

	Instat		Numb		Jugling		Lung		
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
Jongue Side	5	13	2	8	2	5		2	stick 2 Cold 1 Dilat.
" Tip		13	1	1	2	5		1	2 stick 2 Post SW
" Bone	2	2							St?
" middle	3	3	1	1		4			
" instatid	4	19		2		4	1		Thick 1 Post (knicks) Fidelity to instat 1 Post
Mouth	15	39	4	6	6	12		2	Low 1 Post W Post L 2V 1 Cold - Post 2 tough temp post tw - 1 - pul B 1 Post Cold 1 Pain 2
Thumb	4	13		6	1	5	1	3	
Index		6		2	1	5			
Middle		1	1			3			
Ring				2		1			
Little		2		1		4			
Hand	16	38	9	19	18	34	5	10	Pre 3 Post 8F Pain 2 Pre 13 Post
Arm	14	35	9	14	13	20	2	5	Elbow 1 Post 4 Post pain 1 Post 1 Post with feeling
Elbow									
Face	7	18	8	3	3	4	1	1	3 Pre Pain 1 Post Cold 2 Pre 7 Post 106
Joint Feet	5	16		3		4		2	
Leg	6	10	4	5	6	5	2		B - 1 Post DM - 1 Pre
Hips		1	1	2		1		1	1 Pre - Pain 9B Post
Foot	1	3	1	2	1	1	1		1 Cold - post
Head	5	3			3				H 1 Pre Pain 1 Post - 2 Post 2 Pre
Toes	1	2	1						
Throat	3	7							Throat 1 temp.
Eyes	1		1				3		1 temp 1 - area 18
Trunk	5	13	1	8	5	13	1	1	HP - 1 Pre - 1 Post two 1 post 8 Pre 7 Post - 2 Post

	Unsettled Pre Post	Unsettled Pre Post	Unsettled Pre Post	Unsettled Pre Post	Unsettled Pre Post	Unsettled Pre Post	Unsettled Pre Post
Fingers 4-5		3		1		1	3
" 1-2	1	4		1		1	3
" 3-4		6					4
" 1-2-3	1	4	1	1		2	1
" 3-4-5		1				1	3
" 2-3-4				1			2
" 2-3	1	1					1

Total 98 271 43 88 64 140 17 31 + 1 temporal  
 369 131 204 49

Checks. 5 - Post Central - Tongue  
 Cold 1 post - tongue 1 Post - Thumb 1 Post - Mouth  
 2 pre - 7 post face 1 post foot Total 13  
 Pain 2 post thumb 2 pre hand 4 post arm  
 3 pre 1 post face 1 pre - hip 1 pre, 2 post 2 temp - head  
 1 post - 1-2-3-4-5; 1 post - 2-3-4-5 Total 20 Pain

Stiffness 1 post tongue  
 Cant Control - 1 post  
 Tongue  
~~2 post tongue~~  
~~1 post tongue~~  
~~1 post tongue~~  
~~1 post tongue~~  
 Blood Rushing 1 pre 1 post tongue 1 pre - hand 1 post leg 1 post hip  
 1 pre - trunk 2 pre 2 post arm 10 total  
 Thumping 1 pre - arm 3 pre Ear(?)  
 Hesitant to move 2 pre - arm 1 pre leg  
 Heat 1 pre - head 1 pre - trunk  
 Thirst - 1 temp throat  
 Feather 3 pre 3 post Hand 1 pre - 4-5 fin Total 7  
 Swelling sense - 1 - tongue - post central.

Subtract 7 1. face for this  
 4 face  
 5 head 2 4

- 1
43. Elliott Smith - gross vision map.  
45. Parietal lobe enlargement.  
' Poliak  
49. Rolando - pioneer electric stim.  
37. Flowrens vs. Broca + Jackson  
52. Laitz Luitseh + Hitzig  
53. Jackson jubilee.  
59. } Luciani  
58. } Hitzig

61A. Horsley Detail

in bilat. except lips etc.

Orang. inexcitable areas on precentr. gyrus.

Horsley + Schaefer - sensory function must await a human case.  
for proof positive.

62. - Eye movement, conjugate.

Mott + Schaefer Frontal field dominated occipital one.

63. Beevor + Horsley - unilaterality in soft palate.

63. Sherrington + Gr.

In no case motor area behind fiss. R.

Conjugate eye from frontal + occip. pole.  
No vocalization.

By facilitation only - movements from post central cont.

64. Jolly + Luchsland + Simpson also - no mov. from post central

65. Facilitation, Reversal

67. Gr. Brown's conclusion Motor area hyperirritable  
cell station acted upon by other areas.

70A. Tower - Adversive head + eye movements extra pyramidal

70A D. Boenrus

72. Roberts Bartholow - first human stimulation.

74. Sciamanna

74. Horsley - direct human stim., excision + ligation of artery.

74. - Lloyd + Deaver first noted the spaces of unresponsive cortex interspersed & responsive. Also Bidwell + Sherrington in monkeys.

Dana - 142 sensory dist. & cort. paralysis, & vice versa

75. Ransom. - pre Rolandic. human sensation.

Thomas + Cush.

77. Foerster often got motor response from post central gyrus. No mention of sensory from pre central.

Sensory lesions short lived due to bilateral representation.

EPB

Consider 5 E a <sup>Sensory</sup> ~~motor~~ abdominal movement (trunc)

~~110 E a sensory abdominal contralateral.~~

~~From autonomic.~~

Ipsilateral models —

EPB — Eye?

M-92 — bilateral mouth. Started ipsilateral.

~~M-3 — " " not ipsilateral~~

Extinction Thompson.  
Richardson

~~Vocaliz. 4 Down.~~

~~4 Non Down. (Left hand in Lt. hem)~~

Pain paragraph p 38 — quality

Ad

Quality of Sensation. } Sense of movt.  
Desire.  
- Meaning of electrical response  
Extent of responses.

Motor  
Sensory  
Comparison  $\bar{c}$  chart of Loerster.  
Motor.

Sequence + importance of representation  
neck  
Lumk

Facilitation

Adversive movements.

~~Senses~~  
- Introspection

Unilateral

- Vocalization + grunting

## Summary

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Introspection

Vocalization

Meaning of electr. stim. - sensory + motor

Facilitation

Sensory motor cortex - Loerster, Dussier de Baronne.

Adversive movements

# Summary.

has been made

29 ~~A~~ detailed analysis of the records of 163 operations ~~in which~~ during which the cortex was stimulated electrically. The evidence from this evidence the following conclusions ~~are drawn~~ somatic motor function is represented

most. usual.

Type Sensation!  
 Sense most. related to mov.  
 Sequence

unilateral  
 vocalization

Epileptic. Facil  
 spread  
 inhibition

6 a B  
 Four areas      neck & face      41

Trunk Sens.      8 areas.

Identify 6 a B.  
 Extent of motor  
 Adversion moods.

The ~~about~~ about one half as many points ~~post central~~ behind the fissure of Rolando as in front. Similarly ~~somatic~~ sensation (imitating somatic sensation has a precentral representation about one half as often as post central. The Rolandic cortex should be considered sensori-motor, <sup>and not exclusively subdivided</sup> in the as urged by ~~Jusser de Baronne~~

All movements are ~~not~~ recognized by the patients as in voluntary. Vocalization as a separate discrete representation. Sequence of responses <sup>both sensory and motor</sup> ~~front above down~~ are consistently the same ~~with~~ when neighboring functions can be elicited. Detailed functional response is possible. can be elicited but the topographical position of response points varies greatly ~~in different individuals.~~

51

Sensation is described most often as numbness, next tingling, next a feeling of movement in a part, <sup>a desire to move, an inability to move etc</sup> etc. All sensation and

29  
 41  
 51  
 ---  
 121



Motor response is strictly ~~or~~ contralateral.  
excepting for face and tongue

Bilateral sensation occurs only in the tongue  
and face with ~~some~~ exceptions.

43

There is ~~no~~ evidence <sup>is found</sup> that the so called frontal  
adversive field (6 a) ~~beta~~ produces <sup>either</sup> adversive movements  
in man. There is ~~no reason~~ evidence for extending the <sup>perhaps</sup>  
motor <sup>or sensory representation</sup> beyond the pre and post central gyri except for  
conjugate movements of the eyes.

~~the~~ Facilitation ~~can be pro~~ sensory or motor  
Displacement of a cortical point can be  
produced by repeated stimulation. Habitual  
~~epileptic discharges~~ epileptic discharges may produce  
Sensitization of a cortical area, spread of response  
to a distance and ~~inhibition~~ depression of  
a cortical area

? Results of Stimulation of the human cerebral cortex.  
? Stimulation of the human cerebral cortex.

---

1. Introduction.

2. History of stimulation. Animal  
Human

3. Methods.

Conduct of operation and operative set-up.

Thyratron + electrodes

Method of recording

Compilation of data.

Specimen case with photograph + records for each response.

4. Presentation of Material

Summary charts. - excluding those in doubt or a few observations

discussion under each chart.

e.g. extrapyramidal motor system  
extent of sensory cortex  
realization.

5. Discussion. Instability of cortical point.

Epileptic facilitation.

Discreteness of localization

Motor and sensory sequence charts.

Relationship of cortical activity to consciousness.

Relationship of motor response to cortical  
response to epileptic discharge.

6. Conclusions

Human

Atypical Sensory

Removed A 122 Schwab pounding in opposite ear  
? pulse. — continued.

# Autonomic

Pupil. Gabrielle - Dr Cove. Contr. twice 3 times at I repeated.  
at II near.

Paradic.

~~Dilated once near.~~

Dilated.

near  
~~lower frontal~~

Contracted.

2 - lower precentral.

First sign. attack Weakness - then post central seizure.

Pulse - Edna Montgomery - great increase.

repeat - quickening of few beats.

vomiting from under surface.

94 W. Klein.

Rising feeling in chest. 5 points in or near focal atrophy. - Once saw in pre central gyrus about where chest should be

91 Weeping  
24 - not ep.  
108 - Yascardis Weeping disregard

5 E

Tremor in stomach not aura

20 E.

Posterior to post centr. - aura of attack.

24 - E.

Feeling in chest like aura & similar place

110 - E.

one sided - post centr. not aura

104 N

Belleau Nausea - aura

249

Richardson Nausea & vocalization 2. - Precentral.

11

Bacon Vomiting after tingling in head. precentral  
Vomiting twice after occip. stim.

auton.

Salivation <sup>50</sup> no. McLean. Mouth watered - swallowing

" 92 Larsen. Saliv. & tingling about tongue

2<sup>nd</sup> time Saliv. & tingl mouth + tongue

15 - N. - Two postantrol - Beaulieu - pain in head  
+ nausea about  
cyst.  
bowel movement during sleep.

~~29 N. - 2 preantrol clod.~~

77 Dawd. Big cyst. - nausea as aura of attack.

Bil Sens.

7 I-223 Morin. Sens. to the eyes  
like paralyzed.

M-101 - Sciretti sensation stiffening, both sides

I-43 Sensation of lifting the eyes. - R. Murray.

B-35 - Sens. mouth bilateral. - Postord

I-43 - post. sens. of eyes turning up.  
checked. - feeling of impending attack. + eyes wide  
ant. - failed to check. eyes

13 cases operat. Dr. Corp

1 Eto.

Lipsi lat.

L. 82 is all about Scar - results - use for ep. - Diffusion.

R. 15 - Betanien

Chart

Relations

- I. Tongue movt: Swallowing lies below; jaw movt above
- II Tongue Sensation: Teeth and throat below; lips above.
- III Mouth movt - jaw below; {neck and vocalization above.
- IV " Sensation: Tongue below; Face above.
- IV jaw movt: - Tongue below; mouth (lips) above.
- \* V " + Tooth Sensation - Throat below; Tongue above.
- V - {Face movt - See mouth movt.  
Throat " - See swallow
- VI - {Throat Sensation - Below " Sylvian fissure; above is Tooth Sensation.  
Face Sensation - Mouth lies below; thumb lies above.
- VII - Swallowing - Below is Sylvian fissure; above is tongue.
- VIII - Vocalization - Neck + mouth are below; Eyelid. above.
- Head sensation - Not localized.
- IX Finger movt. - order is Hand close  
Small finger  
ring "  
middle "  
index "  
Thumb  
Eyelid. - Forehead lies below + above  
(2 pts each) eyelid in only  
case = both in it. (78)
- X Finger Sensation - order is Hand  
Small finger  
ring "  
middle "  
index "  
Thumb "  
face. (Nose lies above " face" (57)  
Forehead also lies above face  
Forehead + nose? (104)  
above; open above close. (forearm)  
hip
- XI movt - Hand - little finger below. wrist  
arm - order is wrist, elbow - shoulder. - chest.
- XII movt arm - see above  
Sensation arm - Hand below  
Forearm below arm below shoulder. below chest
- XIII movt. Hand - see above.  
Sensation .. - little finger lies below; forearm lies above.
- XIV - see XII - Sensation in arm.
- \* XV - Movt trunk + legs. - order from below is shoulder, <sup>(?)</sup> tip, back  
knee, ankle, toes.
- XVI - ~~tip~~ Sensation in leg + foot. - From below order is chest,  
abdomen, ~~tip, back, leg, toes.~~ abd + back  
new notes.  
hip, leg toes
- XVII Sensation in trunk