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ON QUASI-APHASIC SPEECH
DISTURBANCES
IN LESIONS OF THE DEEP STRUCTURES
OF THE BRAIN.

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MOSCOW

1975

On quasi-aphasic speech disturbances in lesions of the deep structures of the brain

For ~~During~~ a century, it was supposed that speech defects associated with focal brain lesions (as well as defects in complex cognitive processes) are due to circumscribed ~~the~~ lesions of the speech area of the major hemisphere or its connections intracortical lesions of deep structures of the brain (the thalamus and adjacent formations) as well as lesions of the paleocortical formations (the limbic zone), being involved in the regulation of ~~the~~ ^{AND} tonus ^{AND} ~~the~~ functional processes, were supposed never to result in any speech defects.

This assumption was well ~~based~~ ^{FOUNDED} and [was practically accepted by all Neurologists] ~~beginning~~ ^{WITH} from Broca and Wernicke and ~~up to~~ ^{CONTINUING WITH} Goldstein and Head, Cajotjanine and Lhermitte Critchley and Geschwind (who's contribution was only in ^{DRAWING} ~~bringing~~ attention from cortical cell structures to their connections).

During the last ^{FEW} decades, a certain development ^{IN} of our approach to speech disorders took place and a ~~certain~~ ^A revision of our previous views was made.

The basis of such revision was closely associated with the introduction of the vertical principle of organization of brain systems, and with attempts to show that cortical systems ~~are working~~ ^{WORK} in close interrelations with ~~the~~ deep structures including those of the brain stem (thalamic and hypothalamic regions), as well as the systems of the paleo and arcocortex (limbic system, hippocampus, amygdala) and the structures of the caudate nuclei which ~~are~~ were supposed to play ^{A PARTICULAR} ~~a certain~~ part in the organization of ~~the~~ cortical processes.

Such a revision of our basic concepts was ^{BEGUN} ~~started~~ by the developmental studies of Majoun, ~~and~~ Meruzzi and Jasper who showed the role played by the reticular formation ~~of~~ in the organization of cortical processes; it continued in the work of Lindsley who ^{DREW} ~~draw~~ attention to the ^{ACTIVATING} ~~activation~~ function of emotion, as well as in the studies of Olds, P. Milner and N. Miller who ~~demon-~~ performed well known experiments with ~~the~~ stimulation of the deep parts of the brain and who analysed ~~the~~ changes in behavior evoked by ~~the~~ ^{THIS STIMULATION} ~~changes~~. An important contribution

DO YOU MEAN THAT THIS ASSUMPTION WAS ACCEPTED, IN PRACTICE, BY ALL NEUROLOGISTS, OR THAT IT WAS ACCEPTED BY PRACTICALLY ALL NEUROLOGISTS? THERE'S A DIFFERENCE, YOU KNOW.

THIS WORK to ~~these~~ studies was made by B. Milner with her studies of the role of the hippocampus in memory processes. all ^{OF} these studies showed that the influence of the brain stem and the old cortical structures ~~rather~~ in the organization of behavior was a rather unspecific one, ^{WHILE} ~~and~~ only part of these ^{EXPERIMENTS} studies (as those of Olds, P. Milner, N. Miller), as well as the recent studies of P. Anokhin, W. Penfield and in the ~~last~~ ^{RECENT} ~~time~~ ^{USE} of N.P. Bekhtereva, tried to ~~follow~~ ^{USE} a different ^{APPROACH} ~~line~~ and to show some specific influences ~~to~~ of the deep structures on the performance of mental activities.

The last line of research was followed by a series of authors who tried to ^{MAKE} ~~use~~ observations on changes of behavior following stereotaxic operations and the destruction of several thalamic nuclei or higher cortical processes, ~~and~~ especially on speech.

Ojemann and his co-workers (1-5), van Buren (6-7), Riekkinen and Cooper (8-10), Moore (11) and others ~~to~~ showed that excitation of thalamic nuclei or their ^{DESTRUCTION} ~~destruction~~ during the stereotaxic operations could result in marked changes of speech processes, and, whereas manipulations of the anterior nuclei of the thalamus could result in an arrest of speech, manipulations of the postero-medial parts of the thalamus ~~resulted~~ evoked some dis-regulation of speech processes, making speech more accessible to ~~the~~ extraneous influences, bringing paraphasias, ~~loss of tone~~ and perseverations, and resulting in a certain deterioration of the selective organization of the speech processes (4).

It is obvious that in all these observations, no changes in the ~~formation~~ ^{OR} ~~generation~~ of verbal linguistic codes took place (that was ~~fully~~ ^{WELL} executed by cortical formations structures); these observations ~~meant~~ ^{MEANT} only that the realization of verbal codes already existing could suffer, that their modifications or "fluctuations" could ~~have~~ undergo some changes and that, ~~as a result of these lesions~~, the blocking of extraneous factors ^{becomes impossible and ~~that~~ THE} immediate influences of outside stimuli and former traces could derange the highly selective processes of verbal activities.

Although these changes of speech ^{WERE} ~~had~~ ^{OF} an aphasic nature, their description ^{GREAT} ~~careful~~ was of a ~~high~~ interest, and it was an important problem to find ~~just~~ reliable symptoms to

differentiate these disturbances from the aphasic ones.

2) ~~That is why~~ ^{GREAT} of a high importance are observations made in cases of temporary breakdown or changes ^{IN} the influences we mentioned ^{THESE} (that can be seen during ~~the~~ stereotactic operations and electrical excitations of the thalamic structures) as well ^{AS} ~~of~~ observations on cases with ~~station~~ stable derangements of speech which can be seen in ~~cases~~ when the pathological process ~~was~~ expanded to thalamic ~~regions~~ ^{REGIONS} and ~~when~~ ^{WHEN} this region was destroyed after neuro-surgical interventions.

3) The latter group of cases is ^{RATHER} ~~pretty~~ rare and can happen when ~~an~~ aneurism is situated in ^{THE} thalamic region and ~~when~~ ^{WHEN} a surgical intervention is associated with ^{THE} destruction of these structures.

We shall describe ~~such~~ a case where ~~an~~ ^{an} intervention ~~to the~~ ^{IN} the left thalamus, aimed ^{AT} ~~to~~ ^{REMOVING} an aneurism, resulted in clear derangement of the speech ~~with~~ and where a systematic study of the speech disturbance, evoked ~~and~~ ^{US} allowed ^{US} to describe a very specific quasi-aphasic disorders.

Patient Dem. (Case N 63119), 25 years old, an ^{ENGINEER} ~~intelligente~~, entered the Boardenko Neuro Surgical Institute September 25, 1974 with a preliminary diagnosis of ^{AN} aneurism of the left hemisphere. During 1971 and 1974 she had two hemorrhages with loss of consciousness; after the second hemorrhage slight speech defects were observed which disappeared in a short time. ^{THERE WAS} Only a slight paresis of the left ~~for~~ right facial nerve and a ~~bit~~ ^{bit} less reflexes ~~on~~ the left side were exaggerated.

Neuropsychological analysis (by L. Moscovichute) showed that the patient was ^{emotionally} ~~fully~~ adequate, ^{AND} well oriented, ^{AND} co-operative. No defects in praxis, gnosia ^{OR} ~~and~~ speech were observed; she ^{MADE} ~~no~~ no complaints and ~~did~~ not symptoms of her awareness to the exhaustion, ^{objectively} seen after a rather prolonged work. Very slight defects in reproducing of rhythms and in evaluation of complex thematic pictures ^{were} seen. The patient's spontaneous, extended speech showed no defects.

The EEG showed ^{slight} some general changes ~~in~~ of electrical activity; ^{slight} local symptoms were seen in the left occipito-^{parietal zone} (2x2 x 0.8cm). The vertebral angiography showed a small (1.5cm) aneurysm in the left ~~to~~ thalamus, with symptoms of hemorrhage in this

I DON'T UNDERSTAND WHAT YOU MEAN TO SAY HERE.

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The blood supply ^{TO} of the aneurysm was from the choroidal artery (CAROTID?) and the evacuation of blood - was ^{BY} the Vena Malena region (Fig. 1)

Fig. 1.

18. XI. 1974 the patient was operated (Dr Yu. M. Filatov) and an arterio-venous aneurysm of the left thalamus was removed. The aneurysm was situated in the region of ^{THE} fornix and the posterior parts of the ~~the~~ left thalamus. The intervention ^{WAS MADE VIA} ~~used the way~~ of the wall of the left side ventricle, ~~and~~ close to the limbic region, and precuneus. (cf. Fig. 2)

Fig. 2

After the operation, the whole syndrome of the patient's behavior changed radically.

A right sided hemianopia appeared; ~~which may could be~~ ~~was explained as a result of~~

There was a ~~deterioration~~ right-sided loss of superficial and deep sensitivity (the former recovered slightly, the second remained stable), ^{AND} a right sided hemiparesis with marked symptoms of its afferent nature.

Neuropsychological analysis of the patient's behavior was started ~~by~~ a week after the operation and was continued during the next two months. It ^{REVEALED} ~~revealed~~ the following picture:

The patient remained ~~to be~~ active, co-operative, fully oriented, ^{AND} emotionally preserved. Her emotional reactions to her defects were very expressed. No optico-gnostic defects in perception of objects or drawings were observed; all kinds of praxis remained unchanged; she could ~~not~~ repeat all kinds of rhythms according to an acoustic model and on verbal instruction; her musical abilities ^{were} ~~remained~~ preserved and she was able to sing melodies, retrieving them from memory or repeating the melodies given; she could copy geometrical figures and did not have marked difficulties in simple computation. Two components of a new syndrome, ~~and~~ which emerged after the operation, were clearly observed. The first component (due to the dissection of ~~callus~~ the fibres of the posterior part of the corpus callosum) included

marked disturbances of visual perceptions of letters, and words and symbols which contrasted with the fully preserved perception of objects and images. This part of the syndrome, ~~is~~ very close to the facts described by Sperry (8) and Gazzaniga (9), will be ~~be~~ carefully described elsewhere and will not be discussed in this paper.

The second part of the syndrome (very probably associated with the destruction of the left thalamus and the deep parts of the left hemisphere) was seen in some massive disturbances of spontaneous speech, repetition of words and naming disorders. This part of the syndrome will be discussed further.

The patient's speech ~~was~~ ^{HAD BEEN ENTIRELY} ~~fully~~ normal before the operation. Now ~~the~~ massive disturbances of speech could be seen. ~~From~~ ^{At} ~~the~~ first glance, they seemed to be close to the syndrome of a complex aphasia, but a ~~more~~ careful analysis showed that there were some significant differences ~~of~~ which had to be taken into account.

The basic differences which made ~~to~~ verbal contact with the patient impossible ~~did~~ ^{HAD} ~~not~~ nothing to do with motor aphasia. The patient could speak very fluently; the prosodic organization of her speech remained normal; she was able to understand separate fragments of speech and sometimes even to name objects (as we shall see further, ~~it~~ ^{that} was possible only for a short time and then ~~the~~ normal naming ^{WAS} ~~it~~ replaced by perseverations or with extraneous ~~associations~~ ^{paraphrasias}). She easily counted in ^{THE} normal direction and could even ~~count~~ name numbers backward. Nevertheless verbal communication ~~with~~ with the patient remained impossible: she listened very actively to ~~the~~ speech, grasped its general sense and, ~~sometimes~~ ~~it's~~ ~~given~~ as a rule, responded ^{WITH AN} ~~by~~ absolutely inadequate utterance, which ~~only~~ ~~temp~~ ~~partly~~ contained ^{SOME} ~~a~~ adequate components, but which mostly consisted ~~from~~ ^{of} ~~of~~ ~~absolute~~ outrageous associations, which very often ended ^{WITH} ~~by~~ ^{the patient's} exclamation: "Oh, gosh, what do I talk about?!"

Here are some ~~of~~ fragments of ~~the~~ tape recordings ^{IN 1965} of such conversations.

(23.11.1974) . When did we ^{MEET} meet ? " Not so long ago.. " How long ago did we ^{MEET} meet ? " For example, a street .. for example houses... That's a building where all goods were preserved... Oh, dear me ... what I am telling about ?! .. well .. a cup-board ... no ... it's here ... no..." Did we ^{MEET} meet before ? " Well... it's two weeks, perhaps more ... " Who am I ? " A doctor! " What's my name ? " I don't know.. " And who is ^{THAT} that ? (looking ^{AT} at an assistant) " It's a doctor as well ... he treats children ... no ... not children ... adults ... What I am telling about, oh, gosh ... " Is she nice ? " You know ... I lost all ~~you ask~~ I need ... You ask me - and I answer things which don't fit ... I can answer but I really do not know whether ~~my~~ my answers are right ... " Is she nice or not ? " I really don't know whether my ^{ANSWERS} answers will fit ... perhaps it will not fit at all ... " What time of the year is now ? " November - it was the last year, we had ^A festival .. October ... it will come ... no, really it's not I want to tell you ... " Who remained in your house ? " With me ... or with my husband ... no ... nobody is in my house ... my husband is in his ^{OFFICE} Bureau and my daughter is with my husband's mother ... " Where are you from ? " I was born in N ... no ... not ^{LIVING} living ... " What do I say ?! " I have forgotten ... " And where are you ^{LIVING} living ? " N ... what do I say ?! .. " Where did I live ... Oh ... no ... I try to say ... but I can't ... " What is your address ? " I was born ... ~~not~~ no ... it wasn't a town ... " Do you live in Moscow ? " No ... I was born ... it is a village ... a small city ... etc.

It can be easily seen that sometimes the patient understands the question quite well and gives adequate answers, and sometimes she doesn't answer ^{CORRECTLY} correctly, gives perseverative answers, and being aware of her mistakes, but ~~being~~ unable to overcome them.

(26.11.1974) . How are you ? " I am hearing you well! " and how are you ? " And I am seeing you well too ... " And how are you now ? " Oh, yes ... again ... I am seeing you all right! " How is your hand ? " I am seeing you well ... " And how is your hand and your leg ? " I am seeing you all right .. But my ~~the~~ left eye ... no, my right eye .. I have the impression that I am seeing you well .. " Just

a little..." And how is your leg? "I don't listen to you. That means I don't hear what you are ^{SAYING} ~~telling~~... no... I don't listen..." You don't understand what I am ^{SAYING} ~~telling~~? "No, I am hearing well... I don't listen to you... I ~~do~~ answer your questions". Where did you work? "I was an operator in a technical ^{OFFICE} ~~Bureau~~..." What did you do there? "I prepared the technical documentation... you see... ~~the~~ ^{the} ~~trains~~ and ~~carriages~~ were coming... A documentation is required..." And what is the name of your ^{office} ~~Bureau~~? "I didn't grasp... I didn't listen... I listened, but..." ^{YOU} ~~you~~ did not understand my question or it was difficult to answer? "No, I understood the question, but I had other thoughts..." What is the name of your ^{office} ~~Bureau~~? "Oh, I didn't listen, too..." What is the name of your ^{office} ~~Bureau~~? "The ^{office} ~~Bureau~~... Oh, well, the ^{office} ~~Bureau~~..." Well? "That's the Station K. on the Vaega railroad..." Did you ever visit ~~the~~ the South of the country? "Oh, yes, indeed". Please tell me, what part of the South did you visit and what did you see there? "I take a train, and then... I come to the station... And I leave the train... And they give me a railroad ticket... No, I gave the ticket to the station office... let ^{ME} ~~I~~ say I try to find the office..." Well... "And then I am going to the ~~book~~ booking office... Oh, ~~as~~ I'm telling wrong things... I take the places in the ^{coach} ~~car~~... Oh, no, I tell it wrong... No I take a ^{coach} ~~car~~... no... not a car..." What do you do there the whole day? "I take the places..." Did you ~~have~~ swim in the sea? "Oh, yes!" Tell me. "There in the ^{BOOKING} ~~book~~ office... Oh, that's not a booking office... Again the booking office!... No, it's not the booking office at all... Why am I speaking about the booking office?..." Did you have a swim? "Only once". Tell me about swimming, please. "That is marvellous, to observe all that... a lot ~~set~~ of memories remain..." Did you ^{HAVE} ~~had~~ a swim? "Well, I want to tell you all that, and again this booking office comes to my mind... Again that's a booking office!..."

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1. It is quite ~~clear~~ ^{clearly} that sometimes the patient is
2. able to give ~~reasonable~~ ^{REASONABLE} answers, but in the next
3. moment she becomes absolutely unable to do it,
4. an inert trace of the former answer ~~is~~ blocks the
5. new answer, and, although the patient is fully aware that ~~the~~ her answer is ~~false~~ wrong, she remains unable to overcome the inert stereotype (Booking Office etc.). Sometimes the investigator has an impression that the patient's attention goes astray, that she does not listen or does not grasp the question, and replacing it with a different answer. [Sometimes a pathological, perseverative tendency appears, and adequate answers are blocked.]

I THINK THIS SENTENCE IS JUST A REPETITION OF LINES 3, 4, + 5 PERHAPS IT COULD BE LEFT OUT.

(20.xii.1977) Were you ill ^{FOR} during a long time? "No, not so long.." And how long is it? "~~From 1970 to 1983~~ ^{FROM 1970 TO 1983}... oh, no, what am I telling?!... from the 70th... oh, no... from the second.." And what year is now? "Now... now... 197... 197... 1980... 1980th... 1983!" Are you sure? "1984... 1984... no, it is 1984... Oh, that is a nightmare..." How old are you? "Now - 1984th..." How old are you? "You told me just a year (in Russian the question is: How many years have you? The answer is an ^{ECHOLALIC} ~~exhaustive~~ repetition of the word "year"). A year... 19... 24th year!" Have you children? "a daughter" How old is she? "She... on the street... she..." How old is she? "She is 24th year..." And how old are you? "She is three years old... three years and seven months." And how old are you? "She is two years.. and seven months..." And you? "and you... and you..." How old are you? "27 months..." No, how old are you? "Two years... and two months..." Is that really two years and two months? "Yes, one year and seven months" etc.

It can be seen that a ~~set~~ ^{set} to tell the year is followed by a natural ascending chain with perseveration included (1970..1980..1983..1984), and that the patient tries to correct her own mistakes; it can be seen as well that the naming of her own age ("24 years") remains inert in the naming of her daughter's age and ~~it~~ (2 years 7 months) ^{WHICH} then is ^{TRANSFERRED} transferred to the naming of her own age. The tendency to stick ^{TO} ~~on~~ ^{TO} inert stereotypes which break adequate answers and replace them with

inert perseveration remains as one of the basic characteristics of the patient's speech, and although she is often aware of her mistakes and evaluates them as ~~so~~ a kind of obsessive reactions - she ~~remains~~^{is} unable to correct them.

Such a basic defect of her speech makes it impossible to realize a goal. Instead, selective narration and replaces it by extraneous speech (Vorbeireden).

Here are some examples:

Please tell me something about the North! "There is a lot of snow... That's the first point. There are ^{big} mountains. That's the second... There are many... many... What is there? "What kind of animals? "With ant-moes..." "What kind of animals? "Bears". What kind of bears? "Gray... perhaps gray..." And in the ice? "In the ice... there are gray bears... They are in the forests..." And in the ice? "Oh, yes, there are gray bears... Oh, no... there are not gray but white bears..."

What do you know about the North pole expedition? Who was on a drifting ice-floe? "There were scientists. They were born ~~and~~^{AND} grown up... Oh, what do I tell? It is mine, how I ~~has~~ worked and studied... I am telling about myself... I am mixed... why am I as mixed confused?!..."

Tell me the contents of the Pushkin's "Eugene Onegin" "Pushkin... He had a very short life... but all he wrote remained with the people..." And what can you tell about Eugene Onegin? "For instance that he wrote these verses..." Who was Eugene Onegin? "He was an innovator... Pushkin... He... a lot... No... not a lot... The Pushkin's verses." And do you remember who was Onegin? "Sure!" And Tatiana? "Sure". And what happened with them? "Firstly... Oh, no... I have forgotten!"

It can be clearly seen how unstable is the ~~deserts~~ generation of a theme, how soon it is broken down by some well

x) Eugene Onegin" is the most popular novel by Pushkin, well known by every Russian pupil.

imprinted stereotypes ("bears - grey - in the forests") or by shifting to the patient's own biography ("I worked... I learned... that's all about myself...") and knew some fragments of Pushkin's biography & were told instead of the ~~contents~~ ^{CONTENTS} of "Eugene Orestes".

The same was seen in a retrieval of paragraphs presented to the patient.

(2. XII. 74) After experiments with repetition of single ~~2~~ sentences (~~among~~ ^{AMONG} them the phrase "In the orchard blossom trees were in blossoms") - a short story "The hen with golden eggs" was presented, and the patient was asked to repeat it. The patient ~~starts~~ ^{STARTED} to do it: "Well... there was a starling... no... I ~~do~~ cannot... the old lady was asked to tell this story ~~freely~~ (the patient ~~inter~~ ^{TWINES} the situation ~~when she~~ ^{the old physician} ~~was~~ ^{was} asked ~~to~~ ^{to} retrieve the story)... And he... to tell... the story... with the starling..." (The story was ~~read~~ ^{READ} a second time). "The story with the old lady was repeated" (the perseveration of the physician's remark "I shall tell you repeat its story")... with a girl... she told the story... and I have forgotten." was the story about a hen? "I don't think so."

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The same story was given 7 weeks after.

(27.I. 1975). The experiment included repetition of sentences (among them such sentences as: "In the garden ~~behind~~ ^{BEHIND} a high fence, apple trees were growing" and "On ~~the~~ ^{THE} border of a forest the hunter killed a wolf"); after this part of its experiment the same story, "The hen with the golden eggs" was presented, and the patient was asked to retrieve it.

The patient starts: "The heath-cog... a small heath-cog... lived on a tree... And one day the heath-cog learned... that a small heath-cog did something wrong... The heath-cog decided to punish him... Oh, no... I do not know..." (The story is ~~repeated~~ ^{given} ~~the~~ ^A second time) "On a tree... and a small heath-cog... And the old heath-cog decided to ~~punish~~ ^{give a lesson to} him. He... he... "Oh... I really can't..." (The story is given ~~the~~ ^A third time) "On a tree... there was a heath-cog... and a small heath-cog... Once the old heath-cog... decided to give a lesson to him... No... that isn't... Oh... I can't..."

It is clear that ^{THE} retrieval of an orally presented story is impossible, that the traces of the story were ^{UNSTABLE} ~~unstable~~ and were easily broken down by quite extraneous associations, ~~some immediate~~ influence of the immediate situation (an old physician - is teaching - the young patients), as well ~~of~~ as of the components of the story itself (the peasant who wanted to have all ^{THE} golden eggs at once, and killed the hen, was disappointed to ~~to~~ find nothing) and ~~of~~ by the fragments of former traces ("in the forest the hunter..." etc.).

The patient's ~~access~~ verbal accounts of thematic pictures ^{WERE} ~~was~~ much better. This time the flow of narration was determined by the contents of the picture itself, and the patient did not have to ^{RETAIN} ~~follow~~ the traces of the story given.

Here are some examples.

(24.11.1924). The patient was given a picture, "Ice-hole," representing a boy ^{WHO HAS} fallen in an ice-hole and people ^{WHO ARE} trying to save him. She began to tell ^{ABOUT} the contents of the picture: "Here... a river covered by ice. And the ice broke... and the boy tries to save him... and a bridge... some wooden blocks... and the boy... he tries to save him... and there are other boys, they are shouting... to stop them..." etc.

The patient was given another thematic picture, "The broken window": She ^{BEGAN} to tell ^{ABOUT} the contents: "Here... it is a skating-rink... ~~no~~ (perveneration from the first picture). No... it isn't a skating-rink... a boy... the window is broken... and this ~~respects~~ boy with spectacles - he is weeping... I do not know why... And this boy - he is hidden behind a tree... ~~and~~ and the mother... or who is that... doesn't let him go... The door is open... What happened? Perhaps this boy asked the second boy... to go in... he has a snowball in his hand... Who broke the window? "Of course that one" (the patient is pointing to the right boy).

Here some components of pathological inertia are seen only ~~a~~ in the beginning of narration ("the skating-rink", but the mistake was corrected at once and the ~~basic~~ contents of the thematic picture ^{WERE} ~~was~~ told adequately. Similar data were seen in ~~at~~ the patient's analyses

of a more complex picture.

(30.1.1975). The patient was given a well known picture "An uneven marriage". She started to tell ^{ABOUT} its ^{CONTENTS} ~~content~~: "That's ... before a marriage. He and she... A great difference... She is young... and he is an old man... The marriage is, of course uneven, there is a great difference in age... He is ^{SEVENTIES} ~~near~~ in his ~~seventies~~, and she is about twenty... And here are guests, they whisper that they are uneven.. She didn't want to ~~get~~ ^{get} ~~married~~ etc. get married." etc.

The observations we described make it possible to move to ^{THE} preliminary characteristics of the patient's speech.

The patient presented ~~the~~ extended, grammatically well organized, melodically normal speech. The most important trouble was that the patient permanently ~~she~~ ^{SLID} ~~slid~~ ~~down~~ to extraneous associations and into stereotypes, being fully ^{AWARE} ~~aware~~ that some she ^{DIDN'T} ~~doesn't~~ express in her speech what she wanted, that uncontrolled components ^{CAME} ~~came~~ to her mind, that her verbal activity ^{LOST} ~~loses~~ its selective, closed structure and ^{BECAME} ~~becomes~~ open to all influences which ^{LAY} ~~lay~~ outside of the program she started.

A clear contrast to that deranged speech ^{WAS} ~~is~~ seen in speech controlled by immediate visual perception. In these cases - ^{IN THE} ~~in~~ description of a thematic picture - the ~~fact~~ ~~of~~ ~~seeing~~ ~~down~~ to outside associations ^{WAS} ~~was~~ ~~not~~ ~~seen~~ and the speech remaining well organized.

The same ^{COULD} ~~could~~ be seen when the patient ^{WAS} ~~is~~ asked to sing well imprinted melodies. The melodies of well known songs remain fully preserved, and when reproducing these melodies without words, the patient easily ^{SHIFTED} ~~shifts~~ from one melody to another; ~~and~~ only in cases ^{WHERE} ~~where~~ the motives ^{WERE} ~~are~~ realized together with the ~~the~~ verbal contents of the songs ^{COULD} ~~could~~ some perseverations ~~can~~ be seen, and the patient ^{BEGAN} ~~begins~~ to sing the new motive ^{PERSEVERATIVELY} ~~perseveratively~~, reproducing the words of the former song.

It is typical, as well, that when the patient ^{WAS} ~~is~~ asked to reproduce the text of the songs without ~~the~~ melodies, - ~~she~~ her inability to do ~~that~~ ^{IT} ^{WAS} ~~is~~ seen again and extraneous associations and a loss of selectivity of verbal structure appeared anew.

We can ~~come~~ ^{CONCLUDE} ~~to a conclusion~~ that the patient's speech ^{MAY} ~~can~~

remain normally organized only when it is realized in the frames of immediate visual perception or included in well imprinted melodic stereotypes.

We described ^{HAVE GIVEN} ~~the~~ general characteristics of ~~the~~ defects observed in ^{THE} spontaneous speech of our patient, and can now move to the description of the understanding of speech, naming of objects and repetition of words and sentences.

Understanding of speech, as we ^{HAVE} already mentioned, was very unstable. Sometimes the patient understood speech quite well, sometimes ~~his~~ ^{the} understanding of speech was severely disturbed; it was difficult to say whether these defects of understanding were ^{THE} results of an "confusion of the word meanings of the words" or were due to a very unstable attention and ~~an~~ easy distractibility.

Detailed analysis of phonemic hearing could not be fulfilled ^{BY} ~~with~~ ~~the~~ means of ^{THE} repetition of ^{OF} phonemes: as we shall see later the repetition of words and ~~phon~~ sounds and phonemes was severely disturbed. That is why we had to use other methods; ~~and~~ first of all, ^{THE} methods of comparison of two phonemes, and then, ^{THE} method of conditional motor reaction (reactions of the right hand to one sound and ~~with~~ ~~the~~ left hand to another sound). Data we obtained show that disjunct phonemes (which have several different features ^{SUCH} as B and R, R and S) were easily discriminated. No difficulties were found in cases when our patient had to discriminate (cases even to repeat) different pitches. Opposite (or correlative) ~~the~~ discrimination of opposite (or correlative) phonemes (such as B and P, D and T, Z and S) or opposite articules (such as D-L-T, B-m) evoked marked difficulties, and in these cases ~~our~~ the patient remained unsure whether the results were right or wrong.

Here are some fragments of our protocols.

(Comparison of sounds: the patient had to say whether two sounds presented were ~~is~~ identical or different. The intervals between two sounds were 2-3 sec.)

A-O	O-O	E-E	E-U	R-R	R-R
"different"	"identical"	"identical"	"different"	"different?"	"identical"

L-R "different" M-M "identical" P-N "different" P-P "they seem as different" P-B "identical" D-T "identical"

(Conditional reaction to phonemes)

Please, when hearing "R", lift your right hand, when hearing "Sh" - your left hand.

The instruction was fulfilled without mistakes.
Please when hearing "B" lift your right hand, when hearing "P" - your left hand

B B B P P P B P etc.
2 2 2 2 2 2 2 2

Please when hearing "D" lift your right hand, when hearing "T" - your left hand

D T T D D T D D T etc.
2 2 2 2 2 2 2 2

The same experiments with more extended intervals (of 5 to 10 sec.) gave identical results.

It has to be mentioned that discrimination of two geometrical figures (a circle ^{AND} a triangle, a triangle and a square) was fulfilled easily and without any mistakes.

The data we mentioned show that our patient had slight difficulties in discrimination of opposite (corresponding) phonemes and articulations.

The same results were seen in a special experiment with discrimination of words: acoustically different words were discriminated easily, acoustically similar words were sometimes evaluated as identical.

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<u>dom - rot</u> (home - cat) "different"	<u>zuby - guby</u> (teeth - lips) "different"	<u>dozhd - most</u> (rain - bridle) "different"	<u>dom - dom</u> (house - house) "identical"
<u>Zima - sneg</u> (winter - snow) "different"	<u>dom - tom</u> (house - boon) "identical"	<u>palka - balka</u> (stick - block) "they seem diff. but, I am not sure"	<u>rot - noss</u> (cat - nose) "different"
<u>doch - noch</u> (daughter - night) "different"	<u>dochka - tochka</u> (daughter - point) "different" "they seem to be different, I'm not sure!"	<u>god - kot</u> (year - cat) "they seem to be different, I'm not sure"	<u>koska - myshka</u> (cat - mouse) different
<u>Koshka - koshka</u> (cat - cream) "identical... or different?"	<u>guby - guby</u> (lips - lips) "identical"	etc etc.	

It has to be mentioned that ^{is by} errors of discrimination of the differences ^{BETWEEN} of words ^{is by} can unstable type: ~~and~~ sometimes identical words are evaluated as ^{EITHER} identical ^{OR} ~~or~~ ^{different} identical, but phonetically similar words - as identical. It is quite possible that we are dealing here with a mechanism, different from ^{THOSE} ~~that~~ we described in our analysis of the cases with primarily lesions of the left temporal zones of the cortex and of acoustic aphasia, although slight defects in phonematic discrimination ^{WERE} ~~was~~ present.

Very typical data were obtained in experiments with comparison of single words. Words phonetically different were evaluated as different, whereas words quite different semantically but ~~phonemically~~ which were phonemically similar often were often evaluated as identical.

Here is an example of the such defect:

Observations ^{OF} ~~with~~ understanding of the meaning of separate words ^{REVEALED} ~~revealed~~ massive disturbances.

The patient could easily show an object (or a picture) named or select it from 8-10 objects; ^{although a certain instability was seen} but even in this experiment, ^{some} ~~not~~ constability, and mistakes were seen. Defects ~~in~~ increased when the patient ^{HAD} ~~had~~ to show parts of the body named; the same increase of mistakes was seen when objects from the indefinite surroundings were named and the patient had, first of all, to find the object named, singling it out from an undetermined surrounding situation. (F)

THESE TWO PARAGRAPHS SEEM TO BE EXACTLY THE SAME THING, TWICE.

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(26.11.1975)

(a) Showing - Selecting objects named from eight possible figures

"tea-pot"	"apple"	"watch"	"scissors"	"cog"	"lamp"
+	+	she shows a lamp.	+	+	+
^{INKSTAND} "inkstand"	"scissor"	"bottle"	"tea-cup"	"mushroom"	
she shows a bottle, then	+	+	+	+	
+	then she shows a lamp				
"Telephone"	"Bucket"	"Sofa"	"suitcase"		etc.
+	she shows a hat, then a belt	she shows a bench	she shows a telephone		

p.15

(V) When ~~the patient is given~~ two successive objects (from eight objects drawn on a list) were named — the patient ^{BECAME COMPLETELY} ~~becomes~~ ^{GAVE} ~~gives~~ ^{RESPONSES} ~~adequate~~ ^{choices}.

(b) Selecting ~~the~~ parts of the body and objects from indefinite surrounding.

<u>"mouth"</u> +	<u>"ear"</u> she shows her tongue	<u>"No, ear"</u> she shows her nose	<u>"ears"</u> +	<u>"eyes"</u> +	<u>"knee"</u> she shows her elbow.
<u>"chest"</u> +	<u>"back"</u> she shows her shoulder, then her neck	<u>"chin"</u> she is lost, then she shows her shoulder	<u>"teeth"</u> she shows her eye	<u>"dress"</u> she shows her eye.	
<u>"lamp"</u> she shows her neck.	<u>"ceiling"</u> ^{CEILING} she shows the wall	<u>"shoulder"</u> she shows her the back of her head	<u>"cushion?"</u> ^{SCUSHION?]} <u>"cushion"</u> +	<u>"door"</u> she shows the table	etc.

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(c) Selecting two object named successively from eight objects

<u>"scissors and apple"</u> she shows a lamp and an ^{INKSTAND} inkstand .	<u>"scissors and apple"</u> she tries to find the objects ^{NAMED} named and shows the F ^{COG} and the apple.	<u>"scissors and apple"</u> she shows the ink-stand inkstand and the apple.
<u>"hat and bottle"</u> she shows a bottle and scissors	<u>"tea-cup and cog"</u> she shows a cog and scissors [SNAKE?]	<u>"Bucket and ^{MUSHROOM} mushroom"</u> she shows ^A bucket and sofa.
<u>"telephone and belt"</u> she shows a hat and a telephone	<u>"sneak and spectacles"</u> she shows ^[SNAKE?] a sneak and bicycle.	<u>"cup-board and ball"</u> she shows ^A bicycle and spectacles.

It can be seen that understanding of words is very unstable and depends ^{EITHER} ~~either~~ ^{ON} ~~from~~ the ~~number~~ level of certainty (the number of objects from which the selection has to be made) or ^{ON} ~~from~~ the number of the words presented. ^{IN OTHER WORDS,} ~~the more~~ the more complex ^{OR} ~~is~~ the selection, ^{OR} the more ^{IN OTHER WORDS,} ~~is~~ the ^{NUMBER} ~~of~~ words ^{WHICH} the patient has to retain, or the less the word named can be directly applied to a visual image, ^{OR} the more the uncertainty of the choice is increased, - the more difficult ^{BECOMES} ~~becomes~~ the process of selecting ^{ADEQUATE} ~~adequate~~ understanding of words and ^{THE} ~~the~~ selection of ^{ADEQUATE} ~~adequate~~ objects.

The dependence of the understanding of speech ^{ON} ~~from~~ the ^{VOLUME} ~~scope~~ ^{OF} ~~the~~ verbal communication can be shown in experiments where the patient had to ^{CARRY OUT} ~~fulfill~~ a complex verbal instruction. Here the instability of the patient's action ^{INCREASED} ~~increased~~; ^{HE} ~~she~~ ^{AND} ~~the~~ patient often ^{GRASPED} ~~grasped~~ only fragments of the verbal instruction and sometimes ^{LOST ENTIRELY} ~~loses~~ ^{THE} ~~fully~~ the sense of the instruction given.

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(30-XII-1974). Please take your ^{CUSHION} ~~cushion~~ and place it ^{ON} ~~to~~ another side of the bed. The patient fulfilled the instruction adequately. Please take a pencil from the table and give it ^{TO} ~~me~~. The patient ^{TOOK} ~~took~~ the pencil, ~~she~~ touched her ear with the pencil (perseveration of one of the former instructions "show your ear"), then placed ~~it~~ ^{it} near close to the ^{CUSHION} ~~cushion~~ (perseveration of the former instruction). Please shake your fingers. The patient lifted her hand and ^{SCRATCHED} ~~scratched~~ the back of her head. Please take the toy and give it to the doctor. The action instruction ^{WAS} ~~is~~ fulfilled adequately. Please take the towel and give it ^{TO} ~~me~~. "The towel... and ^{TO} whom have I to give it?" Please ^{TAP} ~~knock~~ twice with your foot. "Take... pull... did you ^{SAY} ~~tell~~ something about a chair?" (The instruction was repeated) "Twice... with the chair..." (the patient ^{WAS} ~~is~~ confused). (The instruction ^{WAS} ~~is~~ repeated again) "The chair... Oh... is that so (the patient ^{TOOK} ~~took~~ a ^{CUSHION} ~~cushion~~, and ^{WAS} ~~is~~ ^{ALTOGETHER} ~~fully~~ ~~con~~ fused).

This experiment shows that a whole complex of defects appears in fulfillment of a complex verbal instruction. It includes ~~also~~ losing a part of ^{THE} instruction, alienation of word meaning, ~~and~~ appearance of ^{IRRELEVANT} ~~of~~ ~~extraneous~~ associations, perseverative ^{BEHAVIOR} ~~actions~~, etc.

All ^{OF} this shows how unstable ~~are~~ ^{ARE} traces of words and how easily ~~the~~ adequate actions are replaced by extraneous ones.

A very different set of defects was seen when we moved to the patient's ability to name objects presented visually or by ^{TOUCH} ~~touching~~ them.

As we have already shown, ^{IN} ~~at~~ the first stages of the patient's postoperative state, ^{adequate} verbal communication with her was hardly possible and ^{adequate} naming of objects was seen only a very short time; after two or three attempts, adequate naming was replaced by perseverations of the word already evoked or by uncontrolled ~~in~~ extraneous association. Both ~~was~~ ~~cases~~ forms were very different from ^{ATTEMPTS} ~~the~~ ~~later~~ to find ~~in~~ the proper word associated with ~~the~~ verbal paraphasias typical for aphasia. Lettering a word the patient never doubted that it was the right one, and ^{HER} ~~her~~ doubts came only retrospectively.

(Apple - telephone)

+

(Shake and coat)

+

Bottle - tea-can

+

(Ball and spectacles)

"A Ball and watch"
(the patient ^{WAS} showing her eyes) (NB: in Russian both words have a phonetic and logical similarity: "chessy" (= watch) and "ochki" (spectacles))

(telephone and watch)

+

AGAIN, WHAT'S A TEA-CAN?

26

(30.1.1975) The naming ^{WAS} improved and only rare mistakes ~~that~~ were seen.

It is clear that severe defects were ~~seen~~ in naming objects were seen only ^{IN} the first period after operation and that they had the structure ~~either~~ of perseveration or of misnaming, where absolutely extraneous associations and paraphrasias (perhaps a kind of "Verbeirreden") took place. All these defects disappeared after two months.

It is typical, as well, that during the first period ^{real} ~~no~~ search for a word needed was observed and ^{BEHAVIOR} ~~the~~ we have ^{SAW} ~~seen~~ ^{WAS} ~~more~~ ^{TO} ~~more~~ similar ^{RATHER} ~~than~~ real paraphrasias.

We ^{MUST NOW} ~~have to~~ discuss the last - and perhaps the more most interesting side of the speech disorders of our patient. It deals with ~~the~~ disturbances of the repetition of speech.

As we ^{SAID} ~~mentioned~~ - the more our patient's speech was determined by immediate visual ~~or tactile~~ perception or ~~with~~ by well imprinted stereotypes which didn't ^{LEAVE} ~~left~~ undetermined ~~was~~ alternatives ^{AMONG WHICH} to choose - the ^{BETTER} ~~more~~ preserved was her speech.

We mentioned, as well, that traces of her verbal-accountic system were unstable and that ~~very~~ ^{EASILY} a kind of alienation of ~~the~~ the meanings of ~~the~~ words and a shift towards ~~extraneous~~ ^{UNPREDICTABLE} ~~extraneous~~ associations or towards inert stereotyped responses took place, when ~~this~~ ^{EASILY} determination of ~~the~~ speech by immediate visual perception was eliminated.

That is why some very expressed defects even in the repetition of words could be observed in our case.

27

As we have already mentioned elsewhere, the process of repetition of ^{THE} sound of a word given ^{HAS BEEN} ~~was~~ treated quite differently by different authors. Whereas ^{SOME} ~~one~~ part of them considered the repetition ^{TO BE} ~~as~~ the simple sensori-motor act, - ~~another part~~ ^{of the work} Neurologists, and among them H. Goldstein, supposed the repetition to be a very complicated psychological process where the ~~attends~~ speech was not included in the process of ^{of} natural social communication and where an abstraction and a change of the ^{PRIMARY} ~~primary~~ goal ^{WERE} ~~was~~ required: instead ^{OF} a communication of information the subject had to single out the acoustic features of the word to be repeated and to block all extraneous alternatives. The conflict of these two tendencies was ^{AT} ~~seen~~ seen in the theory of "conduction aphasia".

~~From the~~ ^{At} first glance, our patient showed symptoms of just the syndrome we mentioned.

Having no difficulties in discrimination of very different sounds and only an instability of traces of correlative phonemes, showing only slight defect in the stability of ~~the~~ traces of words or phrases, - she was ^{COMPLETELY} ~~fully~~ unable to repeat sounds, words or sentences.

This defect was clearly seen ~~it~~ during the first ^{WEEKS} post-operatively ~~weeks~~ ^{SOME} ~~and~~ having repeated ^{SOME} sounds or words adequately she very soon ^{OR} ~~after~~ three ^{PRESENTATIONS} ~~or~~ four ^{PRESENTATIONS} / became unable to ^{ACCOMPLISH} ~~do~~ this task, which seemed to be very simple, and ~~to~~ replaced the repetition ^{REQUIRED} ~~either~~ by inert stereotypes or by unpredictable ^{IRRELEVANT} ~~irrelevant~~ associations.

~~That~~ ^{THIS} ~~meant~~ ^{MEANT} ~~that~~ ^{HERE} the inability ^{OF} to repeat sounds or words was ~~that~~ of a fluctuating, dynamic character. It is worthwhile to mention that the patient was not ^{ALWAYS} ~~every~~ ^{time} aware of her own mistakes, and only after some reflexion ^{SAID} ~~told~~ that the sound or word given was a mistake, that it ^{HAD} ~~was~~ nothing to do with the sound or word given, and that she really ^{DID} ~~did~~ not know ^{WHERE} ~~from~~ ^{CAME} ~~from~~ this ~~and~~ unexpected reaction ~~came~~ from.

This defect was very clear during the first 5-6 weeks ^{FOLLOWING} ~~after~~ ^{THE} ~~operation~~ and only ~~then~~ after this period ~~tended~~ showed a tendency to disappear.

Let us ^{DEMONSTRATE} ~~show~~ this symptom in some protocols of our observations.

SINCE YOU'VE MENTIONED SEVERAL SYNDROMES IN THE LAST COUPLE OF PAGES, I'M NOT SURE WHICH ONE YOU MEAN HERE.

28

INDIVIDUAL

(2.xii.1974) The patient was asked to repeat ^{individual} sounds, then pairs of sounds, immediately after their oral presentation.

$\frac{a}{a}$	$\frac{o}{o}$	$\frac{e}{e}$	$\frac{l}{l}$	$\frac{R}{\text{vraht}}$ (doctor)	$\frac{R}{R}$	$\frac{m}{\text{Lilia}}$ (Lily)	$\frac{m}{R}$	$\frac{m}{\text{ei..m..}}$	$\frac{m}{\text{ei..ei..a}}$
$\frac{k}{kz}$	$\frac{a}{me}$	$\frac{o}{u}$	$\frac{e}{e}$	$\frac{R}{e}$	$\frac{m}{e}$	$\frac{p}{p}$	$\frac{n}{ei}$	$\frac{sh}{t..no..}$ Please, once more!	$\frac{sh}{t..ka..k..}$ NO, I can't.
$\frac{a-u}{\text{Ba-u}}$	$\frac{e-a}{u-u}$	$\frac{n-l}{m-n}$	$\frac{p-z}{p-tu}$	$\frac{e-d}{re-pe}$	etc.				

It is obvious that a shift from adequate repetition of the sounds to inadequate began only after some accumulation of former traces, that a tendency to replace single sounds by combination of sounds or even words appeared, and that repetition of pairs of sounds was impossible from the very beginning. (#)

← 29

The next step of our experiments was to answer the question whether the patient was able to evaluate ^{THE ACCURACY OF} ~~his~~ her answer. ~~was right or not~~. For this purpose we repeated the same experiments asking the patient every time whether ~~the~~ her ~~own~~ reproduction of the given ~~the~~ sound or word was adequate.

(26.ii.1974)

"UP TO ME" IS NOT AN ACCEPTABLE PHRASE IN ENGLISH OR AMERICANS - PERHAPS WE CAN FIND SOMETHING MORE APPROPRIATE.

$\frac{R}{u..}$ Is that right? "Up to me - it's right."	$\frac{p}{N}$ Is that right? "It seems to be not right.."	$\frac{u}{ts}$ Is that right? "It seems to be right."	$\frac{l}{m}$ Is that right? "No, it isn't."
$\frac{m}{z}$ Is that right? "No, it isn't."	$\frac{d}{N}$ Is that right? "It seems to be right."	$\frac{p}{t}$ Is that right? "I think - it's right!"	$\frac{s}{ts}$ Is that right? "Up to me - it's right!"
$\frac{a-e}{a-e}$ Is it right? "Yes, it's right"	$\frac{o-u}{e-u}$ Is it right? "Yes, it is"	$\frac{e-u}{zh-z}$ Is it right? "No, it's different.."	$\frac{o-u}{o-a}$ Is it right? "No, it isn't"
$\frac{R-k}{zh-z}$ Is it right? "No, it isn't"	$\frac{R-R}{R-t}$ Is it right? "No, it isn't.."	etc.	

(cont 21)

(#) The same photo defect of repetition ~~of~~ ~~frames~~
remained ^{FOR} ~~during~~ ^{FOLLOWING} the ~~next~~ three weeks.

IN ~~the seventh week~~ ^{EIGHTH} week after operation, ~~the~~ ^{PERFORMANCE} ~~correctly~~ ^{WERE} ~~begin~~ ^{PRESENT} to im-
prove, but the mistakes ~~we~~ ^{DESCRIBED} ~~mentioned~~ ^{WERE} still ~~present~~ ^{WERE} and
preserved ~~the~~ ^{THEIR} type.

(27.1.1975)

Repetition of single sounds

$\frac{a}{a}$	$\frac{o}{u}$	$\frac{e}{kosma..}$	<u>what?</u>	$\frac{r}{e...}$	$\frac{e}{e}$	$\frac{z}{z}$				
			cosmonaut..	no.. not e..						
			Don't know why!							
$\frac{sl}{sl}$	$\frac{m}{m}$	$\frac{s}{mu}$	$\frac{a}{a}$	$\frac{e}{e}$	$\frac{t}{ch}$	$\frac{e}{p}$	$\frac{r}{r}$	$\frac{m}{m}$	$\frac{z}{m}$	$\frac{s}{u..}$

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Repetition of pairs of sounds

$\frac{a-u}{a-u}$	$\frac{e-a}{n-i}$	$\frac{e-a}{n-d}$	$\frac{e-a}{n-a}$	$\frac{p-k}{p-r}$	$\frac{u-o}{zno..}$	$\frac{a-e}{a-i}$
$\frac{l-n}{p-n}$	$\frac{g-d}{ch-l}$	etc.				

Repetitions of triads of sounds

$\frac{a-u-e}{a-u-e}$	<u>once more!</u>	$\frac{e-a-u}{e-a-u}$	$\frac{d-p-k}{d-b-e}$
	$a-u-i$		
$\frac{z-n-ch}{z-ch-n}$	$\frac{l-p-g}{t-b-a}$	$\frac{a-e-u}{a-e-u}$	$\frac{a-e-u}{a-u-e}$
		<u>Is it right?</u>	<u>Is it right?</u>
		"It's hard to tell... perhaps it's right"	"I don't know"
$\frac{p-m-l}{s-p-b}$	$\frac{a-k-c}{a-e-p-z}$		
<u>Is it right?</u>	<u>Is it right?</u>		
"I don't know"	"I really am not sure.."		

It can be seen clearly that the basic defect ~~remained~~ ^{WAS REMAINED}, that
the sound ~~appeared~~ ^{APPEARING} in the patient's answer did not appear in
accordance ^{WITH} some phonemic rules (replacement ^{OF} phonemes by
their opposition, etc.) and that the patient was, ^{FOR THE} ~~mostly~~
not fully aware ^{OF} ~~the~~ ^{WHETHER OR NOT} the sounds ~~we~~ ^{WERE} produced
were adequate. ^{STATED}
It ~~was~~ ^{SHOULD} be ~~mentioned~~, as well, that in the last period
of an observation, when severe defects in repetitions of
the sounds ~~we~~ ^{WERE} ~~still~~ ^{YET} remained, the patient was able to
name letters and did not make any mistakes in elementary
reading.

MOST PART,

THE NEXT QUESTION FOLLOWS NATURALLY.
~~It is only natural to ask the next question.~~ ^{WOULD} ~~the~~

Some defects appear in repetition of the meaningful words and sentences, or ^{WOULD} the factor of meaningfulness eliminates these defects? ~~Does~~ ^{WILL} the experiment with repetition of words or sentences evoke literal paraphrasias (as it is the case in patients with sensory aphasia) or ^{WILL} some ^{DIFFERENT} kind of ~~different~~ phenomena ^{BE} seen?

Data we obtained were ~~quite~~ ^{absolutely} different from ~~those~~ ^{THOSE} which can be observed in patients with sensory ~~aphasia~~ or ~~conduction~~ classical "conduction aphasia" (of the sensory or the afferent motor type), but just these data gave an important ~~clue~~ ^{KEY} to the ~~under~~ ^{ENTIRE} better understanding of the basic nature of the ~~entire~~ syndrome.

As a rule the patient gave her answer immediately, ^{WITHOUT} trying to select the word needed; and the patient very often responded with words which had nothing in common with the word presented. Sometimes she ~~even~~ ^{WOULD} ~~become aware~~ ^{AWARE OF} her mistake; sometimes - after a short pause - she ^{SAID} "Oh, dear me, how ^{DOES} such nonsense come to my head?! Where does ~~it~~ ^{this} word come from?!..."

Let us turn to some examples.

(2. XII. 1974). ~~At~~ The patient was given a word and asked to repeat it. ~~At the first steps~~ She started with a adequate repetition, but at once replaced it ^{WITH} ~~by~~ ^a ~~extra~~ ^{extra} word.

<u>mama</u> (mother) "mama"	<u>Koshka</u> (cat) "miachik" (a ball)	<u>Koshka</u> (cat) "okana" (sencelen) .. no...	<u>dom</u> (home) "tra.. (trava = = grass) .. no... "	<u>Luna</u> (moon) Repnik (contamina- tion of "repa" = turnip and "repnik" = = burdock) Oh.. no! porokhod (boat) "sopelak" (persecution)
<u>Luna</u> (moon) "Rep..."	<u>ross</u> (nose) "Goloss" = = voice	<u>ross</u> (nose) "sopniak.. sopel." (= snivel)	<u>Botinok</u> (shoe) "sopelak" (persecution)	

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(26. XII. 1974)	<u>Koshka</u> (cat) "Koshka"	<u>mama</u> (mother) "mee.. no!"	<u>mama</u> (mother) "mama"	<u>Zuby</u> (teeth) "Zuby"	<u>okno</u> (window) Zabor (fence) "Is it right? No!"
	<u>okno</u> (window) "dom" (home) "Is it right? It's not - it is!"	<u>cus</u> <u>podushka</u> (cushion) prestuplenie (crime)		<u>Prostyria</u> (sneat) prestuplenie	

<u>lampa</u> (lamp)	<u>yazyk</u> (tongue)	<u>ruchka</u> (pen)	<u>plecho</u> (shoulder)	<u>palety</u> (fingers)
"nastupeniye" (= approach) I don't know why this word comes to my mind!"	"machine" (madness)	"dome" (house)	"povtoreniye" (repetition)	"Nastupeniye... why does this word come?"

(30. 11. 1974)

<u>golova</u> (head)	<u>Zemlia</u> (earth)	<u>Zemlia</u> (earth)	<u>Luna</u> (moon)	
"Byvayet" (it happens)	"Zima" (winter)	"Zerna... why is it? Black..." (Zerna = contami- nation of Zemlya = earth and "Zerno" = grain)	"Luna"	
<u>podushka</u> (cushion)	<u>podushka</u> (^{CUSHION} cushion)	<u>podushka</u> (^{CUSHION} cushion)	<u>Botinok</u> (boot)	
"Pomolunia" (contamination of podushka = cushion and "pamolunije" = full moon)	"Byvayet" (it happens)	"Byvayet" (it happens) Is it right? "No." pamolunije... (full moon)	"Byvayet" (it happens) Is it right? "I don't know"	
<u>snieg</u> (snow)	<u>snieg</u> (snow)			
"pod voprosom" (questionable)	"pomolu kwo (contamination) no... I am ^{FEEL} that is wrong!"			

33

(27. 1. 1975)

<u>Pustynia</u> (desert)	<u>Rzuchka</u> (root)	<u>Rzuchka</u> (root)	
"pustynia"	" ^{POLYE} polje" (field)	" polje polje" (field) Is it right? "fitty-fitty..." verblud (camel) "nogui" (legs)	
<u>Zuby</u> (teeth)	<u>Zuby</u> (teeth)	<u>Zuby</u> (teeth)	
"pukh (fluff) no... it's not the word I need..."	"pustynia" (desert)	"there was something about a desert..."	
<u>Koshka</u> (cat)	<u>Koshka</u> (cat)	<u>Koshka</u> (cat)	
"Zypliaty" (chickens)	"ducks"	"Kury" (hens)	

It is easy to see that several factors are included in ^{THE} generation of the "paraphrasias" we have observed.

Sometimes the false repetitions are due to phonetic similarity of some sound fragments ("koshka - okana", "zemiya - zima").

Sometimes the patient word presented evokes ~~some~~ A word associated with ~~the~~ ^{THAT} given ("kavchik - grass"); very often the response is a perseveration of the former response, or ~~some~~ ^{SOME COMBINATION} ~~CONTAMINATION~~ of ~~both~~ ^{THESE} ("okno (window) - zabor" = perseveration of the former "z" from "zuby"; "root" in "field" = perseveration of a former "pustynia" - desert ex-
"pole" (field) = perseveration of a former "pustynia" - desert ex-)

Sometimes, however, the words ^{PRODUCED} ~~evoked~~ by the patient ~~are~~ ^{WERE} ~~completely~~ ^{COMPLETELY} unpredictable and ~~had~~ ^{HAD} nothing to do with phonemic (~~literal~~ ^{LITERAL}) or semantic (verbal) paraphrasias; ~~and~~ the patient herself ~~is~~ ^{WAS} ~~becomes~~ astonished and confused by these unpredictable evoked words.

34

It is of a special interest that the patient, being unable to repeat the word given ^{COULD} ~~not~~ ^{early} grasp its melody. That ~~is~~ ^{WAS} ~~shown~~ ^{IN} special experiments where we presented her ~~with~~ ^{WITH} some words, ~~with~~ changing their prosodic component. The results showed that even when the word itself could not be repeated, the melo prosodic structure (the melody) of the word remained.

(27.1.1975)		
Ra-a-ma (frame)	Ra-a-ma-doch (frame-daughter)	Noch - Ra-a-ma (night-frame)
Ra-a-dio! (Radio)	Ra-a-dio-utro (Radio-morning)	1) Rut - U-utro 2) Duy - Ra-a-dio (both first words are senseless)
Ro-ot-platye (coat-dress)	platye - Ro-ot (dress-cat)	Noch - gu-uby (night-lips)
Ko-oshka (she-cat)	Na-a - Ko-ot (senseless)	1) u-utka ... (duck) 2) u-utro, that's the locora (morning) and the first I don't know

Perhaps the most singular fact is that the patient, who could easily sing a song, was absolutely unable to repeat separate words of the song & same song, or that after she ~~gave~~ ^{GAVE} ~~total~~ ^{SHE} quite easily the ~~contents~~ ^{CONTENTS} of ~~the~~ ^A thematic picture, ~~was~~ ^{SHE} unable to repeat separate words which were included in her own narration.

A protocol shows it all well.

(27. I. 1975)

The patient ^{SANG} ~~in songs~~ easily a popular song "Apple trees and pear-trees were in blossom"; both the ~~motive and the words are present~~ or another popular song, "Moscow evenings"; both the motive and its words were all right. But when separate words of both songs (in the same sequence) were given ^{HER} to repeat - the patient ~~was~~ was unable to do it and instead of repetition of the words given, ^{PRODUCED} ~~produced~~ different words from the same two songs or gave paraphrases of the type we ^{DESCRIBED} ~~mentioned~~.

<u>apple-trees</u> "evenings"	<u>pear-trees</u> "up to 10 mornings!"	<u>утро</u> (morning) "утка" (duck)	<u>шорoki</u> (zastli) "shukki" (jokes)
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The patient was given ^{THE} thematic picture, "An uneven marriage." She ^{SAID} ~~told~~: "That is before a marriage... He ^{was} ~~was~~ she... a great difference... The marriage is, of course, uneven". Immediately ^{AFTERWARD} she ^{HAD} ~~was~~ was asked to repeat the same words she ^{HAD} just ^{SPOKEN} ~~used~~ to speak:

<u>Брак</u> (marriage)	<u>Неравный брак</u> (an uneven marriage)
"Pazka... pazk"	1) "KAZHNA... a hut" 2) "KAZHNA diadi Toma" (Uncle Tom's hut) Please forgive me, the Uncle Tom's hut comes to my head!...

It is obvious that repetition of words ~~already~~ used in her former conversation or songs was impossible, and the ^{NECESSARY} words ~~used~~ were replaced by others, ~~used~~, either already included in a former ~~stereotyped~~ complex (song), or ^{WHICH WERE} parts of extraneous associations.

It can be clearly understood that ^{repetition of} pairs ^{OR} of triads of words was impossible; ~~and~~ sometimes only one of the group of words was repeated or both words were replaced by ~~per-~~ separation or extraneous association.

(30. XII. 1974)

<u>Koshka - myshka</u> (cat - mouse)	<u>Stena - zvezda</u> (wall - star)
"two... koni doch is seems" (horse - daughter)	"two... koni - sustop. I don't" know (horse, the second - senseless)

(27.1.1975)

Kot-dom
(cat-house)

Zuby-noch
(teeth-night)

Krysha-Luna
(roof-moon)

lem-dom
(mind house)

"v... no it is quite different..."

"the second word is tongue"

dom-les-cot
(house-forest-cat)

Stuch-zost-Luna
(knock-growth-moon)

Sneg-pochka-milka
(snow-but-flour)

"dep-radio-letzo.. No..."
(senseless-radio-morning)

"tut-utro-radio"
(here-morning-radio)

"Sneg-utro-tut"
(snow-morning-here)

The same derangements, ^{even} but of a ~~rather~~ more expressive type were ~~found~~ ^{FOUND} in repetition of sentences. Now our patient ~~was~~ replaced by sentence presented with ^{quite} ~~absolutely~~ different sentences. It ~~was~~ ^{MUST} ~~be~~ ^{BE} taken ^{TO} account that, as a rule, the morphological (syntactical) structure of its ^{PHRASE} ~~phrase~~ (a two- or three component ^{PHRASE} ~~phrase~~) ^{WAS} ~~was~~ preserved, ^{THAT} ~~that~~ ^{THOSE} ~~its~~ ^{CONTENTS} ~~contents~~ ^{HAD} ~~is~~ ^{absolutely} nothing in common with ~~the~~ ^{presented}.

WHATSOEVER

(2.11.1974) (The experiment of this day began with a drawing of trees and birds)

devochka spit
(The girl sleeps)

malchik plachet
(The boy weeps)

Nasha vorona
"Our blackbird"

Nasha Vorona
(Our blackbird)
Is it right? I don't know.

Malchik udaril sobaku
(The boy hit a dog)

Ryba plavayet v prudu
(The fish is in the pond)

"Nasha vorona... netak!"
(Our blackbird... No, it's different)

1) Vorona & gaz... Net!
" (The blackbird... senseless... No)
2) Vorona varit... gaz... OK!
" (The blackbird cooks the gas)

Na ulitze vypal glabokij sneg
(On the street a deep snow was seen)

Nastepila vessna
(Spring came)

1) "Sredi kartoshki... ya pochuvstvovala chto vy..."
(Between potatoes I felt that you...)

"Do istorii vy pochuvstvovali..."
(Before the history you felt...)

2) "Uzhe vy pochuvstvovali shcho moloko..."
(Already you felt that the milk...)

Ya lezhu na krovati
(I am resting in bed)

Na ulitze vypal sneg
(On the street there is snow)

1) Suda idet... moi!
" (Kero comes... my...)
2) ~~Here~~ ~~is~~ ~~of~~ ~~Suda~~ ~~idet~~ ~~moi~~ ~~prija~~ ~~tel~~
(Here comes my friends)

"Obuv v tufle nachala puzhat'sia"
(foot-wear in the shoe began to ... senseless)

(26.XII.1974)

Dom gorit
(The house burns)

"Dom gorit.. grad dajet"
(The house burns.. (apparent skunk.. word) gives)
Is that right? I don't know.

~~the boy~~
malchik udare sobakoy
(The boy hit a dog)

~~the~~ "Grad dajet bukva"
(Skunk gives a letter)

Nastupila verna i zasveli derevia
(Spring came and trees are in blossoms)

1) "Dni prokhodiat (Days pass..)
No, I don't ~~speak~~ ^{SPEAK} ~~the~~ right.."

2) "Dni prokhodiat bystro i zasidetaiut derevia"
(Days pass quickly and trees are in blossoms)

Pacient lezhit v bolnitze an i skoro budet operaziya
(The patient [is in the ward] and an operation will be soon)

"Dni prokhodiat bystro i vyrastaiut derevia"
(Days pass quickly and trees are growing)

"Segodnia ya esche ne ~~had~~ ^{HAD} my dinner!"
(Today I haven't yet ~~had~~ my dinner)

"Dni prokhodiat bystro i vyrastaiut derevia (The days pass quickly and trees are growing)
No... I feel it's quite different.."

Koshka ozerapala malchika
(The cat scratched a boy)

"Miach beret vyssoli (The ball takes high.. I wonder, stand that I am ^{NOT SAYING} ~~feeling~~ not what I had to, not what you have told.."

The same ~~remained~~ ^{THING TOOK PLACE} after two months after operation.

malchik spit
(The boy sleeps)

"malchik spit" (the boy sleeps)
(The sentence remains and is reproduced after 1.5 minutes with ~~no~~ ^{no} ~~change~~ ^{change} ~~in~~ ⁱⁿ ~~the~~ ^{the} ~~text~~ ^{text} ~~itself~~ ^{itself})

Sobaka lalet
(The dog barks)

Grad dajet
(skunk word gives)
(Skunk - gives)

Devochka p'et chay
(The girl drinks tea)

"Dni tekut bystro"
(Days are passing quick).

Stoit zima i na ulitsakh glubokij sneg
(It's winter and ^{THE} streets are covered with deep snow)

"Dni prokhodiat bystro i vyrastaiut derevia"
(Days pass quickly and trees are growing)

malchik poshel v shkolu
(The boy went to school)

"Volosy vyrastaiut bystro"
(The hair is growing quickly)

where does it come from?

"Oh... I ^{READ} ~~read~~ some quotations.."

IT MIGHT BE BETTER TO SAY "THE PATIENT LIES (OR RESTS) IN THE HOSPITAL;" ETC.

INTERPOLATED

devochka plachet
(The girl weeps)

1) "malchik srazat"
(The boy smokes, the ash word deformed)
2) "malchik plachet"
(The boy weeps.)

devochka p'et chay
(The girl drinks tea)

"malchik p'et chay"
(The boy drinks tea)

V sadu za vyssokim zaborom n rassli yabloni (In the garden behind a high fence apple trees were growing)

Na opuske lesa okhotnik ubil volka (On the border of a forest a hunter killed a wolf)

- 1) "V sadu utrom nashli vinograd" (In the garden ^{IN} the morning grapes were found)
- 2) "V sadu rano utrom nashli grozd vinograda" (In the garden early in the morning a grape was found).
Is it right? "No, just a little."
- 3) "V sadu rano utrom nashli grozd vinograda" (the same)
Is it right? "I don't know."

- 1) "V sadu rano utrom ubili grozd vinograda" (In the garden early in the morning a grape ~~of~~ vine was killed)
- 2) "V sadu rano utrom ubili ma-kanogo teterevionka" (In the garden early in the morning a little heath-cog was killed) (perseveration of the former repetition of the sentence)
- 3) The same. (The sentence ^{WAS} preserved and repeated after 1.5 min. inspired ^{OF} later. sentence)

39
 THESE observations ~~was mentioned~~ ^{INDICATE THAT} the repetition of two sounds, words and sentences was impossible for our patient, but ^{THEY} show, too, that the nature of these defects was quite different from what ^{ESSENTIAL DEFECTS} was the ~~essence~~ in the cases of sensory, afferent motor or "conduction aphasia". Whereas patients with these forms of aphasia ^{TRY} ~~try~~ to find the right word, are actively involved in active attempts to ~~choose~~ ~~to~~ select the right combination of sounds, to analyse the structure of the word, forgetting or confusing parts of it and ~~changing~~ ^{THE WORD} confusing it with ^{OTHER} ~~different~~ alternatives, — all ~~mislike~~ ^{ENTIRE} the ~~whole~~ ^{AN ALTOGETHER} process we could observe in our patient was ~~absolutely~~ ^{of a} different nature.

Our patient did not try to analyse the word given, to simply select sounds needed from several alternatives. The word or the sentence appeared quite ^{UNEXPECTEDLY} ~~unexpectedly~~ and the patient did not know where it ^{CAME} ~~came~~ from. ^{INCORRECT} ~~fact~~ An objective analysis shows that the ~~fact~~ name could be a simple perseveration — a result of the inert traces from formerly evoked words or phrases which appeared without any control, or — in other cases — a result of some extraneous and unpredictable associations which the patient could not explain and which she ~~realized~~ ^{realized} sometimes met with ^{DEFINITE} ~~definite~~ surprise.

So, it ^{SEEMS} ~~is~~ clear that the ^{THAN THOSE} ~~facts~~ we have observed were of a quite different nature ~~than those~~ ^{than those} observed in well known forms of aphasia.

40 / Discussion

We described some observations which differ significantly from our experience with ^{VARIOUS} different forms of aphasia.

A ^{THIS} patient, with an aneurism of the left thalamus, ^{HAD} fully preserved ^{BEHAVIOR} before the operation.

After the operation, ~~was~~ where manipulation ^{OF} the deep deep parts of the left temporal lobe took place and ^{WHERE} ~~where~~ not only a part of the left thalamus, but ^{ALSO} ~~as well~~ its connections with the left temporal lobe ^{OCURRED.} ~~took place.~~ were destroyed, - severe ~~&~~ speech disorders ~~took place.~~

These disorders had a structure very different from what we often ~~see~~ ^{HAVE OBSERVED} ~~are observing~~ in cases of well known temporal (sensory-motoric or sensory-motoric) aphasia.

The patient ^{RETAINED} ~~presented~~ ~~as~~ well modulated, prosodically intact, ~~and~~ extended speech, but the speech became very frequently filled with perseverations, ^{AND} ~~and~~ extraneous ~~as~~ fragments ^{UPON} ~~and~~ which the patient remarked after it ~~it~~ was formulated and suddenly stopped.

^{HER} ~~The~~ understandings of speech was unstable, fluctuating, and whereas parts of the patient's ~~as~~ patient's contact with the interlocutor ^{WERE} ~~was~~ ~~fully~~ preserved, other parts of the speech input were lost and the patient complained ^{EITHER OF} ~~either~~ not ^{UNDERSTANDING} ~~to understand~~ it, ~~or~~ not ^{LISTENING} ~~to listen~~ to it, ^{OF} ~~not~~ paying enough attention to it.

The phonemic ~~&~~ hearing was only slightly disturbed, ^{AS, FOR EXAMPLE,} ~~and~~ the naming of objects; understanding of words was deranged ~~is~~ much more, ^{INDICATE} ~~and~~ in the experiments where the patient had to ~~show~~ ^{HER RESPONSES} objects named, ~~she~~ showed signs of alienation of the meanings of words, instability of the word traces and ~~is~~ severe deterioration in singling out the right meaning of the word, selecting it from many indefinite alternatives. ^{THIS} ~~It~~ means that the ~~(perhaps the most strange observations were made in~~

41 ~~during the exp)~~ stronger ~~was~~ the immediate relation of the word ^{TO} ~~with~~ ~~the~~ object's visual image - the more preserved ^{WE SEE THIS} ~~was~~ its meaning, ^{IN THE} ~~and~~ it is ~~only~~ ~~too~~ clearly ~~to see~~ that ~~it~~ is a ^{GOOD} ~~very~~ ~~presented~~ description ~~and~~ formulation of

the left thalamus and its connections with the verbal zones of the left temporal cortex, resulted in a specific kind of derangement, where the specificity of the speech process was lost, the selectivity ~~the~~ blocking of & already evoked or extraneous associations became impossible and the selectivity of speech ^{HAD} broken down.

AND WHY IS LOSS OF THE SPECIFICITY OF THE SPEECH PROCESS (WHAT-EVER THAT MEANS) NOT A LINGUISTIC DISTURBANCE (ASSUMING THAT LANGUAGE IS A WELL DEFINED PHENOMENON - WHICH IT IS NOT).

Observations made by Ojemann (1-5), van Buren (6-7) Cooper (8-10) and others we mentioned at the beginning of this paper ^{DESCRIBE} come close to the description of similar data, but neither the structure of these defects ^{and their} ~~are~~ ^{ARE} causes ~~were~~ ^{ARE} not clear enough.

We can only express ^{THE} ~~our~~ ^{BELIEF} belief, that speech disturbances ^{CAN RESULT FROM} ~~can be a result of~~ lesions of the deep parts of the left frontal hemisphere; that ~~the~~ such disturbances ~~have~~ result from some mechanisms very different from the mechanisms of aphasia which ~~are~~ ^{HAVE BEEN} ~~were~~ carefully studied during the last century; that they have a very special structure which is intimately associating with ~~the~~ important ^{CHANGES} ~~changes~~ in gating and blocking processes ^{which} ~~is~~ ^{is of a} ~~have~~ a dynamic character being. We are here that we are facing ~~here~~ a new kind of speech disorders ^{HERE} ~~and~~ that this kind of speech disorders ^{MUST} ~~are~~ to be carefully studied.

July 1975.