

Arterial supply to the soft palate was studied by the author on cadavers. The blood vessels were filled with a contrast medium; roentgenograms were taken and anatomical preparations of the filled vessels were made. He concluded from the investigation that 79% of the blood supply of the palate comes from the palatine arteries and 21% from the pharyngeal arteries. Both the ascending palatine artery and the ascending pharyngeal artery divide into two main branches, one muscular and the other glandular, and then into many small branches. The muscular branch supplies all the musculature of the soft palate and the nasal mucosa. The glandular branch supplies the glands of the soft palate and the oral mucosa. The importance of the glandular branch of the palatine artery is the establishment of anastomotic connections with the arteries of the hard palate. (Karfik)

Livshits, I. L., On the technique of conducting radical uranoplasty. *Stomatologia* (*Moskva*), 42, 55–57, 1963.

The author's material consists of 218 radical uranoplasties, 212 of them in children over eight years of age and six in adults. In 108 cases, this included Limberg's interlaminar osteotomy and in 110 cases, resection of the posterior border of the palatine foramen and fracture of the hamulus (according to Billroth). The author concludes that the severance of the neurovascular bundle at the foramen is dangerous because it reduces the visibility of the mucoperiostal flaps and may lead to partial necrosis. The operation on the bony palate must be determined in individual cases according to the type of the cleft and local conditions. (Karfik)

Yakovenko, V. N., Determination of the necessary prolongation of the palate in the operative treatment of congenital cleft palate. Stomatologia (Moskva), 42, 58-59, 1963.

The length of the palate was studied in 330 children and adolescents between eight and 18 years of age. The measurements were made with a wooden applicator. The distance between the edge of the central incisors and the back border of the uvula and between the incisors and the posterior pharyngeal wall were measured. The differences between these two measurements represented the depth of the space between the soft palate and the pharyngeal wall. These figures, in unoperated cleft palate cases at the age of eight, were, on an average, .9 cm shorter than in healthy children. At the age of 18 this difference amounted to 1.1 cm. The measurements of 94 patients with cleft palate showed that the average length of the palate after repair is 7.3 cm. This measurement does not depend on the age at the time of operation. This figure includes lengthening of the operated palate as compared with unoperated palate by 1.8 cm at the age of seven and by .5 cm in adulthood. (Karfik)

Ilyin, V. A., A new method of plastic repair in unilateral congenital cleft lip. Stomatologia (Moskva), 42, 59– 60, 1963.

This describes various methods of Veau, a Russian surgeon, and the author's own procedure for unilateral cleft lip. He has used this method in 52 patients of different ages in the last three and a half years. Most of the operations were performed in the first or second year of life. On the lateral side, a vertical flap is dissected with the base along the vermilion border and with its apex at the nostril. This flap is rotated into the defect made by a horizontal incision along the vermilion border on the cleft side and ends at the tip of the cupid's bow on the noncleft side of the lip. The bilateral cleft lip can be operated on in a similar manner. The inconspicuous scar and the possibility of restoration of the cupid's bow are considered by the author as important advantages of this operation. Unfortunately, the paper is not documented by any photographs of patients. (Karfik)

Blocksma, R., Correction of velopharyngeal insufficiency by Silastic pharyngeal implant. *Plastic reconst. Surg.*, 31, 268–273, 1963.

In spite of improved methods of cleft palate repair, speech failure remains a major problem. Failure is usually due to a palato-pharyngeal incompetence, a condition in which the soft palate fails to meet the pharyngeal wall. The causes of incompetence are reviewed and the procedures used to correct this deficiency, including pharyngeal flaps, pharyngoplasty, and bulb obturators, are discussed. The author believes that all the described methods are expensive, time consuming. and technically difficult and that a simple approach should be devised. Bringing the pharynx forward with preserved cartilage grafts gave dramatic, immediate speech improvement which was gradually lost, however, after a year's time because of reabsorption. The same result without reabsorption could be achieved by the use of an inert implant. Interest in bringing the pharynx forward was stimulated by the observation that there

was speech regression following some adenoidectomies. The material selected for the implants was Silastic, a silicone rubber preparation. The author's preliminary work in animals indicated that RTV fluid Silastic and four varieties of sponge Silastic were reactionless in tissues. In an earlier series of patients, various forms of the solid material were implanted after local anesthesia. The implant was placed through a $1\frac{1}{2}$ cm vertical incision behind the right posterior tonsil into a transverse pocket made behind the muscle in the prevertebral fascia just above the atlas. The technique was later simplified and RTV fluid Silastic was injected just above the tubercle in amounts varying from 2 to 7 cc. Twenty-three patients with velopharyngeal incompetence were treated, nine with shredded implants, nine with liquid implants, four with solid implants, and one with sponge implant. The ages of the patients ranged from four to 31 years. Four patients were rated excellent or near normal speech; 13 were rated good with some residual nasal emission; four were rated only fair, and two rated poor. There was general improvement in attitudes and social adjustment. Although the results are good, the author believes that if autogenous tissue could accomplish this objective, the results would be far superior. (Ashley)

Stenstrom, S. J., and Thilander, B. L., Bone grafting in secondary cases of cleft lip and palate. *Plastic* reconstr. Surg., 32, 353–360, 1963.

Iliac bone grafts were used in 16 unilateral and three bilateral cleft lip patients whose ages ranged from 14 to 31 years. Orthodontic arch correction was undertaken prior to grafting. Palatal and gingivolabial flaps were used for soft tissue coverage. Failure of healing occurred in two patients who failed to wear the retaining labial arch bar and prosthetic devices used to prevent the early collapse of the expanded maxilla. Ten cases were tested with the authors' stability measuring device. Stability in the region of the graft was excellent. Instability in the transverse direction of the maxilla was, however, present, although less than in unoperated controls. (Crikelair)

Walker, J. C., and Clodius, L., The syndrome of cleft lip, cleft palate, and lobster-claw deformities of hands and feet. *Plastic reconstr. Surg.*, 32, 627-636, 1963.

Three patients with a combination of cleft lip and/or palate together with a lobster-claw extremity deformity are presented. Their families contained other members with similar defects alone or in like combination. The rarity of this combination is such as to suggest to the authors that in these cases a common tetrogenic stimulus may have been present and that this combination deserves a place among those such as Apert's syndrome in which skull and extremity anomalies are associated. (Crikelair)

Wang, M. K. H., A follow-up study of unilateral cleft lips repaired by the modified Le Mesurier's and Tennison's technique. *Plastic reconstr.* Surg., 30, 329–335, 1962.

The author reports a follow-up on 37 children with unilateral complete and incomplete cleft lips operated on by his technique. Of these, 12 had a follow-up of three years, 23 for two to three years, and two for one year. Results were judged by criteria of lip symmetry, equality of length of repaired and normal sides, equality of width of vermilion segments, presence of mobility unaltered in motion, as well as an operative scar that did not distort the lip. Thirty-one of the 37 cases were considered excellent. Of the 12 cases with a three-year followup, 11 have remained excellent. In one case the repaired side of the lip became

shorter, in another it became longer than the normal side. Minor revisions of the vermilion were required in four cases. The report is noteworthy not only for the results achieved but for the emphasis placed on the necessity for longitudinal study of procedures which must be selected ultimately according to the ability to stand the test of growth. (Crikelair)

Ivy, R. H., Congenital anomalies: as recorded on birth certificates in the division of vital statistics of the Pennsylvania Department of Health for the period of 1956 to 1960, inclusive. *Plastic reconstr. Surg.*, 32, 361– 367, 1963.

The author adds this recent information to his previous report of the period from 1951 to 1955. An increase in the recorded total number of anomalies is noted to coincide in part with the increased birth total, but the incidence of anomalies rose from 8.22 to 11.4 per 1000 live births in the second period. Better reporting may explain this. Club foot and cleft lip-cleft palate continue to hold first and second places in order of frequency of occurrence. With some changes in relative frequency. the other major anomalies remained the same in the two periods. While males outnumbered females three to two in total anomalies, females were more frequent than males in having cleft palate without cleft lip. The impression that cleft lip and palate deformities are less frequent in Negroes than in Whites is borne out by statistics in the most recent period considered. The incidence of other anomalies in 293 children with cleft lip and/or palate in 1960 was 17.7%. (Crikelair)

Gunter, G. S., Nasomaxillary cleft. Plastic reconstr. Surg., 32, 637–645, 1963.

Four patients were presented with a rare type of facial cleft involving the lip, palate, the lateral nasal structures, the nasolacrimal apparatus, the eyelids, eye, and forehead. The nose on the cleft side was short between ala base and inner canthus. Blocked nasolacrimal duct and repeated infection of the lacrimal sac occurred in all patients. Total extirpation of sac and duct was necessary. Partial absence and distortion of eyelids had functional significance when the eye itself was normal, although micropthalmia was present in some patients. Extension of the process across the eyebrow and forehead with abnormal hair growth is a point not previously recorded. Maxillary asymmetry varied from slight to massive. Pertinent literature was reviewed. (Crikelair)

Crikelair, G. F., Bom, A. F., Luban, J., and Moss, M., Early orthodontic movement of cleft maxillary segments prior to cleft lip repair. *Plastic* reconstr. Surg., 30, 426–440, 1962.

Experience with a modification of the technique of McNeil utilizing intraoral appliances to achieve alveolar arch alignment prior to lip repair is reported in a series of six patients. Periodic dental moulds demonstrated correction of alveolar arch alignment in four of the six. Only one or two acrylic plates prepared on initial dental moulds were required to achieve realignment in these patients. The appliances were retained by outriggers taped to the face. They were inserted at ages varving from 13 days to three and a half months and were in place six to 12 weeks with lip repair following at two to five months of age. Soft palate repair only was done at six to 12 months of age. Reported follow-ups ranged from six to 28 months following lip repair. Prosthesis did not prove necessary to maintain arch alignment following the lip repair. Out patient care was feasible for all patients. The possible values of keeping the tongue out of the cleft, of instituting an active treatment from the time of birth to the time of lip repair, and the decrease in the gap in the lip prior to its surgical closure are advantages claimed for this method in addition to the prime one of early alveolar arch alignment. (Authors' Abstract)

Stark, D. B., Nasal lining in partial cleft palate repair. *Plastic reconstr. Surg.*, 31, 75–81, 1963.

The scarring which occurs after cleft palate repair is said to be partially responsible for the shortening and decrease in the mobility of the palate. The technique described in this paper is designed to overcome the scarring by providing an intact nasal epithelial surface. The basic repair is Wardill's push-back with the standard elevator of mucoperiosteal flaps. The modification is introduced in the development of the mucoperiosteal tissues on the nasal side of the palatal shelves. After the tissues are elevated, one side is developed into an anterior-based flap and one side into a posterior-based flap. The posterior-based flap is rotated medially and posteriorly while the anterior-based flap is sutured to the opposite palatal shelf. A single transverse incision through the anterior-based flap opposite the palatine vessels opens a triangular defect, into which the apex of the posterior-based flap is fitted. This results in the complete closure of the nasal surface back to the tip of the uvula with a staggered line. The effect is that of a Z-plasty, thus elongating the palate. The oral side of the palate is closed in the usual manner. The procedure is of limited value when the cleft is of soft tissue only. (Ashley)

Quigley, L. F., Jr., Webster, R. C., Coffey, R. J., Kelleher, R. E., and Grant, H. P., Velocity and volume measurements of nasal and oral air flow in normal and cleft-palate speech, utilizing a warm-wire flow meter and two-channel recorder. J. dent. Res., 42, 1520-1527, 1963.

A method of rapidly and accurately measuring simultaneously nasal and oral air flow velocities in speech and breathing is presented. The fundamental measure-

ments made in this study were those obtained by the cooling effect of air rushing by the warm-wire sensing units. A special circuit automatically supplies just enough electrical current to the heated filament to maintain its absolute temperature above that of the unheated filament at a fixed ratio (about 1.21.0). Higher velocities of air flow have a greater cooling effect on the heated filament and automatically call for more current to the heated filament to maintain a fixed temperature ratio. It is this current that is read on the panel meter and a proportional voltage is fed to the output terminals for chart recordings. From these measurements volume flow rates and volumes of air flow over periods of time can be derived. Certain rapidly changing characteristics of nasal leakage in palatopharyngeal incompetency can be observed and quantitated. The instrument provides another tool for research into the acts of breathing and speech. It has diagnostic value and will probably be used in the future in treatment and prognosis. (Authors' Abstract)

Reichert, H., Plastic surgery of the nose in children. *Plastic reconstr. Surg.*, 31, 51-57, 1963.

Plastic surgery on the nose in children presents the additional problem of the future development of this structure besides the immediate restoration of shape and function. By way of review, the author points out the various ages at which accelerated growth of the nose occurs. The importance of correcting the disfigurement of the nasal soft parts before any psychological disturbance can take place is stressed. The following techniques are employed at the Eduard Schmid plastic center in Stuttgart. Composite grafts are used to build rotation and tumbler flaps near to the nasal defect. Pieces of ear cartilage and skin are implanted under the skin or mucosa according to a model. In a second step the

elevated flap, now epithelized on both sides and reinforced by cartilage, provides suitable tissue for closing a defect or widening a constricted nostril. Cartilage implants are always carved larger to account for growth and frequently maternal source is used. For total nasal reconstruction a forehead temple flap described by Schmid is used. Pieces of ear cartilage are implanted in the temple area shaped according to the new ala. A glabella to temple bridge flap is then constructed which is finally elevated along with the cartilage-supported temporal region. A Thiersch graft lines the under surface. The various stages of this technique are not graphically demonstrated in this paper. If the patient is under the age of 14, the nose is reconstructed by a sternoacromial tube flap, and the final reconstruction by the Schmid technique is reserved for later. (Ashley)

Moll, K. L., Huffman, W. C., Lierle, D. M., and Smith, Jeanne K., Factors related to the success of pharyngeal flap procedures. *Plastic reconstr. Surg.*, *32*, 581–588, 1963.

Clinical speech ratings and oral breath pressure ratios were used to evaluate a group of 123 posterior pharyngeal flaps performed in subjects classified diagnostically as having cleft palates only, unilateral cleft lips and palates, bilateral cleft lips and palates, and noncleft palates (including short, paralyzed, and submucous cleft palates). The poor results as revealed by speech and breath pressure evaluation showed no essential relationship to the diagnostic classifications. There was a marked clustering of speech rating failures, however, in the low intelligence members of each group. On the other hand, the relationship between intelligence and breath pressure ratios wasn't so marked, suggesting that the mechanical wherewithal for velopharyngeal closure had been supplied to the low intelligence

subjects to a greater extent than it was being utilized in speech. Failure of improvement also tended to be associated with greater age at the time of operation. Narrow flaps tended to be associated with poorer results. In this regard, it was noted that in approximately 10% of cases atresia or stenosis of the nasopharynx was produced. The authors feel that the overall success of the procedure is 80 to 85% in their hands. A weakness of the study is its failure to present pre-operative evaluation comparable to the post-operative study. It would be significant to evaluate the degree of success achieved within the diagnostic categories presented in this regard as well as in terms of the other factors studied. (Crikelair)

REGISTRY OF CURRENT RESEARCH PROGRAMS

Investigation of the mechanism of the teratogenic effects of PGAdeficiency in the rat, by the application of autoradiographic methods, using tritiated thymidine (National Foundation, Committee on Research—Medical Sciences). C. Willet Asling, M.D., Ph.D., Professor of Anatomy, University of California Medical Center, San Francisco, California.

Summary: Previous studies with a transitory deficiency of pteroylglutamic acid (PGA) in the rat have demonstrated that the period of greatest embryonic susceptibility to this deficiency is during the eight to tenth days of pregnancy. Histological studies of such implantation sites have indicated that PGA-deficiency affected primarily embryonic, rather than placental, tissues. Significant retardation in embryonic size and some retardation of development of the neural tube accompanied by decreased mitotic rates was observed in 10-day PGA-deficient embryos. The initial inhibition of cellular proliferation was restricted to certain regions, rather than characterizing the entire embryo and indicated that serial histologic sections must be employed for radioactive tracer studies rather than chemical extracts of the entire embryo. We propose to employ autoradiographic methods, using tritiated thymidine and adenine or cytidine, to label the proliferating cells of normal and PGA-deficient embryos and placentas during the second week of pregnancy. If time permits, abnormal embryonic and placental development resulting from other procedures will also be investigated by the same methods and the findings compared.

Development of the cartilaginous skeleton of the face (NIH). James K. Avery, School of Dentistry, The University of Michigan, Ann Arbor, Michigan.

Summary: It is known that the nasal capsule and Meckel's cartilage play an important role in early prenatal facial development. In studies carried out at the University of Michigan it was found that these nasal capsular cartilages appear maldeveloped in both unilateral and bilateral cleft palate human embryos. It was found also that these cartilages normally develop prior to palatal formation and closure, implying a possible relationship between the malformations arising in the nasal capsular cartilages and the formation of a cleft palate. It is, therefore, the aim of the proposed investigation to make a detailed study of the forming facial skeleton prior to, during and following palatal formation. This will be carried out in two ways: 1) growth analysis of facial cartilages of cleft-palate and normal human specimens in the University of Michigan embryology collection, and 2) numerous experimental studies on the cartilaginous facial skeleton of cleft palate and normal mice. The latter investigations will be aimed at determining the relative amounts of chondroitin sulfate in the facial cartilages of cleft palate and normal mice, as well as studying the relationship of cortisone to chondroitin sulfate metabolism.

A longitudinal cephalometric analysis of the height and depth of the epipharynx in cleft palate patients (NIH). Peter J. Coccaro, D.D.S., National Institute of Dental Research, Bethesda 14, Maryland.

Summary: Longitudinal analysis of horizontal and vertical changes of the epipharynx in cleft palate subjects. Comparison of developmental increments among subjects having different patterns of anomaly and in the normals.

The effect of teratogens on proteins of fetal organs (Public Health Service). Neil C. Davis, Ph.D., Department of Biochemistry, Children's Hospital Research Foundation, Cincinnati 29, Ohio.

Summary: The present project is concerned with attempting to demonstrate whether a teratogenic agent (riboflavin deficient diet plus galactoflavin) produces changes in the proteins of selected fetal rat tissue. To demonstrate the presence or absence of such a change in a tissue. Schiedigger's micro-modification of Grabar immunoelectrophoretic and William's analysis will be employed. An extract of fetal rat liver from the litters of untreated mothers will be used to immunize rabbits. A rabbit anti-fetal-rat-liver serum will then be used as the antiserum to develop the precipitin lines of fetal rat liver extract which has been electrophoresed in agar. The pattern of tissue specific proteins so revealed will then be compared with the patterns obtained from the livers of fetuses in litters from mothers treated with the above teratogen. Such comparisons will be made at several different times of gestation and will employ (as above) several fetal tissues. By this means it is hoped that a teratogen administered to the mother can be demonstrated to have an effect on the tissue of the fetus by its alteration of the protein composition, a composition which presumably is concerned with the maintenance of normal tissue development and integrity.

Inter-disciplinary studies in cleft palate (NIH). Edward Forrest,

D.D.S., Ph.D., Dean, Dental School, University of Pittsburgh, Pittsburgh 13, Pennsylvania.

Summary: This proposal is for the purpose of establishing an inter-disciplinary research center dedicated to the broad study of cleft palate. Major areas for investigation include etiology and pathogenesis; surgical management and procedures and their relationship to growth, development, and speech; dental development and procedures and their relationship to other aspects of the problem; speech and hearing development and management; psychosocial implications; and parent orientation.

Drug induced phocomelia (Easter Seal Research Foundation of the National Society for Crippled Children and Adults). Charles Frantz, M.D., Medical Co-director, Area Child Amputee Center, Michigan Crippled Children Commission, 920 Cherry Street, SE, Grand Rapids 6, Michigan.

Summary: A study tour of Northwest Germany to evaluate the incidence of phocomelic infants and their functional problems in the future. An endeavor will be made to classify these as to types relative to the incidence increase. An attempt will be made to analyse the functional disabilities plus the possible approaches to nonstandard prosthetic devices.

Cinefluorographic study of pathological speech mechanisms (NIH). *Elise Hahn*, Ph.D., Department of English, University of California at Los Angeles, Los Angeles 24, California.

Summary: This research project will examine the relationships between pathological physiology and speech disorders, as revealed through the use of cinefluorography. The investigators will examine, specifically, 1) changes in the speech processes before and after the pharyngeal flap operation; 2) changes in speech processes when a prosthetic device is introduced; 3) specific kinesological differences in phonation and swallowing; 4) relationships between articulation disorders and the early appearance of hypertrophied adenoids; and 5) the study of malocclusions which show a need for corrective surgery.

Carcinogenic studies on tetracycline (NIH). W. C. Hueper, M.D., Chief, Environmental Cancer Section, National Cancer Institute, Bethesda, Maryland.

Summary: Recent reports from Japanese investigators suggested that several antibiotics possess carcinogenic properties for rats. Certain features of tetracycline, especially its tendency to be retained in the bones after administration in both man and animals, made a carcinogenic bioassay attractive. The material is administered to pregnant mice and to their offspring by subcutaneous injection. The animals will be observed for malformations and for their relative vitality as presented by their survival rate.

The effects of urethane on the developing mouse embryo (NIH). Shirley L. Kauffman, M.D., State University of New York, Downstate Medical Center, 450 Clarkson Avenue, Brooklyn 3, New York.

Summary: The mechanism of action of urethane both as a teratogenic and carcinogenic agent is being studied. Mouse embryos are exposed to urethane by intraperitoneal injection of the pregnant mouse. The developing spinal cords of the embryos are examined with regard to the effect of urethane on mitosis, and the exposed mothers are studied for the presence of pulmonary adenomas. Presently under investigation is the hypothesis that urethane effect is due to interference with DNA synthesis. Various precursors of DNA as well as DNA are injected along with urethane as a test of these compounds ability to antagonize the decrease in mitosis in the embryonic spinal cord and the production of pulmonary adenomas in the mothers.

Congenital defect in rats deficient in vitamin B12 (Public Health Service). Paul M. Newberne, Ph.D., Department of Nutrition, Food Science and Technology, Massachusetts Institute of Technology, Cambridge 39, Massachusetts.

Summary: None provided.

The genetics of mental retardation studies of chromosomal abnormalities (NIH). Charles V. Pryles, M.D., Department of Research, Wrentham State School, Wrentham, Massachusetts.

Summary: At the Wrentham State School, we have a population of ever 2300 mentally retarded patients of both sexes, all age groups, and many different diagnostic categories. We plan to do chromosomal analyses of groups of patients belonging to specific diagnostic categories and when abnormalities are found to do further ancillary studies. These will include chromosomal studies on the patients' families and on other patients in the same diagnostic categories to determine the genetics of the abnormality and the uniformity of its existence in similar patients. Urinary amino acid studies and other biochemical determinations will be done as indicated. We will be able to study patients at the other three State Schools in Massachusetts in order to increase our number of cases and to validate the consistency of our findings. By doing chromosomal studies and correlating the abnormalities found with the patients' mental and physical defects, it is hoped

that "mapping" of human chromosomes, i.e., determining which chromosomes are responsible for specific aspects of the human make-up, will in time become possible. Chromosomal studies have been done with the mentally retarded and abnormalities found in patients with mongolism, multiple congenital abnormalities, and gonadal anomalies. We have done preliminary studies on some of our patients in these and other categories, and wish to continue our work on a larger scale.

An evaluation of intensive therapy for cleft palate (NIH). L. L. Schendel, Ph.D., Associate Professor and Director, Speech and Hearing Clinic, Florida State University, Tallahassee, Florida.

Summary: The aim or purpose of the study is two-fold: first, to objectively evaluate the progress made by cleft palate children during the summer clinic program and the extent to which the newly acquired speech patterns are stabilized, and second, to evaluate the relative merit of the various tests and procedures presently being used for clinical speech evaluations of cleft palate persons. The long-terms goals of this study are to improve the effectiveness of speech therapy programs for persons with cleft lip and palate and to identify the diagnostic and treatment tools which will aid in this endeavor. Fourteen to 16 children between the ages of seven and 15 with speech problems related to post-operative cleft palate will be enrolled for a six-week period of intensive speech therapy. The therapy program will be organized toward improvement of communication skills through formal speech therapy techniques, through participation and oral communication experiences, through music therapy techniques, and planned recreational experiences. Pre-therapy and posttherapy scores will be compared and analyzed. An exploratory investigation will be made to evaluate the relative merit of the various tests and procedures used in the clinical speech examinations of each cleft palate child.

Evaluation of the speech adequacy of cleft palate children by the use of radiologic and speech rating procedures (NIH). Ralph Shelton, Ph.D., Department of Hearing and Speech, University of Kansas, Kansas City, Kansas.

Summary: Acoustical, cinephotographic and cineradiographic observations of persons having anomalous or surgical clefts or perforations of the soft and/or hard palate. Comparison of familiar prostheses upon speech performance by these criteria.

Dissection and clinical studies of anatomical relations in the pharynx, basicranium and adjacent cervical vertebra (NIH). Yasuaki Takagi, M.D., National Institute of Dental Research, Bethesda 15, Maryland.

Summary: Dissection and motor physiological studies of the musculature at junction of pharynx and basicranium. Particular attention was given to the intersection of the longus capitis and superior constrictor muscles in human adult and infant cadavers and in five lower species. Clinical studies are in progress of actions of these muscles in infants and children having anomalies of upper pharynx and for basicranium.

Symposium on chromosomes and congenital malformations (National Science Foundation). Josef Warkany, M.D., University of Cincinnati, School of Medicine, Cincinnati, Ohio.

Summary: None provided.

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Mechanism of salicylate induced congenital anomalies (NIH). William C. Yakovac, M.D., School of Medicine, University of Pennsylvania, Director of Pathology, Children's Hospital of Philadelphia, 1740 Bainbridge Street, Philadelphia 46, Pennsylvania.

Summary: Congenital anomalies of the skeletal and intestinal systems in rats have been experimentally produced by

single injections of toxic doses of salicylates in pregnant females on the ninth to eleventh days of gestation. The mechanism of the induction of anomalies by salicylates is being studied by investigating the roles of the four main pathophysiologic effects of salicylate intoxication: 1) uncoupling of oxidative phosphorylation; 2) release of corticosteroids and thyroxine; 3) disturbances of acid-base balance; and 4) effects on enzymes.

LETTER TO THE EDITOR

'Objective' Measures of Nasality

The investigation reported in this *Journal* by Weatherley-White, Dersch, and Anderson (9) represents only one of many attempts (1, 2, 4, 10) to develop an 'objective' measure of nasal voice quality. It is not the purpose of this writer to criticize any particular measurement technique which has been developed. Rather, the purpose of this letter is to question some of the basic assumptions underlying attempts to develop such measures and to point up a number of issues which are involved in the testing of these measures.

All attempts to derive an 'objective' measure of nasality involve the assumption that a measure which does not involve listener judgments would be superior to those that are based on 'subjective' evaluations of humans. Such an argument is developed in detail by Weatherley-White, Dersch, and Anderson (9). It is the thesis of this writer, however, that the rejection of listener judgments as measures of any speech dimension ignores the basic nature of the speech process. Few would argue with the statement that the primary purpose of speech is communication, a process which necessarily requires a listener. It follows that the ultimate test of the acceptability of speech involves its perceptual acceptability to listeners. For example, it may be possible to differentiate the speech of individuals on the basis of some acoustic characteristic which presumably is related to nasal voice quality; however, this would not mean that such differences would be perceived by a listener or, if perceived, that they would result in a judgment that the speech was nasal. It has been contended (9) that a human listener evaluates speech on a 'linguistic' level while objective speech analysis must be done on the 'phonetic' level. It would appear, however, that if deviations on a 'phonetic' level are not reflected in listener judgments that the speech is deviant, then they are of no consequence in the process of communication. Such considerations lead to the conclusion that speech dimensions must be defined ultimately in terms of listener perception. This fact was recognized by Kantner (3) who pointed out that in the assessment of nasality 'the human ear is the final detector and arbiter.' When speech is considered within the framework of a communication situation, in which listeners always are involved, is it reasonable to contend that an 'objective' measure of nasal quality is more valid than one based on listener judgments? In fact, are the terms 'objective' and 'subjective' really meaningful in evaluating measures of speech dimensions, since listener judgments, which would be considered 'subjective,' provide the only measures which are direct and

which are logically valid in relation to the basic perceptual nature of speech?

Despite the considerations discussed, it is possible that some technique other than listener judgment procedures may have practical advantages as a measure of nasality. It should be recognized, however, that such a measure is indirect and is only an *index* of nasality. In addition, such a measure must be validated against listener perceptions. A number of investigators (1, 4, 10) have carried out such validation procedures and, in at least one instance (10), a fairly close relationship has been found between the objective measure and listener judgments. Doubek (2) simply assumed that his measure of nasal sound pressures was a valid index of nasality, an assumption that might be questioned. Weatherley-White, Dersch, and Anderson (9) also rely on certain assumptions in attempting to validate their procedure. They show that their measure can differentiate the words 'oh' and 'nine.' However, does this mean that it is differentiating on the basis of nasality? Obviously, these words also contain different vowel sounds. In addition, these authors found that their measure differentiated cleft palate children from those without clefts. Yet, can it simply be assumed that the cleft subjects were nasal while the nonclefts were not? Even granting this assumption, one might develop a procedure which would differentiate these groups on the basis of articulatory proficiency, since it is well documented that cleft individuals often exhibit consonant misarticulations. How can one be certain that the procedure described by these authors, or any other measurement technique, differentiates only on the basis of nasal voice quality and nothing else? It is interesting to note that one of the normal subjects tested was found to exhibit nasality according to the measure used. The authors attribute this to the fact that this child had a 'moderate cold' at the time. Yet, the voice quality usually associated with a cold is not nasality but denasality. It is recognized that these authors present their findings as only a preliminary report and that further work is in progress; however, the problems involved in interpretation of the reported validation procedures should be recognized and avoided in future testing of this measure.

If some type of 'objective' measure of nasality is to be useful, it must be demonstrated eventually that the procedure provides continuous and reliable measurements which are closely related to listener judgments of this voice quality dimension. This is the only procedure by which the measures *can* be validated. Even then, however, it cannot be assumed that such an 'objective' measure is somehow inherently better than listener judgments. It is obvious that any measure which relates closely to judgments must contain the same amount of error and bias presumably involved in 'subjective' listener ratings. The requirement that any proposed measures of nasality provide continuous data also should be stressed. Although a nasal-non-nasal dichotomy might be sufficient for some purposes, such gross classification in many research studies would not provide adequate measurement of the dimension. As a result, an attempt to validate measures by using two subject groups which represent opposite extremes on the nasality dimension is not an entirely adequate procedure. Close correspondence between the proposed measure and measures based on listener perceptions must be demonstrated at many intermediate points on the nasality scale.

Much of the criticism of the use of listener judgment techniques for assessing speech appears to stem from a lack of understanding by many individuals of the nature of psychological scaling procedures. Such procedures have been used quite successfully for measuring various speech dimensions (6, 8) as well as many other perceptual phenomena. They result in continuous and reliable measures. In addition, the use of a 'standard stimulus' in such judgment procedures as Direct Magnitude-Estimation (6) would allow comparison of speech samples from subjects in different centers, a condition stressed by Weatherley-White, Dersch, and Anderson (9) as being important in cleft palate research. The primary disadvantages of listener judgment procedures are that the recording and judging of speech samples often may be time-consuming and secondly, that the 'purity' of judgments may be questioned; e.g., articulation proficiency may affect judgments of nasality (5). Such contamination of judgments may be reduced, however, by such methods as playing the speech samples backward when rating voice qualities (7). Further, any measure, whether 'objective' or 'subjective', is subject to contamination by other factors. As mentioned previously, differentiating between words or between subject groups does not define the dimension which is actually being measured.

At present, it appears that listener judgment techniques provide the only direct and logically-valid measures of nasal voice quality. In addition, such measures are at least as reliable as those provided by any other technique. It is possible that an index of nasality, such as that proposed by Weatherley-White, Dersch, and Anderson (9), may be shown to be empirically valid in relation to listener judgments and to have practical advantages. However, there still would be no valid justification for criticizing listener judgment techniques, since the use of such techniques recognizes the fact that a listener is *always* an integral part of the speech communication process. It appears to this writer that we should be quite cautious in removing listeners from our assessments of speech dimensions.

Kenneth L. Moll, Ph.D. University of Iowa Iowa City, Iowa

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ANNOUNCEMENTS

The Nomenclature Committee announces that reprints of the article "A classification of cleft lip and cleft palate" (*Plastic reconstr. Surg., 29, 31, 1962*) are still available. Requests for no more than 10 copies are filled at no charge; a rate of 10 cents per copy is assessed for numbers of copies in excess of 10. Orders should be sent to:

William R. Harkins, D.D.S. Fulton Building Osceola Mills, Pennsylvania

The Abstracts Committee is having difficulty in providing comprehensive coverage of current literature. To assist the members in their efforts, authors are invited to either send reprints of recent publications for abstracting purposes in the *Cleft Palate Journal* or to send an abstract already prepared. Either should be sent to the Abstracts Editor:

> Dr. Kenneth R. Lutz School of Dentistry Loma Linda University Loma Linda, California

The Second Latin American Congress of Audiology and Phoniatrics is announced. The Congress will be held August 9 to 13, 1964, in Mexico City, and will include discussions on medical, teaching, and psychological aspects of speech and hearing. Inquiries about the Congress should be sent to:

Dr. Lucia O. de Flores Colegio Hispanoamericano Para El Estudio de Los Problemas de La Audicion, La Voz y el Lenguaje Av. Progreso 141-A Mexico 18, D. F.

The University of Alabama School of Dentistry announces a three-year training program in Dental Radiology leading to a Master of Science degree. Support for two qualified applicants at a stipend of \$5,000 per annum plus tuition charges is available through a National Institute of Dental Research training grant. Applicants are not restricted to those having a dental degree. Inquiries and applications should be addressed to Dr. Arthur H. Wuehrmann, University of Alabama Medical Center, School of

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Dentistry, Birmingham 3, Alabama. Individuals accepted into the program must be approved by both the School of Dentistry and the Graduate School of the University.

The University of Pennsylvania and the Lancaster Cleft Palate Clinic have announced that graduate fellowships in cleft palate therapy and rehabilitation, supported by the United States Public Health Service, are available to qualified applicants. Clinical training is offered at the Lancaster Cleft Palate Clinic, Lancaster, Pennsylvania. Graduate work in a basic science in connection with the clinical training is encouraged. The annual stipend is \$5,000 with annual increments and dependency allowances, and is tax-free. Address all inquiries to: Chairman, Committee on Traineeships and Fellowships, University of Pennsylvania, School of Dentistry, 4001 Spruce Street, Philadelphia 4, Pennsylvania.

Proceedings of a scientific seminar marking the 15th anniversary (June 14, 1963) of the National Institute of Dental Research have been published in a brochure just released. The Institute is one of the nine National Institutes of Health in Bethesda, Maryland, the research arm of the U.S. Public Health Service. The publication reproduces addresses of the three main speakers, representing Government science, university research, and the dental profession. The status of dental research and an assessment of accomplishments are reviewed by Dr. Seymour J. Kreshover, NIDR Associate Director; the role of NIDR in dental education is presented by Dr. Joseph F. Volker, Vice President for Health Affairs, University of Alabama; and communication of research findings is discussed by Dr. Leland C. Hendershot, Editor of the Journal of the American Dental Association. Messages of welcome by Dr. Luther L. Terry, Surgeon General of the Public Health Service, and Dr. James A. Shannon, Director of the National Institutes of Health, are presented. The introduction is by Dr. Francis A. Arnold, Jr., Director of the Dental Institute, who presided at the seminar. Illustrated with candid photographs of the occasion, the 26-page booklet, 'The National Institute of Dental Research, 1948–1963,' is available in single copies on request from the Information Office, National Institute of Dental Research, National Institutes of Health, Bethesda, Maryland.

Back issues of the *Cleft Palate Bulletin*, Volumes I through XIII, are available for purchase. Copies of a bound volume (including Volume I through VIII) are available at \$7.50 each. Unbound copies of Volumes IX through XIII are \$4.00 per volume. Orders should be sent to the SecretaryTreasurer, Dr. Charlotte G. Wells, 106 Parker Hall, University of Missouri, Columbia, Missouri 65202.

The establishment of the National Referral Center for Science and Technology is announced. The Center does not answer technical problems directly, but rather refers the inquirer to those who may be able to assist. More specifically, the Center lists, in answer to an inquiry, information centers, special libraries, governmental agencies, professional societies, industrial laboratories, abstracting services, and individual specialists who may be able to supply the information. Requests for referral service should be made to the Center (by full name), Library of Congress, Washington, D. C. 20540.

Time and Place for Future ACPA Meetings

1965—May	20,	21,	and	22 .	New	· York	City	at the	• Ameri	cana
1966-April	14,	15,	and	16.				1	Mexico	City

The National Foundation-March of Dimes announces a new publication Birth Defects: Abstracts of Selected Articles. This is a monthly compilation of selected articles related to birth defects published in periodicals in this country and abroad. Over 2,600 journals are included in the literature research. About 45–55 significant articles are abstracted every month for inclusion in the publication. The subject of birth defects is interpreted to include broadly morphological and functional defects of congenital origin. Both clinical and experimental studies are included. Articles in the basic sciences related to birth defects, such as epidemiology, embryology, teratology, biochemical genetics, cytogenetics, medical and population genetics are also covered. The emphasis is on the human and clinical. Calendar year subscription: \$5.00. Vol. I, No. 1 was January, 1964; subscriptions entered now will begin with January issue while supplies of first issues last. Correspondence and subscription orders should be addressed to:

> The National Foundation Supply Division, Room 555 800 Second Avenue New York, New York 10017

The American Society for Testing and Materials has announced time and place for annual meetings for 1964 through 1970. Information is available on request from H. H. Hamilton, 1916 Race Street, Philadelphia 3, Pennsylvania.

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The 21st Annual Meeting of the American Institute of Oral Biology will convene in Palm Springs, California, October 5–9, at the Hotel Riviera. The 1964 Institute will bring together a group of foremost authorities to deal in depth with factors that influence the optimal development and quality of calcified tissues. The essayists will consider the nutritional ingredients as well as the chemical quality that make for better bones and teeth, and will discuss the metabolic significance of hard tissues in health and disease and the most recent work on factors controlling the remodeling of skeletal structures. For further information and application forms, write the Executive Secretary, Mrs. Marion Lewis Meyer, 260 San Leandro Way, San Francisco, California 94127.

The 1964 Pan Pacific Dental Conference, sponsored by the Hawaii State Dental Association, will be held from November 14–19 at the Princess Kaiulani Hotel. Rates as low as \$257.80. For further information and free brochure write: Pan Pacific Dental Conference, P. O. Box 2198, Honolulu, Hawaii, or Mid-West Reservations, 36 South Wabash, Chicago, Illinois.

Dedication ceremonies for the new Hebrew University-Hadassah School of Dentistry will take place in Israel, August 11–13. The school, founded by the Alpha Omega Dental Fraternity, together with the new Medical School and School of Pharmacy will be part of the Hebrew University's teaching center known as the Schools of Healing. Dr. Isaac Schour, Dean of the University of Illinois College of Dentistry, will be chairman of a three-day scientific congress on Changing Concepts in Dentistry to be held at the time of the dedication. Distinguished dental educators and practitioners from all over the world will participate in the program.

The Journal of Implant Dentistry, in an effort to fill a gap in the dental literature and to bring to a much larger segment of the profession a subject which up until now has had no formal outlet, has elected to change its name to The Journal of Oral Implant and Transplant Surgery. The Journal, which will be issued once yearly, will not only cover the field of implant dentistry in its every aspect—surgical, prosthetic, and research—but will also cover the new and ever-broadening subject of implantation and transplantation in dental and oral surgery. This will include tooth transplantation, homo, hetero, and autogenous; the implantation of allopathic materials for alveolar ridge reconstruction; oral plastic surgery using hetero-implants such as acrylic and tantalum chins; a discussion of the use of metals for oro-antral fistula closure; many of the revolutionary European implant techniques such as the end-osseous or intraosseous pin and screw implants and Kirchner pinbroach implants. The newly appointed editor is Dr. A. Norman Cranin. Further information regarding the *Journal* may be obtained by writing to Marilyn S. Cranin, Managing Editor, 209 Cedar Avenue, Hewlett Bay Park, New York.

The H. K. Cooper Institute for Research, Education, and Rehabilitation and the Lancaster Cleft Palate Clinic are presenting a comprehensive course in the habilitation - rehabilitation of oral-facial communication disorders October 26 through 30, 1964. Graduate trainee grant awards from the U.S. Public Health Service, National Institute of Dental Research, are available to qualified individuals in the fields of medicine, dentistry, speech, and audiology. All inquiries concerning application should be sent to Robert T. Millard, Program Director, Lancaster Cleft Palate Clinic, 24 North Lime Street, Lancaster, Pennsylvania 17602. No applications will be processed after August 1, 1964.

The American Fund for Dental Education and the American Association of Dental Schools announce the production of a new film entitled *Focus On Dental Education*. The film reviews several AFDE support programs such as dental student loans; dental teaching fellowships for graduate dentists; scholarships for hygienists, dental assistants, and laboratory technicians; student recruitment; dental education research; workshops on teaching methods; and direct grants to the nation's 50 dental schools. Booking: Free-loan. 28 minutes, black and white with sound. Normal loan period is three days; 10 days for television booking. Write AFDE, 410 North Michigan Avenue, Chicago, Illinois 60611.

The 1964 Annual Directory of the Association is in preparation. All changes in listings must be made immediately with the Secretary or the Editor of the Association.

Cleft Palate Teams with at least one ACPA member on the staff are invited to list that service and the name of the executive officer for the team in the Directory. Listing in the Directory, however, does in no way imply endorsement of the team by the Association.

AMERICAN CLEFT PALATE ASSOCIATION

Information for Applying for Membership

The Association was organized in 1940 with the following objectives:

- 1. To encourage scientific research in the causes of cleft lip and palate.
- 2. To promote the science and art of rehabilitation of persons with cleft palate and associated deformities.
- 3. To encourage cooperation among, and stimulation of, those specialists interested in the rehabilitation of cleft palate persons.
- 4. To stimulate public interest in, and support of, the rehabilitation of cleft palate persons.

The Association publishes the *Cleft Palate Journal* quarterly. The Association's Annual Meeting includes sessions devoted to the presentation of papers in medicine, dentistry, speech, and related areas concerning the problems in individuals with cleft lips and palates.

To be qualified as a member of the Association, the applicant must be in good standing in the professional organization representing his major or clinical orientation. He must be accredited in his professional field, and he must have displayed an interest in the rehabilitation of cleft palate persons. The above statement has been interpreted to mean that those applicants trained in Speech Pathology and Audiology must hold at least basic certification from the American Speech and Hearing Association at the time of the application.

The person shown as sponsor on the application must be a member of the Association and must write a letter attesting to the fact that the applicant is eligible for membership.

Send applications or requests for further information to:

CHARLOTTE G. WELLS, PH.D. Secretary-Treasurer American Cleft Palate Association Parker Hall, University of Missouri Columbia, Missouri 65202