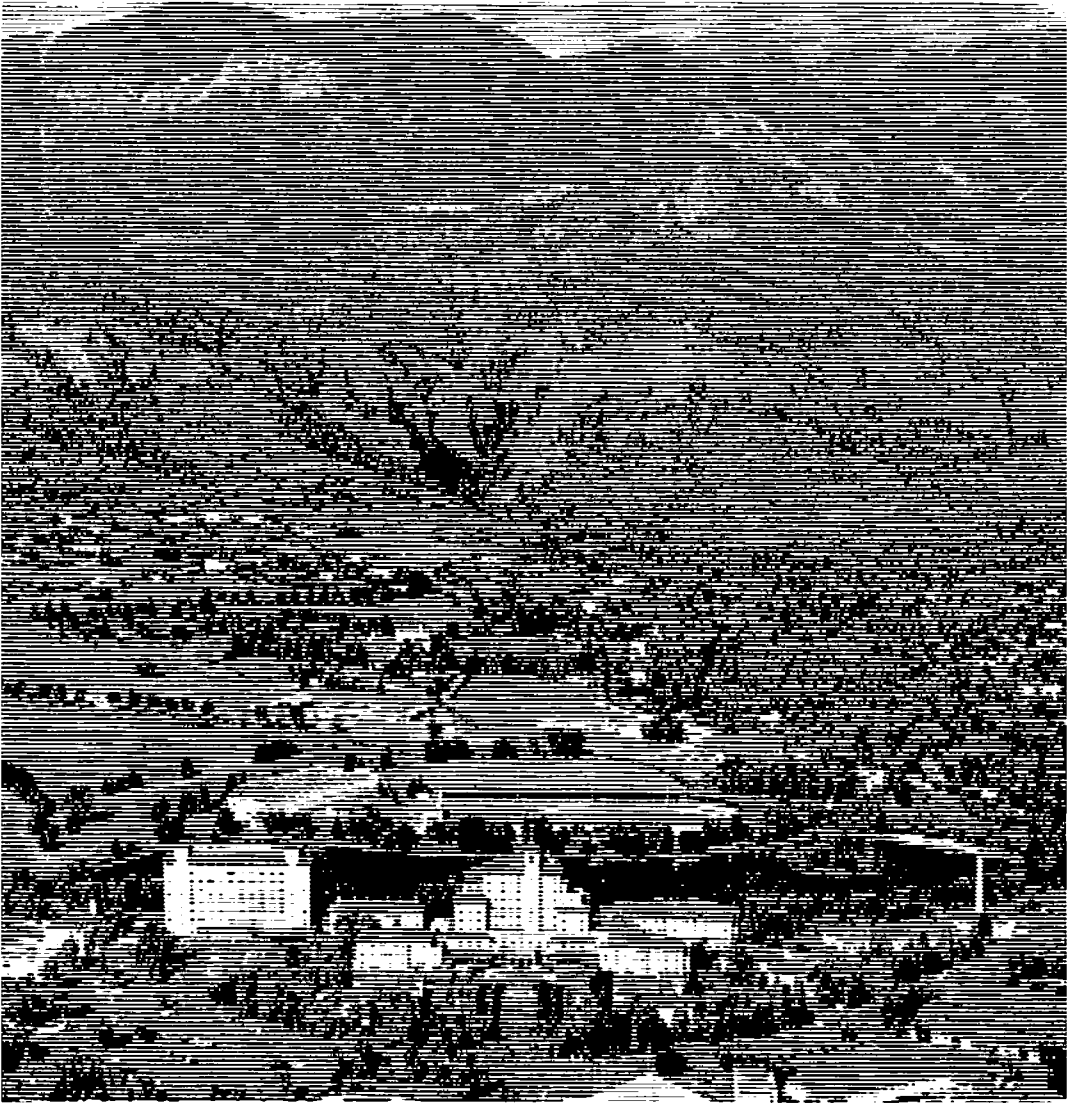

American Academy of Neurological Surgery

ANNUAL MEETING

Colorado Springs, Colorado

October 6-9, 1968

ANNUAL MEETING — 1968

THE BROADMOOR

COLORADO SPRINGS, COLORADO

The American Academy of Neurological Surgery

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Social Calendar — 1968

Sunday, October 6, 1968

3:00 to 6:00 p.m.	Registration - Mezzanine
6:30 to 7:30 p.m.	Cocktails - Pompeiian Room
7:30 to 9:30 p.m.	Dinner - On Own

Monday, October 7, 1968

8:00 to 12:00	Registration - Mezzanine
8:30 to 12:00	Scientific Session - Theatre
10:00 a.m.	Coffee for the Ladies (Terrace Lounge)
11:00 a.m.	Trip to the Mountains with Lunch (Ladies)
12:00 to 1:30 p.m.	Lunch - On Own
1:30 to 4:30 p.m.	Scientific Session - Theatre
4:30 p.m.	Executive Meeting (Members Only) - Theatre
6:30 to 7:30 p.m.	Cocktails - Main Dining Room
7:30 p.m.	Dinner - Main Dining Room

Tuesday, October 8, 1968

8:30 to 11:30 a.m.	Scientific Session - Theatre Academy Award Presentation
11:30 to 12:00	Presidential Address (Wives and Guests Invited)
12:00	Lunch - On Own
2:00 p.m.	Trip: Air Force Academy
7:00 to 8:00 p.m.	Cocktails - Pompeiian Room
8:00 p.m.	Banquet (Black Tie Optional) - Ballroom

Wednesday, October 9, 1968

8:30 to 11:30 a.m.	Scientific Session - Ballroom
11:30 a.m.	Executive Meeting (Members Only) - Ballroom
12:00	Lunch - On Own

AFTERNOON FREE FOR RECREATION

Scientific Program

MONDAY, OCTOBER 7, 1968

8:30 a.m.

1. **Spasmodic Torticollis Results after Cervical Rhizotomy in 80 Cases**
Wallace B. Hamby and Stanton Schiffer
Cleveland, Ohio

Partial denervation of the cervical musculature has proved to be the best treatment presently available for spasmodic torticollis. The most effective procedure in our experience has consisted of bilateral intracranial section of the XIth nerves at the level of the vertebral artery and section of anterior roots of C1-2 and 3, with ipsilateral section of C-4 root in cases having gross sternocleidomastoid hyperactivity.

Eighty patients have been treated thus. Two patients (2.5%) died. Deaths were attributed to coronary occlusion and to the delayed effect of operative cerebral ischemia in one case each. Status of 70 of the survivors was ascertained after at least one year; 3 were lost to follow-up. Good results were obtained in 55 (79%) of patients and poor in 15 (21%).

No specific preoperative criteria were identified as prognostic for postoperative status except that associated dystonias carried a poor prognosis. Postoperative complications included craniocerebral instability, persistent abnormal head posture, and retrocollis which complicated swallowing and intensified cervicobrachial pain.

The paper presents a brief summary of the clinical features common to the condition, a review of patients treated, pertinent technical surgical details, the end results obtained and complications encountered.

8:45 a.m.

2. **Treatment of Benign Cervical Osteoblastoma**
John D. Jackson
New Orleans, Louisiana

A case is presented of an extensive benign cervical osteoblastoma causing mainly neck and shoulder pain. This extensive lesion which extended from C-3 to C-6 produced a complete block at C-4 on a cervical myelogram. The tumor was removed and the spinal cord and nerve roots decompressed by two opera-

tions. First, an anterior approach was made and the involved bodies of C-3, C-4, and C-5 and all tumor that could be seen was removed. The removed cervical bodies were replaced with an iliac crest graft inserted between C-2 and C-6. A few weeks later, a posterior approach was made and all of the tumor and involved bone that could be seen was removed. Two posterior tibial grafts were made that extented from C-2 lamina to C-6 lamina. The follow-up course and x-rays are presented. All of 3, 4, and 5 were removed without injuring dural sac, roots or vertebral arteries.

9.00 a.m.

3. **Cervical Spondylotic Myelopathy**
William F. Beswick
Buffalo, New York

This preliminary report indicates that the high failure and morbidity rates must be reduced. The proven facts concerning the diminished sagittal diameter of the cervical spinal canal and the vascular insufficiency that can result from extension can possibly result in minor, non-permanent cord changes, but prolonged cervical extension with traction to provide better surgical exposure on the operating table must be considered hazardous. Early surgical intervention is mandatory. We must also look upon flexion of the cervical spine as another danger to avoid.

9:15 a.m.

4. **Trans-Thoracic Removal of Midline Thoracic Disc Protrusions Causing Spinal Cord Compression**
Phanor L. Perot, Jr.
Charleston, South Carolina

A survey of reported cases of thoracic disc protrusions with cord compression reveals a high incidence of serious complications when removal is attempted through the usual posterior laminectomy approach. This is particularly true when the protrusion is hard, in the midline and above the T10 level. To gain safer access to these discs, Hulme of Bristol advocated a lateral paraspinal extrapleural approach (modified costo-transversectomy) and obtained good results. We have used a trans-thoracic trans-pleural approach through a standard thoractomy in two patients both of whom had a mild spastic paraparesis due to midline thoracic disc protrusions above T10. Both patients recovered without incident and their neurological deficits disappeared. We feel that in selected cases this approach has definite advantages over posterior laminectomy. A short movie will be shown to illustrate details of the operation.

9:30 a.m.

5. The Predictive Value of Myelography in the Diagnosis of Ruptured Lumbar Disks
W. Robert Hudgins
Memphis, Tennessee

A formula for calculating the "Predictive Value" of a diagnostic test has been used to study the indications for myelography in the diagnosis of ruptured lumbar disks. Data was obtained in a prospective clinical study of 394 ruptured lumbar disk suspects hospitalized by neurosurgeons and an additional 102 patients serving as normal controls. All patients were examined by the author, grouped according to the amount of clinical findings, and the incidence of ruptured disk determined in each group. The presence of a rupture disk was determined either by surgery or follow-up examination or questionnaire for conservatively treated patients. Using known abnormal and normal controls, it was found that the sensitivity of myelography is about 75% (25% false negative) and the specificity is roughly 90% (10% false positive).

The "Predictive Value" of a test has been defined as the ability of a test to detect the presence (or absence) of a disease when the disease is in fact present (or absent). By using the "Predictive Value" of positive and negative myelograms, it is shown that:

(a) Myelography is very helpful in ruling out the presence of a ruptured lumbar disk when the diagnosis is doubted on clinical grounds.

(b) Myelography is helpful on patients who have only mechanical signs or poor mechanical and poor neurological signs. Either a positive or negative myelogram will always increase the accuracy of diagnosis over clinical examination alone.

(c) Myelography is not indicated for those patients who have good neurological signs, or good mechanical and poor neurological signs, or a crossed Lesegue sign. In these patients the predictive value of a normal myelogram is less than the accuracy of diagnosis from clinical examination alone.

9:45 a.m.

6. Dislocated Lumbar Vertebral Epiphysis in Teenagers
John J. Lowrey
Honolulu, Hawaii

Among 565 ruptured disc patients operated, 14 were 18

years of age or younger. Three of these showed a transverse ridge across the anterior spinal canal composed of bone, cartilage and nucleus pulposus. The surgical findings seem best explained on the basis of a slipped vertebral epiphysis but Bradford and Spurling indicate the epiphyseal ring is not present posteriorly. The patients are summarized with a photomicrograph of a transverse section of the ridge and the lesion is discussed.

10:00 a.m.

7. **Lumbar Disc Surgery: A Plea for Complete Removal and Early Ambulation Without Fusion or Braces**
William B. Scoville
Hartford, Connecticut

It is believed that back pain alone, whether due to a disc or sprain, is best treated by active calisthenics without bracing. Myelograms are done only in the absence of localization or uncertain diagnosis. Discography has no place in lumbar disc surgery. Operative technique includes side position; "bottonhole" exposure; dorsal decompression of the nerve root; and radical removal of the disc and cartilaginous plates, amounting to 15 to 30 gms.

Rehabilitation includes immediate mobilization and vigorous exercises followed by "wood chopping" calisthenics as a permanent regime. No braces are employed.

The disc space will always show a collapse by postoperative x-ray if complete cleaning out of the interspace has been accomplished. Facetectomy is done in cases of foraminal discs, without apprehension. The superior results following radical disc removal and active mobilization disprove the need for spinal fusion, following facet resection or postoperative collapse of interspace.

Spondylolisthesis alone is rarely a cause of sciatica. When present it is treated the same as other ruptured discs including postoperative calisthenics, no bracing and no fusion, except in those rare cases of vertebral body progressive slippage and continuous back pain upon standing.

In conclusion, it appears that the more radical the removal and earlier the mobilization, the better the results in both leg and back pain, and in the prevention of recurrences. 95% of operated cases have shown good to excellent results with a return to work in two to four weeks following operation, including "compensation cases"; 90% have returned to their former occupation including heavy labor; and the recurrence rate is now down to 2½%.

10:30 a.m.

8. Symposium on the Care of the Paraplegic Patient

Moderator ..... Guy L. Odom
Durham, North Carolina

Acute Care of the Paraplegic ..... Eben Alexander, Jr.
Winston-Salem, North Carolina

Rehabilitation of the Paraplegic ..... Frank H. Mayfield
Cincinnati, Ohio

The Paraplegic and the National Paraplegic Foundation ..... Henry L. Heyl
Hanover, New Hampshire

The Paraplegic and the Veterans Administration ..... Donald D. Matson
Boston,Massachusetts

12:00 noon

Lunch

1:30 p.m.

9. Graduate Training in Surgery as Related to Subspecialties
John Kirklin, Birmingham, Alabama

2:00 p.m.

10. The Unconscious Patient. Neurosurgical Experiences and Diagnostic Difficulties. Report of 23 cases
David L. Reeves
Santa Barbara, California

The undiagnosed problem of the unconscious patient has confronted every physican. Not uncommonly the answer has been unexpectedly revealed at necropsy. Even the post-mortem examination has not always yielded an unequivocal explanation.

Frequently the comatose patient is brought into the emergency department with little previous medical information or evaluation. The history from relatives may be incomplete, conflicting, or unavailable. A language difficulty may add to the confusion. Preliminary examinations and laboratory findings may fail to supply the solution ordinarily anticipated. Not infrequently the neurological surgeon is consulted in undiagnosed and unusual cases.

Not uncommonly in hospitals where the incidence justifies it, a "Coma Team or Unit" has been established. Some times lack of knowledge and occasionally omission of diagnostic procedures has resulted in failure.

Neurosurgical experiences and diagnostic difficulties with the unconscious patient have included cases of rheumatic encephalitis, spontaneous subarachnoid hemorrhage, subacute bacterial endocarditis and emboli, myocardial infarction and emboli, spontaneous subcortical hemorrhage, traumatic subcortical hemorrhage, subdural hematoma, intracranial neoplasia, cerebral arteriosclerosis, fat embolism, meningitis, subdural abscess, drug intoxication, uremia, cases in which the cause of death was not clearly established, and phycomycosis of the central nervous system.

Diagnostically few situations may present a greater challenge, require a wider knowledge, a more rapid and systematic approach, and the use of all necessary procedures and consultations.

2:15 p.m.

11. Long Term Results of Postoperative Intracranial Meningiomas
John Raaf
William R. Parsons
Portland, Oregon

Approximately 140 patients with intracranial meningiomas, operated on by the senior author between 1936 and 1937, have been reviewed. The most frequent presenting symtoms and neurological findings are presented. The use of contrast studies, electroencephalography and brain scans is evaluated. The relative frequency of the intracranial sites of origin of these meningiomas is given. The surgical mortality and morbidity is discussed, as well as the incidence of tumor recurrence.

2:30 p.m.

12. Sensory Rhizotomy Following Operation for Ruptured Intervertebral Disk
Dean H. Echols
New Orleans, Louisiana

Sensory rhizotomy for the relief of chronic pain, first carried out in 1888 by both Bennett and Abbe, had fallen into disrepute by 1925 because of high rate of failure and because of the perfection of cordotomy. In fact, the subject disappeared com-

pletely from the Quarterly Cumulative Index Medicus except for a report of 60 cases by Dr. Bronson S. Ray in 1942. His paper, which included 24 cases of carcinoma of the brachial plexus, was coolly received when presented to the Association for Research in Nervous and Mental Disease. The only article on the subject to appear in the Journal of Neurosurgery (founded in 1944) was in 1966 when Dr. William B. Scoville reported 12 rhizotomies for chronic pain at various levels.

In spite of the fact that rhizotomy for pain was not in good standing in neurosurgical circles, many surgeons including myself continued to employ the procedures when it seemed worth trying in a particular situation. In 1965, Dr. James C. White, an outstanding authority on pain, published a report entitled **Posterior Rhizotomy: A Possible Substitute for Cordotomy in Otherwise Intractable Neuralgias of the Trunk and Extremities of Nonmalignant Origin.**

Probably the chief reason for the reinstatement of sensory rhizotomy as a conventional procedure was the realization by the year 1940, thanks to Jason Mixter, that most chronic sciatica and brachial "neuralgia" is due to compression of a single nerve root by a ruptured intervertebral disk. It is the rather substantial failure rate in disk surgery that has provided a pool if citizens in need of rhizotomy for persistent pain due to scarred or otherwise damaged nerve roots.

Choosing the past 20 years for convenience (1948-1967), the writer finds that he has personally performed posterior rhizotomies on 157 consecutive private patients with serious pain problems. Incidental rhizotomies as part of a cordotomy or part of an operation to remove a benign spinal canal tumor were excluded. Of special interest are the 62 rhizotomies done because of the failure of one or more operations to relieve extremity pain caused by degeneration of an intervertebral disk. In addition, there were 15 patients who had a root cut at the time of a primary operation for a ruptured cervical or lumbar disk (none since 1960). In passing, mention is made of the 49 instances of rhizotomy between foramen magum and coccyx levels for pain of more or less mysterious origin. Finally, there were 31 patients who had rhizotomy for pain due to malignant tumors.

There were no postoperative deaths in the entire group except for one patient with cancer who died in the hospital six weeks after sectioning of S-4 and S-5 bilaterally. The failure rate for the 157 consecutive patients was 38 per cent. The failure rate in the discogenic group was 36 per cent.

Discussion opened by:
William H. Sweet
Boston, Massachusetts

2:50 p. m.

13. Radiofrequency Lesions In Percutaneous Cordotomy
James R. Atkinson
Phoenix, Arizona

Some aspects of electrode placement problems, radiologic and physiologic aids, control of lesion size and tissue response to radio frequency lesions will be discussed. The clinical result of the procedure in a small series will be reviewed.

3:10 pm.

Coffee Break

3:30 p.m.

14. A Comparative Study of Drugs Utilized in the Management of Tic Douloureuz on Primary Afferent Excitability in the Spinal Relay Nuclei of the Trigeminal System
David G. Storrs
Robert B. King
Syracuse, New York

Numerous pharmacological agents have been used in the clinical management of trigeminal neuralgia. However, only a few drugs have found sustained usefulness. The most widely employed agents today are Diphenylhydantoin (Dilantin), Mephenesan Carbamate (Tolseran) and Carbamazipine (Tegretol), There have been few studies concerned with the effects of these agents on the neurophysiologic characteristics of the trigeminal system.

The electrophysiology of trigeminal primary relay nuclei has been extensively studied. We have investigated the comparative actions of drugs known to be effective in the treatment of trigeminal neuralgia on the excitability of neural elements within the relay nuclei of spinal V. Drug induced changes in excitability of the primary afferent preterminals were demonstrated in nucleus oralis and nucleus caudalis utilizing a modified technique of Wall's for determining primary afferent depolarization (PAD).

Adult cats (2.5 - 3.5 Kg) decerebrated by intercollicular section or maintained with alpha-chloralose (60 mg/Kg) anesthesia were used in this study. BP, end tidal CO_2 and temperature were maintained within a rigid protocol.

Diphenylhydantoin ,10-20 mg/Kg) and Mephenesan (20-50 mg/Kg) given by constant intravenous infusion induced:

1. A decrease in preterminal excitability to a test stimulus delivered to either nucleus oralis or nucleus caudalis and measured antidromically from the supraorbital nerve.

2. A decrease in the amplitude and duration of the trigeminal dorsal root reflex.

3. A decrease in the second order neuron response as recorded from both the spinal relay nuclei and the thalmus.

4. A decrease in the effectiveness of a conditioning stimulus, delivered to the ipsilateral sciatic nerve, on primary afferent depolarization in nucleus oralis and nucleus caudalis. This indicates a decrease in effect of presynaptic inhibition.

5. The effect of tractotomy of spinal V at the obex releases a hyperpolarizing influence exerted by nucleus caudalis on nucleus oralis. The drugs decrease this effect.

All of these compounds decrease polysynaptic reflexes and possess anticonvulsant activity. We have shown that the agents reduce transmission of electrical impulses through the relay nuclei and produce a sizable decrease in primary affferent preteminal excitability. The effect of these drugs could be explained by selective blocking of depolarizing interneuronal pathways, and in effect produce hyperpolarizing block, or by stabilizing the preterminal membrane to depolarizing events.

3:45 p.m.

15. Observations on the Electrical Control of Nerve Impulses
Robert H. Pudenz
Enrique A. Carregal
C. Hunter Shelden
Pasadena, California

In recent years there has been an increasing interest in the electrical control of nerve impulses using implanted active and passive sensors. In this report we shall relate our experiences with electrode design and the parameters required to stimulate and block nerves. Certain clinical applications of these techniques will be discussed.

4:00 p.m.

16. Control of Pain by Stimulation of Inhibitory Mechanisms
William H. Sweet
James G. Wepsic
Boston, Massachusetts

Because permanent destructive procedures on the nervous

system for chronic pain, though frequently successful, carry the risk of unacceptable neurological deficit and dysesthesias, we have sought more physiological, non-destructive means to suppress pain. Upon stimulating peripheral large nerve fibers, Wall and colleagues evoked delayed inhibition of unitary discharge in the cat's secondary afferent pain-activated spinal neurons. Shealy and Mortimer found that electrical discharge in the midbrain-tegment induced by noxious stimuli are inhibited by posterior column stimulation. We have attempted to modulate pain perception by activating these inhibitory systems. Working with patients debilitated by chronic pain, poorly responsive to narcotics or previous lesions, or hyperesthetic as a result of these lesions, we have used remote radio-frequency (RF) stimulation of large axons in peripheral nerves and the posterior columns. This has produced both physiologic alteration in thresholds to calibrated pin and subjective improvement in the patient's painful state. Chronic stimulation with a variable, calibrated RF generator reveals 1) that thresholds for sensory changes and paresthesias are relatively constant in the same persons; 2) that, although a feeling of "cool numbness" is produced by stimulation and threshold to calibrated pin or hair induced hyperethesia rises, localization of light touch and position sense remain accurate. No change in underlying control neurological examination has been noted with long term stimulation.

Examples will be given of both good and poor clinical results among the 24 patients studied and treated for up to three years; the techniques of stimulation, electrode design, and implanation will be discussed.

4:30 p.m.

Executive Committee (members only)

TUESDAY, OCTOBER 8, 1968

8:30 a.m.

Academy Award Winner
Yoshio Hosobuchi, M.D.
Chicago, Illinois

A cell-free transmission of chemical carcinogen induced hamster glioma and demonstration of virus particles in its precancerous tissue.

Honorable Mention
Charles W. Needham, M.D.
Montreal, Canada

The reticular formation and generalized seizures.

9:00 a.m.

17. Neuromas of the Brachial Plexus
Robert G. Fisher
Harry B. Tate
Oklahoma City, Oklahoma

Four cases of extensive neuromas of the brachial plexus were found in patients not having Von Recklinghausen's Disease. These may be removed successfully with minimum neurologic deficit, if any, remaining.

9:15 a.m.

18. Medical Epicondylectomy for Ulnar Palsy
Charles Neblett
George Ehni
Houston, Texas

Neuropathies of the ulnar nerve at the elbow produced by compression or traction of the nerve against the unyielding medial epicondyle require an operation that will in some way dissolve the injurious nerve-bone relationship. The almost universally employed procedure is to reposition the ulnar nerve anteriorly, that is, to the flexor side of the medial epicondyle. This is a less than completely satisfactory operation, and one which is probably superior deserves to be better known and more widely used. We wish to report experience with fifteen patients subjected to medial epicondylectomy, which suggests that it is capable of giving greater satisfaction than anterior transposition. The conventional operation necessitates considerable exposure of the ulnar nerve and its branches and jeopardy to them of several sorts, both immediate and late, just in order to move the nerve to the opposite side of a bony prominence which itself has no important function. To accomplish the more direct and simple removal of the medial epicondyle, the delicate sliding investment of the ulnar nerve and its branches does not need to be opened, none of the branches are exposed, or at risk of being stretched or cut, and the nerve is not left in an artificial bed of cut muscle where fibrosis and further late interference with nerve function is a demonstrated possibility. In addition to the operative technique advocated clinical and electrophysiological data will be presented.

9:30 a.m.

19. Sciatic Injection Neuropathy—Its Surgical Treatment
Barton Brown
San Francisco, California

Sciatic injection neuropathy is an infrequent but serious complication of intramuscular injection. The literature would

indicate that spontaneous improvement frequently occurs, but is irregular and incomplete. Teaching of proper injection methods is the keynote to prevention. When the lesion does occur, appropriate investigation and treatment are indicated. This should include consideration of surgical intervention in certain cases. Illustrative cases demonstrate the principles involved.

9:45 a.m.

20. Cysticercosis of the Brain
Fernando Cableses
Lima, Peru

One hundred cases of cysticercosis of the brain are reviewed regarding their pathogenesis, clinical characteristics and treatment.

They are classified in two main groups: a) the cystic, intraparenchymatous type; and b) the racemous type usually occupying the subarachnoid space and cisterns. Both show different problems, and many unsolved questions will be raised in the discussion.

10:10 a.m.

Coffee Break

10:30 a.m.

21. Non-Operative Treatment of Infantile Subdural Hematoma
Robert L. McLaurin
H. Paul Lewis
Emily Isaacs
Cincinnati, Ohio

Based on previous observations of the pathophysiology of chronic subdural hematomas in adults it appeared logical that removal of subdural fluid in infancy was not necessary unless it was accompanied by intracranial hypertension. During the past 2 years a series of 18 patients have been treated by tapping only and this has been done only when clinical evidence of increased pressure was present. No attempt was made to remove all the fluid and repeated taps to "dry up" the subdural space were not performed. Subsequent psychometric follow-up of these patients indicates that 5 fall more than 1 standard deviation below the expected mean for the particular age. While no similar follow-up study of infants treated by craniotomy and/or shunting is avail-

able for comparison we believe the results compare favorably with those obtained by operative methods. It is concluded that surgery is seldom necessary in the management of infantile subdural hematomas.

10:45 a.m.

22. Percallosal Sump Ventriculostomy
George Ehni
Frank Yelin
Houston. Texas

This paper describes a technique which has been employed by the authors to surmount a situation in which long established shunts for hydrocephalus due to aqueductal stenosis had resulted in great shrinkage of the ventricles, so much that the shunts could no longer be maintained constantly effective. The operation consisted of going through a small opening in the corpus callosum and installing a larger diameter tube as a sump into which we introduced at its deep end the already present Pudenz ventricular catheter.

11:00 a.m.

23. Spinal Cord Tumors in Children
E. Bruce Hendrick
Toronto, Canada

This is a review of all spinal cord tumors admitted to the Hospital for Sick Children in Toronto between January, 1955, and December, 1967. There were seventy-five patients in the group studied. A clinical classification, which is of diagnostic and prognostic value, has been developed from this series.

Discussion opened by:
Donald D. Matson
Boston, Massachusetts

11:30 a.m.

24. Presidential Address "A Glance at Neurosurgery, Past, Present and Future"
James G. Galbraith
Birmingham, Alabama

12:00 Noon

Lunch

8:30 a.m.

25. Posterior Communicating Aneurysms

Alfred Uihlein
C. C. Kao
Rochester, Minnesota

This paper is a sequel to our previous review of aneurysms of the anterior communicating artery complex and reviews patients who were managed by us for aneurysms of the internal carotid artery in the region of the posterior communicating artery. A break-down into surgical and medical management was conducted in an effort to determine what procedure appeared to be best suited to this group of intracranial aneurysms. The study encompasses the period from 1957 to 1968. During this period, 86 patients were operated upon for their aneurysms in this location.

8:45 a.m.

26. Common Carotid Ligation for Intracranial Aneurysms: Results in 28 Cases

John S. Tytus
Merrill P. Spencer
Seattle, Washington

We have found gradual common carotid artery occlusion over a period of four to ten days to be a satisfactory method of treating intracranial aneurysms not amenable to direct attack, and in those aneurysms occurring in older patients. Under certain conditions such treatment may be effective in aneurysms arising from the anterior communicating-anterior cerebral complex.

For the past three years, we have implanted an electromagnetic flow meter on the internal carotid artery at the time of applicaion of the Crutchfield clamp in order to monitor the effects of graded occlusion of the common carotid artery. By this means significant reductions in internal carotid arterial flow have been detected prior to changes in retinal artery pressures which, in our experience, usually do not occur until common carotid occlusion is nearly complete. When complete occlusion has been accomplished, the Crutchfield clamp and flow meter are removed and the common carotid artery doubly ligated.

In this series. there were three deaths, none of which resulted from carotid occlusion itself. One death followed recurrent

intracranial hemorrhage during the course of common carotid occlusion. These deaths will be detailed.

There was no morbidity from common carotid ligation in this series except for a transient vagal paresis in one instance.

9:00 a.m.

27. Intracranial Aneurysms, Technique Using the Diploscope
William M. Lougheed
Toronto, Canada

9:15 a.m.

28. Progress Report Copper Electric Thrombosis of Aneurysms
John F. Mullan
Chicago, Illinois

We have now treated 43 patients with intracranial aneurysms by means of electric or copper electric thrombosis. The current indications, technic mortality and morbidity will be described.

9:40 a.m.

29. Endolymphatic Hydrops: A Possible Complication of Removal of Posterior Lip of Internal Auditory Canal
David A. Hilding
William F. Collins
New Haven, Connecticut

Recent experimental work has shown that destruction of the endolymphatic sac in guinea pigs and cats produces late endolymphatic hydrops with degeneration of the organ of Corti. An anatomical demonstration of the relationships of the endolymphatic sac, duct and the porus acusticas will be presented. The endolymphatic sac is usually found one centimeter posterior to the porus acusticas. This distance is even more foreshortened in the sub-occipital approach because of the obliquity of the petrous bone. Injury to the duct or sac can be expected at any attempt to radically remove the posterior lip of the internal auditory canal. Awareness of secondary endolymphatic hydrops as a reason for possible late development of degeneration of the organ of Corti, may alter the indications for the posterior approach to remove small tumors. It also may prevent unnecessary surgical re-exploration of patients who develop progressive hear-

ing loss and tinnitus, years after resection of a small acoustic neuroma by this route.

9:55 a.m.

30. Dandy-Walker Malformation Associated with Syringomyelia in Adults
George S. Baker
Ralph E. Rydell
Rochester, Minnesota

A review of our operative cases of the Dandy-Walker syndrome in adults will be presented. and a very careful presentation of some of the complications and some of the surgical programs that have been necessary to overcome these will be given.

10:10 a.m.

Coffee Break

10:30 a.m.

31. Stereotaxic Study of Sella Turcica
Nicholas T. Zervas
Philip D. Gordy
Richard A. Field
Boston, Massachusetts

In an anatomic study of the stereotaxic anatomy of the sella turcica, the radiographic outline of the subdivisions of the pituitary gland and sella turcica has been correlated with serial microscopic sections in three planes and with the gross topography of cadaver specimens. This has permitted a statistical representation of the lateral poles of the hypophysis, the height and attachments of the diaphragm sellae, the position of the pituitary stalk and the interface between the pars nervosa and the pars distalis in relation to the bony outline of the sella turcica. The application of this information in increasing the effectiveness and minimizing the risk of stereotaxic radio-frequency hypophysectomy in 135 cases will be presented.

10:45 a.m.

32. The Functional Significance of the Human Dentate Nucleus
Blaine Nashold
D. Graham Slaughter
Durham, North Carolina

Intention tremors and reduction of muscle tone occurs in animals following ablation of the cerebellar dentate nucleus.

Recent reports in man suggest an ameliorating effect on Parkinsonian tremor and muscle rigidity following stereotactic lesions in the human detate nucleus. The authors have developed a stereotactic apporach to the human dentate nucleus and electrical stimulation carried out in alert patients with unusual tremors and muscular spasticity. Efforts to ablate the dentate nucleus and the brachium conjunctivum have been made in 7 persons. The physiological implications of this nucleus as it relates to motor control will be presented.

11:00 a.m.

33. Effects of Central Nervous System Activity on Lipemia and on the Coagulation of Blood

James W. Correll
New York, N.Y.

It has recently been shown in cats prepared with stereotaxically implanted electrodes that electrical stimulation of certain cerebral areas, particularly in the basal diencephalic region, will consistently result in a dramatic change in lipid transportation and in the venous clotting time of blood. Under appropriate conditions the plasma will change during a 4-minute period of stimulation from a clear translucent appearance to become milky and opaque. The venous clotting time decreases from a normal 4-5 minutes to as little as 20 seconds. Information concerning the areas of the central nervous system important for these responses, as well as information suggesting possible effector mechanisms, will be presented.

11:15 a.m.

34. Air Embolism During Neurosurgery: The Use of Right Atrial Catheters in the Diagnosis and Treatment

John D. Michenfelder
Alfred Uihlein
Rochester, Minnesota

During a 7-year period (1961-1967) over 1700 major neurosurgical procedures have been performed on patients in the sitting position. Air embolism was diagnosed in 32 patients; of these 30 occurred during occipital craniectomy (an incidence of 4% for that group). There were no deaths attributed to air embolus, although in one patient this was considered a contributing complication. In two patients, transient postoperative neurologic deficits were attributed to air embolus. In 15 of he 32 patients, a catheter had been previously placed in the right atrium by an EKG technic. In each of these, the diagnosis of air

embolus was confirmed by aspiration of air from the right atrium; the volume of air aspirated varied from 5 ml. to 400 ml. In the remaining 17 patients, diagnosis was based upon the sudden appearance of a heart murmur which was usually heard only during systole and was characterized by a harsh, hollow quality. In most instances, the murmur was accompanied by hypotenson nd ventricular arrhythmias. In only five of the 32 patients was the "typical" mill-wheel murmur heard. Treatment varied and included aspiration of the air when possible; elevation of the venous pressure in the head by positive pressure ventilation, internal jugular vein compression, or use of the head-down position and the administration of vasopressors and antiarrhytmic drugs. The low incidence of morbidity or mortality in these patients is attributed primarily to early diagnosis. The common belief that air embolism can only be diagnosed by the detection of a mill-wheel murmur should be discarded, as this is neither an early or a consistent sign. The routine use of right atrial catheters in patients undergoing major neurosurgical procedures in the sitting position is recommended. The presence of such a catheter permits early confirmation of the diagnosis and contributes significantly to the treatment.

11:30 a.m.

Execuive meeting (members only)

Guests 1968

Guest	Host
J. A. Aguilar	John Hanbery
James R. Atkinson	John Green
Barton A. Brown	Edwin Boldrey
Gale Clark	Ernest W. Mack
Salvadore G. Cornejo	Bob Knighton
Robert A. Evans	R. C. L. Robertson
Piero Frugoni	George Baker
E. Bruce Hendrick	Bill Lougheed
David Hilding	Bill Collins
Bob Hudgins	R. L. DeSaussure
John D. Jackson	Dean Echols
John W. Kirklin	Jim Galbraith
John D. Michenfelder	Alfred Uihlein
O. Dean Moore	Frank Mayfield
Charles Neblett	George Ehni
William R. Parsons	John Raaf
Phanor Perot. Jr.	William Feindel
Paul C. Sharkey	James Greenwood
Bennett M. Stein	J. Lawrence Pool
David G. Storrs	Robert King
Ronald R. Tasker	William Keith
Harry B. Tate	Robert G. Fisher
John Tew	Tom Ballantine
James G. Wepsic	William Sweet
Frank Yelin	F. Keith Bradford
Nicholas T. Zervas	Hannibal Hamlin

Past Presidents

Dean H. Echols	1938-39
Spencer Braden	1940
Joseph P. Evans	1941
Francis Murphey	1942
Frank H. Mayfield	1943
A. Earl Walker	1944
Barnes Woodhall	1946
William S. Keith	1947
Howard A. Brown	1948
John Raaf	1949
E. Harry Botterell	1950
Wallace B. Hamby	1951
Henry G. Schwartz	1952
J. Lawrence Pool	1953
Rupert B. Raney	1954
David L. Reeves	1955
Stuart N. Rowe	1956
Arthur R. Elvidge	1957
Jess D. Herrmann	1958
Edwin B. Boldrey	1959
George S. Baker	1960
C. Hunter Shelden	1961-62
Samuel R. Snodgrass	1963
Theodore B. Rasmussen	1964
Edmund J. Morrissey	1965
George Maltby	1966
Guy L. Odom	1967

Past Vice-Presidents

Francis Murphey	1941
William S. Keith	1942
John Raaf	1943
Rupert B. Raney	1944
Arthur R. Elvidge	1946
John Raaf	1947
Arthur R. Elvidge	1948
F. Keith Bradford	1949
David L. Reeves	1950
Henry G. Schwartz	1951
J. Lawrence Pool	1952
Rupert B. Raney	1953
David L. Reeves	1954
Stuart N. Rowe	1955
Jess D. Herrmann	1956
George S. Baker	1957
Samuel R. Snodgrass	1958
C. Hunter Shelden	1959
Edmund J. Morrissey	1960
Donald F. Coburn	1961-62
Eben Alexander, Jr.	1963
George L. Maltby	1964
Robert Pudenz	1965
Francis A. Echlin	1966
Benjamin B. Whitcomb	1967

Past Secretary-Treasurers

Francis Murphey	1938-40
A. Earl Walker	1941-43
Theodore C. Erickson	1944-47
Wallace B. Hamby	1948-50
Theodore B. Rassmussen	1951-53
Eben Alexander, Jr.	1954-57
Robert L. McLaurin	1958-62
Edwin W. Davis	1963-65

Past Meetings of the Academy

Hotel Netherlands Plaza, *Cincinnati, Ohio* ..... October 28-29, 1938

Roosevelt Hotel, *New Orleans, Louisiana* ..... October 27-29, 1939

Tudor Arms Hotel, *Cleveland, Ohio* ..... October 21-22, 1940

Mark Hopkins Hotel, *San Francisco,* and
Ambassador Hotel, *Los Angeles, California* ..... November 11-15, 1941

The Palmer House, *Chicago, Illinois* ..... October 16-17, 1942

Hart Hotel, *Battle Creek, Michigan* ..... September 17-18, 1943

Ashford General Hospital,
White Sulphur Springs, West Virginia ..... September 7-9, 1944

The Homestead, *Hot Springs, Virginia* ..... Septmeber 9-11, 1946

Broadmoor Hotel, *Colorado Springs, Colorado* ..... October 9-11, 1947

Windsor Hotel, *Montreal, Canada* ..... September 20-28, 1948

Benson Hotel, *Portland, Oregon* ..... October 25-27, 1949

Mayo Clinic, *Rochester, Minnesota* ..... September 28-30, 1950

Shamrock Hotel, *Houston, Texas* ..... October 4-6, 1951

Waldorf Astoria Hotel, *New York City* ..... September 29 - October 1, 1952

Biltmore Hotel, *Santa Barbara, California* ..... October 12-14, 1953

Broadmoor Hotel, *Colorado Springs, Colorado* ..... October 21-23, 1954

The Homestead, *Hot Springs, Virginia* ..... October 27-29, 1955

Camelback Inn, *Phoenix, Arizona* ..... November 8-10, 1956

The Cloister, *Sea Island, Georgia* ..... November 11-13, 1957

The Royal York Hotel, *Toronto, Canada* ..... November 6-8, 1958

Del Monte Lodge, *Pebble Beach, California* ..... October 18-21, 1959

Hotel Sheraton Plaza, *Boston, Massachusetts* ..... October 5-8, 1960

Royal Orleans, *New Orleans, Louisiana* ..... November 7-10, 1962

El Mirador, *Palm Springs, California* ..... October 23-26, 1963

The Key Biscaye, *Miami, Florida* ..... November 11-14, 1964

Terrace Hilton Hotel, *Cincinnati, Ohio* ..... October 14-16, 1965

Fairmont Hotel & Tower, *San Francisco, California* ..... October 17-19, 1966

The Key Biscayne, *Miami, Florida* ..... November 8-11, 1967

The American Academy of Neurological Surgery

Honorary Members - 3

	Elected
Dr. Percival Bailey 731 *Lincoln Street* *Evanston, Illinois* 60201	1960
Dr. Wilder Penfield *Montreal Neurological Institute* 3801 *University Street* *Montreal 2, Quebec, Canada*	1960
Dr. R. Eustace Semmes 20 *S. Dudley, Suite* 101-B *Memphis, Tennessee* 38103	1955

Senior Members - 14

Dr. George Baker 200 *First Street, S.W.* *Rochester, Minnesota* 55901	1940
Dr. E. Harry Botterell *Faculty of Medicine* *Queen's University* *Kingston, Ontario, Canada*	1938
Dr. Donald F. Coburn 6400 *Prospect Avenue, Room* 204 *Kansas City, Missouri*	1938
Dr. Theodore C Erickson *University Hospitals* 1300 *University Avenue* *Madison, Wisconsin* 53706	1940
Dr. Joseph P. Evans *University of Chicago Clinics* 950 *E. 59th Street* *Chicago, Illinois* 60637	Founder
Dr. Wallace B. Hamby *Cleveland Clinic* 2020 *E. 93rd Street* *Cleveland, Ohio* 44106	1941
Dr. Jess D. Herrmann *P. O. Box* 135 *Mountain Pine, Arkansas* 71956	1938
Dr. Henry L. Heyl *Hitchcock Foundation* *Hanover, New Hampshire* 03755	1951
Dr. William S. Keith *Toronto Western Medical Building, Suite No* 207 25 *Leonard Avenue* *Toronto, Ontario, Canada*	Founder
Dr. J. Lawrence Pool 710 *W. 168th Street* *New York, New York* 10032	1940
Dr. David Reeves 1482 *E. Valley Road, Studio* 4 *Santa Barbara, California* 93103	1939
Dr. Stuart N. Rowe 302 *Iroquois Building* 3600 *Forbes Street* *Pittsburgh, Pennsylvania* 15213	1938
Dr. Samuel R. Snodgrass *John Sealy Hospital* *University of Texas Medical Branch* *Galveston, Texas* 77550	1939
Dr. Earl Walker *Johns Hopkins Hospital* *Division of Neurological Surgery* 601 *N. Broadway* *Baltimore, Maryland* 21205	1938

Corresponding Members - 5

Dr. Fernando Cabieses — 1966
Clinical Anglo Americana
Apartado 2713
Lima, Peru

Dr. Juan Cardenas y C. — 1966
Av. Insurgentes Sur 594
Mexico, D F.

Dr. John Gillingham — 1962
Boraston House, Ravelston
Edinburg 4, Scotland

Dr. Kristian Kristiansen — 1962
Oslo Kommune
Ullval Sykehus
Oslo, Norway

Dr. B. Ramamurthi — 1966
2nd Main Road, C.I.T. Colony
Madras 4, India

Active Members - 78

		Elected
Dr. Eben Alexander, Jr. *Bowman Gray School of Medicine* *Winston-Salem, North Carolina* 27103	Betty 1941 *Georgia Avenue* *Winston-Salem, N. Carolina* 27104	1950
Dr. H. Thomas Ballantine, Jr. *Massachusetts General Hospital* *Boston, Massachusetts* 02114	Elizabeth 30 *Embankment Road* *Boston, Massachusetts* 02114	1951
Dr. Gilles Bertrand *Montreal Neurological Institute* 3801 *University Street* *Montreal, P. Q., Canada*	Louise 385 *Lethbridge* *Montreal* 16, *P. Q.* *Canada*	1967
Dr William F. Beswick 1275 *Delaware Avenue* *Buffalo, New York* 14209	Phyllis 59 *Ashland Avenue* *Buffalo, New York* 14222	1949
Dr. Edwin B. Boldrey *University of California Hospital* *3rd Avenue and Parnassus* *San Francisco, California* 94122	Helen 924 *Hayne Road* *Hillsborough, California* 94010	1941
Dr. Spencer Braden 1130 *Hanna Building* 1422 *Euclid Avenue* *Cleveland, Ohio* 44115	Mary 2532 *Arlington Road* *Cleveland Heights, Ohio* 44118	Founder
Dr. F. Keith Bradford 1200 *Moursund Avenue* *Houston, Texas* 77025	Byrn 3826 *Linklea Drive* *Houston, Texas* 77025	1938
Dr. Howard A. Brown 2000 *Van Ness Avenue* *San Francisco, California* 94109	Dorothy 2240 *Hyde Street* *San Francisco, California* 94109	1939
Dr. Harvey Chenault 2134 *Nicholasville Road* *Lexington, Kentucky* 40503	Margaret 667 *Tateswood Road* *Lexington, Kentucky* 40502	1949
Dr. William F. Collins, Jr. *Yale University School of Medicine* 333 *Cedar Street* *New Haven, Connecticut* 06520	Gwen 403 *St. Ronan Street* *New Haven, Connecticut* 06511	1963

Dr James W. Correll *Neurological Institute* 710 *W. 168th Street* *New York, New York* 10032	Cynthia *Angonquin Trail* *Saddle River, New Jersey* 07458	1966
Dr. Courtland Davis *Bowman Gray School of Medicine* *Winston-Salem, North Carolina* 27103	Marilyn 921 *Goodwood Road* *Winston-Salem, N. Carolina* 27106	1967
Dr. Edward W. Davis *Providence Medical Office Building* 545 *NE 47th Avenue* *Portland, Oregon* 97213	Barbara *Box* 974 *Troutdale, Oregon* 97060	1949
Dr. Richard L. DeSaussure 20 *S. Dudley, Suite No.* 101 *Memphis, Tennessee* 38103	Phyllis 4290 *Heatherwood Lane* *Memphis, Tennessee* 38117	1962
Dr. Charles G. Drake 111 *Waterloo Street, Suite No.* 211 *London, Ontario, Canada*	Ruth *R.R* 3, *Medway Heights* *London, Ontario, Canada*	1958
Dr. Francis A. Echlin 164 *E.* 74th *Street* *New York, New York* 10021	Letitia 164 *E. 74th Street* *New York, New York* 10021	1944
Dr. Dean H Echols *Ochsner Clinic* 1514 *Jefferson Highway* *New Orleans, Louisiana* 70115	Fran 1428 *First Street* *New Orleans, Louisiana* 70130	Founder
Dr. George Ehni 1531 *Hermann Professional Building* 6410 *Fannin Street* *Houston, Texas* 77025	Velaire 16 *Sunset* *Houston, Texas* 77005	1964
Dr. Arthur Elvidge *Montreal Neurological Institute* 3801 *University Street* *Montreal* 2, *Quebec, Canada*	1465 *Bernard Avenue, West* *Outremont, Quebec, Canada*	1939
Dr William H. Feindel *Montreal Neurological Institute* 3801 *University Street* *Montreal, Canada*	Faith 492 *Argyle Avenue* *Westmount, Province of Quebec* *Canada*	1959
Dr. Robert G. Fisher *Division of Neurosurgery* *O.U. Medical Center* 800 *N.E. 13th Street* *Oklahoma City, Oklahoma* 73104	Constance 107 *Lake Aluma Drive* *Oklahoma City, Oklahoma*	1957
Dr. Eldon L. Foltz *Division of Neurosurgery* *University Hospital* *Seattle, Washington* 98105	Catherine 3018 *E. Laurelhurst Drive* *Seattle, Washington*	1960
Dr. John D. French *The Medical Center* *University of California* *Los Angeles, California* 90024	Dorothy 10800 *Chalon Road* *Los Angeles, California* 90024	1951
Dr. Lyle A. French *University of Minnesota Hospitals* *Minneapolis, Minnesota* 55455	Gene 85 *Otis Lane* *St Paul, Minnesota* 55104	1954
Dr. James G. Galbraith *The University of Alabama Medical Center* 1919 *Seventh Avenue, South* *Birmingham, Alabama* 34233	Peggy 4227 *Altamont Road* *Birmingham, Alabama* 35213	1947

Dr. Sidney Goldring *Washington University School of Medicine* *Division of Neurological Surgery* *Barnes Hospital Plaza* *St. Louis, Missouri* 63110	Lois 11430 *Conway Road* *St. Louis, Missouri* 63131	1964
Dr. Everett G. Grantham 625 *Medical Towers, South* *Louisville, Kentucky* 40202	Mary Carmel 410 *Mockingbird Hill Road* *Louisville, Kentucky* 40207	1942
Dr. John R Green 350 *W. Thomas Road* *Phoenix, Arizona* 85013	Georgia 2524 *E. Crittendon Lane* *Phoenix, Arizona* 85016	1953
Dr. James Greenwood, Jr. 1117 *Hermann Professional Building* 6410 *Fannin Street* *Houston, Texas* 77025	Mary 3394 *Chevy Chase Boulevard* *Houston, Texas* 77019	1952
Dr. Wesley A. Gustafson *First National Bank Building* *McAllen, Texas* 78501	Jennie *North Ware Road, R.R. No.* 1 *Box* 296-A *McAllen Texas* 78501	1942
Dr. Hannibal Hamlin 270 *Benefit Street* *Providence, Rhode Island* 02903	Margaret 270 *Benefit Street* *Providence, Rhode Island* 02903	1948
Dr. John W. Hanbery *Division of Neurosurgery* *Stanford Medical Center* *Palo Alto, California* 94305	Shirley 70 *Mercedes Lane* *Atherton, California* 94025	1959
Dr. George J. Hayes *Commanding General* *U.S. Army Medical Command, Japan* *APO San Francisco* 96343	Catherine 1362 *Geranium Street, N.W* *Washington, D.C.*	1962
Dr. Robert B. King *University Hospital* *Upstate Medical Center* *Syracuse, New York* 13210	Molly 2 *Clara Road* *Fayetteville, New York* 13066	1958
Dr. Robert S. Knighton *Henry Ford Hospital* 2799 *W. Grand Boulevard* *Detroit, Michigan* 48202	Louise 27486 *Lathrup Boulevard* *Lathrup Village, Michigan* 48075	1966
Dr. Theodore Kurze *University of Southern California* *School of Medicine* 1200 *N. State Street* *Los Angeles, California* 90033	Emma 2225 *Homet Road* *San Marino, California* 91108	1967
Dr. Raeburn C. Llewellyn *Tulane University* 1430 *Tulane Avenue* *New Orleans, Louisiana* 70112	Seleta 15 *Colonial Club Drive* *New Orleans, Louisiana*	1963
Dr William M. Lougheed *Medical Arts Building, Suite No.* 430 170 *St. George Street* *Toronto* 5, *Ontario, Canada*	Grace Eleanor 67 *Ridge Drive* *Toronto, Ontario, Canada*	1962
Dr. Herbert Lourie 750 *E. Adams Street* *Syracuse, New York* 13210	Betty 101 *Thomas Road* *DeWitt, New York*	1965
Dr. John J. Lowrey *Straub Clinic* 888 *S. King Street* *Honolulu, Hawaii* 96813	Katherine (Katy) 2299-*B Round Top Drive* *Honolulu, Mawaii* 96822	1965

Dr. Ernest W. Mack 505 *S. Arlington Avenue, Suite No. 212* *Reno, Nevada* 89502	Roberta 235 *Juniper Hill Road* *Reno, Nevada* 89502	1956
Dr. George L. Maltby 31 *Bramhall Street* *Portland, Maine* 04102	Isabella (Sim) *Breakwater Farm* *Cape Elizabeth, Maine*	1942
Dr. Donald D. Matson 300 *Longwood Avenue* *Boston, Massachusetts* 02115	Dorothy 44 *Circuit Road* *Chestnut Hill, Massachusetts*	1950
Dr Frank H. Mayfield 506 *Oak Street* *Cincinnati, Ohio* 45219	Queenee 1220 *Rookwood Drive* *Cincinnati, Ohio* 45208	Founder
Dr. Augustus McCravey 1010 *E. Third Street* *Chattanooga, Tennessee* 37403	Helen 130 *N. Crest Road* *Chattanooga, Tennessee*	1944
Dr. Robert L. McLaurin *Division of Neurosurgery* *Cincinnati General Hospital* *Cincinnati, Ohio* 45229	Kathleen 2461 *Grandin Road* *Cincinnati, Ohio*	1955
Dr. William F. Meacham *Vanderbilt Hospital* *Nashville, Tennessee* 37203	Alice 3513 *Woodmont Boulevard* *Nashville, Tennessee* 37215	1952
Dr. Edmund J. Morrissey 450 *Sutter Street, Suite No.* 1504 *San Francisco, California* 94108	Kate 2700 *Vallejo Street* *San Francisco, California* 94123	1941
Dr. John F. Mullan 950 *E. 59th Street* *Chicago, Illinois* 60621	Vivian 6911 *S. Bennett Avenue* *Chicago, Illinois* 60649	1963
Dr. Francis Murphey 20 *S. Dudley Street, Suite No.* 101-*B* *Memphis, Tennessee* 38103	Roder 1856 *Autumn Avenue* *Memphis, Tennessee*	Founder
Dr. Blaine Nashold *Duke University Medical Center* *Durham, North Carolina* 27707	Irene 410 *E. Forest Hills Boulevard* *Durham, North Carolina*	1967
Dr. Frank E. Nulsen *Division of Neurosurgery* *University Hospitals of Cleveland* *University Circle* *Cleveland, Ohio* 44106	Ginny 21301 *Shaker Boulevard* *Shaker Heights, Ohio*	1956
Dr. Guy L. Odom *Duke University Medical Center* *Durham, North Carolina* 27706	Matalnin 2812 *Chelsea Circle* *Durham, North Carolina*	1946
Dr. Byron C. Pevehouse 2000 *Van Ness Avenue* *San Francisco, California* 94109	Maxine 135 *Mountain Spring Avenue* *San Francisco, California* 94114	1964
Dr. Robert W. Porter 5901 *E. 7th Street* *Long Beach, California* 90804	5400 *the Toledo* *Long Beach, California* 90803	1962
Dr. Robert Pudenz 744 *Fairmount Avenue* *Pasadena, California* 91105	Mary Ruth 385 *S. Oakland Drive* *Pasadena, California*	1943

Dr. John Raaf 1010 *Medical Dental Building* *Portland, Oregon* 97205	Lorene 390 *SW Edgecliff Road* *Portland, Oregon* 97219	Founder
Dr. Aidan A. Raney 2010 *Wilshire Boulevard, Suite No.* 203 *Los Angeles, California* 90057	Mary 125 *N. Las Palmas* *Los Angeles, California* 90004	1946
Dr. Joseph Ransohoff *New York University Medical Center* 550 *First Avenue* *New York, New York* 10016	Rita 140 *Riverside Drive* *New York, New York*	1965
Dr. Theodore B. Rasmussen *Montreal Neurological Institute* 3801 *University Street* *Montreal 2, Quebec, Canada*	Catherine 29 *Surrey Drive* *Montreal 16, Quebec, Canada*	1947
Dr. David Reynolds 1700 *NW 10th Avenue* *Miami, Florida* 33136	Marjorie 1701 *Espanola Drive* *Miami, Florida*	1964
Dr. R. C. L. Robertson 437 *Hermann Professional Building* 6410 *Fannin Street* *Houston, Texas* 77025	Marjorie 5472 *Lynbrook Drive* *Houston, Texas*	1946
Dr. Henry G. Schwartz 600 *S. Kingshighway Boulevard* *St. Louis, Missouri* 63110	Reedie 2 *Briar Oak, Ladue* *St. Louis, Missouri* 63132	1942
Dr. William B. Scoville 85 *Jefferson Street* *Hartford, Connecticut* 06103	Helene 334 *N. Steele Road* *West Hartford, Connecticut*	1944
Dr. C. Hunter Shelden 744 *Fairmount Avenue* *Pasadena, California* 91105	Elizabeth 1345 *Bedford Road* *San Marino, California*	1941
Dr. Anthony F. Susen 3600 *Forbes Avenue* *Pittsburgh, Pennsylvania* 15213	Iris 204 *Church Lane* *Pittsburgh, Pennsylvania*	1965
Dr. Hendrik J. Svien 200 *First Street S.W.* *Rochester, Minnesota* 55901	Nancy 827 *Eighth Street, S.W.* *Rochester, Minnesota*	1957
Dr. Homer S. Swanson 1938 *Peachtree Road, N.W.* *Atlanta, Georgia* 30309	LaMyra 1951 *Mt. Paran Road, N.W.* *Atlanta, Georgia*	1949
Dr. William H. Sweet *Massachusetts General Hospital* *Boston, Massachusetts* 02114	Mary 35 *Chestnut Place* *Brookline, Massachusetts*	1950
Dr John Tytus 1118 *Ninth Avenue* *Seattle, Washington* 98101	Virginia (Gina) 1000 *NW Northwood Road* *Seattle, Washington* 98177	1967
Dr. Alfred Uihlein 200 *First Street* *Mayo Clinic* *Rochester, Minnesota* 55902	Ione 21 *Skyline Drive* *Rochester, Minnesota*	1950
Dr. Exum Walker 490 *Peachtree Street, NE* *Atlanta, Georgia* 30308	Nelle 380 *Valley Road, N.W.* *Atlanta, Georgia* 30305	1938

Dr. Arthur A. Ward, Jr. *Department of Neurological Surgery* *University of Washington* *Seattle, Washington*	Janet 3922 *Belvoir Place, NE* *Seattle, Washington* 98105	1953
Dr. Thomas A. Weaver, Jr. 146 *Wyoming Street* *Dayton, Ohio* 45409	Mary 868 *W. Alexandersville-Bellbrook Road* *Dayton, Ohio*	1943
Dr. W. Kensley Welch 4200 *E. Ninth Avenue* *Denver, Colorado* 80220	Elizabeth 744 *Dexter Street* *Denver, Colorado* 80220	1957
Dr. Benjamin B. Whitcomb 85 *Jefferson Street* *Hartford, Connecticut* 06103	Margaret 38 *High Farms Road* *West Hartford, Connecticut*	1947
Dr. Charles B. Wilson *University of California Hospitals* *San Francisco Medical Center* *San Francisco, California* 94122	Mary 168 *Rock Hill Drive* *Tiburon, California* 94920	1966
Dr. Barnes Woodhall *Duke Medical Center* *Durham, North Carolina* 27706	Frances 4006 *Dover Road, Hope Valley* *Durham, North Carolina* 27707	1941

Deceased Members

		Elected
Dr. Winchell McK. Craig *Rochester Minnesota*	(Honorary) 2-12-60	1942
Dr. Olan R. Hyndman *Iowa City, Iowa*	(Senior) 6-23-66	1942
Sir Geoffrey Jefferson *Manchester, England*	(Honorary) 3-22-61	1951
Dr Kenneth G. McKenzie *Toronto, Ontario, Canada*	(Honorary) 2-11-64	1960
Dr. James M. Meredith *Richmond, Virginia*	(Honorary) 12-19-62	1946
Dr. W. Jason Mixter *Woods Hole, Massachusetts*	(Honorary 3-16-58	1951
Dr. Rupert B. Raney *Los Angeles, California*	(Active) 11-23-59	1939
Dr. O. William Stewart *Montreal, Quebec, Canada*	(Corresponding)	1948
Dr. Glen Spurling *LaJolla, California*	(Honorary) 2-7-68	1942

Broadmoor Hotel - Colorado Springs - Site of 1968 Meeting

THE AMERICAN ACADEMY OF NEUROLOGICAL SURGERY