been found by Adriani and Kerr (1955) to be the most effective drug. First used in neonates, we have used it with success in the last seven older children. In three children treated with paraldehyde, phenobarbitone, and tracheotomy who were having such severe spasms that I.P.P.R. was contemplated, a change from paraldehyde to mephenesin resulted in satisfactory control. In adults it has been used intravenously rather than by mouth, but in children it has proved effective when given by stomach tube. Because of its local anaesthetic action this is preferable to oral administration, which may lead to depression of pharyngeal protective reflexes. It has shown none of the recognized complications of fall in blood-pressure, haemoglobinuria, or thrombophlebitis.

It cannot be too strongly stressed that tetanus is a preventable disease and that active immunization with tetanus toxoid is a safe procedure that should be carried out in all communities. The use of antitetanic serum in prophylaxis is far less satisfactory as it carries a considerable hazard from serum reactions. It has also been shown recently to be ineffective if the recipient has had horse serum or has an anaphylactic reaction (Godfrey *et al.*, 1960). Furthermore, severe and fatal tetanus can follow upon the most trivial injury for which the patient is unlikely to receive any prophylactic antitetanic serum.

Summary

In a series of 55 children with tetanus in which routine tracheotomy was not done, 27 (49%) died, while in a comparable group of 27 children in which tracheotomy was done in 14 severe cases and I.P.P.R. was used in 4, there were 3 deaths (11%). Apart from the use of mephenesin in some of the latter group, treatment was essentially the same.

Reasons are given why tracheotomy should be part of the routine treatment of severe tetanus.

The indications for and the technique and subsequent care of the tracheotomy in patients with tetanus are described.

Even if I.P.P.R. is available, it is felt that tracheotomy and sedation should be tried first, and only if this treatment fails, as judged by certain criteria, should I.P.P.R. be applied.

We thank Professor F. J. Ford for facilities, and Dr. D. V. Maytham, who did most of the tracheotomies. We are also grateful to Dr. J. Burger, medical superintendent of Groote Schuur Hospital, and Dr. J. F. W. Mostert, of the Red Cross War Memorial Children's Hospital, for permission to publish.

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AN INVESTIGATION OF SELECTIVE DEAFNESS PRODUCED BY DIRECT SUGGESTION UNDER HYPNOSIS

BY

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Many aspects of psychogenic deafness as encountered clinically in association with psychopathology have already been demonstrated in deafness produced in normal persons by direct suggestion under hypnosis (Erickson, 1938; Pattie, 1950). Such work to date has dealt only with deafness extending over the whole aural spectrum (total deafness). We have reported, in a preliminary communication, on the production of frequency selective deafness in this way (Black and Wigan, 1960), and we have now carried out further interpretation of our data and have performed a number of additional experiments.

Some of Erickson's subjects, in whom he produced various degrees of such total deafness by direct suggestion under hypnosis (D.S.U.H.), claimed to have subjective experiences of selective deafness, or were said to relieve anxiety by retention of the hearing of a single sound, such as the ticking of a clock. There was also objective evidence in some subjects of other sensory and even motor disturbance associated with this deafness: dilatation of the pupils, focusing disturbances, and nystagmus. One subject experienced concurrent general anaesthesia, with the greatest loss in arms and legs.

Pattie investigated unilateral total deafness produced by D.S.U.H. Earlier, Dynes (1932) experimented on the selective hearing produced by hypnosis *per se*, using the sound of a pistol-shot as the stimulus. Records were made of respiration, heart rate, and the psychogalvanic reflex (electrical resistance of the skin) both in the waking state and under hypnosis. Startle responses were reported to be absent under hypnosis, and no effect was observed on the heart rate or respiration. Slight changes of the electrical resistance of the skin were recorded. Total deafness can also be produced by post-hypnotic suggestion. This was investigated by Lundholm (1928), who showed that conditioned reflexes could not be established after such suggestions of deafness had been made and a sound tick was used as the conditioned stimulus and an electric shock as reinforcement.

Method

In our experiments records were made of the auditory thresholds of six deep-trance hypnotic subjects, first in the waking state and again after selective deafness to tones of specific frequency had been suggested under hypnosis. The evidence of deafness was then further investigated clinically and with the aid of positive conditioned reflexes, using an electric shock as the conditioning stimulus (reinforcement), tone as the conditioned stimulus, and heart rate as the conditioned response.

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In measuring the auditory thresholds of our subjects we were not concerned with any of the manifestations of clinical deafness as defined in terms of an accepted norm of auditory acuity according to British or American standards, since we were interested only in the investigation of temporary changes as these might be produced in the normal threshold of each subject as recorded in the circumstances of the experiment. The subject lay on a couch and wore high-fidelity headphones (Permoflux ; P.D.R.-10) fitted with soft rubber ear-pads to minimize ambient noise in the laboratory, which was estimated at 30/40 phons. The test-tones were thus presented binaurally and the auditory thresholds were measured between 100 and 10,000 c/s. Two methods were used for presenting the test-tones in the headphones.

In Method I tones of variable but precisely known pitch were produced by the operator by means of a hand-operated pulse generator in circuit with a Muirhead–Wigan decade audio-oscillator (part of a T.M.S. tester No. 1, Mk. II). By use of a variable octave filter, any distortion due to the oscillator was kept to less than 0.1%. In this method the intensity of the tone was controlled by the operator, and the various tones from 100 to 10,000 c/s were presented at random in groups of one, two, or three pulses. Each pulse had a smooth rise and fall, with a width of 50 msec. measured at half-height. The subject flashed a signal-light in accordance with the number of pulses heard. To establish as rapidly as possible a close approximation to the hearing threshold, pulses were first presented at the maximum level available (+100 dB ref: 0.0002 dyn/cm.^{2}), and then lowered, at first in large steps and later in smaller steps, it being taken that the threshold had been approximated when, on making a further 4 dB drop in level, either there was no response at all or the number of signal-flashes could no longer be correlated with the pulses.

In Method II a Békésy audiometer (made from a modified Marconi acuity meter: T.S. 444A) provided a gliding tone, the frequency rising throughout the test at the rate of about half an octave per minute, the total period of any one test lasting a little more than 15 minutes. In this method a spring switch operated by the subject either decreased the intensity of the tone when depressed or increased it when released. The intensity was thus controlled by the subject and the result was recorded automatically in ink on paper.

No subject was accepted for the experiment if there was any history or complaint of defective hearing, and the auditory threshold, according to the experimental technique involved, was recorded first in the waking state. Every subject was also tested after each experiment to ensure that the hearing threshold had effectively been restored to normal in terms of the ante-hypnotic value. In this respect specific checks were made at the frequency of the tone to which deafness had been suggested and at all other frequencies where changes in the threshold as recorded had been or might have been observed.

After making the preliminary record of the subject's normal threshold under these circumstances, the subject was then hypnotized and the specific frequency involved was presented for three seconds as interrupted tone in the headphones, solely for purposes of preliminary identification. Suggestions were then made that after a count down from 20 to 1 the subject would be deaf to this tone only and to nothing else. Records were taken of the actual words used in making these suggestions, and at the outset the words "you will not hear this *note*" or "you will not hear this *sound*" were arbitrarily employed. In all cases the specific frequency selected was next presented as constant tone at an intensity level of 80 dB sound pressure level (S.P.L.) over a period of 20 seconds. The count down from 20 to 1 was made during this 20-second period. As a preliminary and entirely subjective test for the suggested deafness the subject was then presented with tone as a series of pulses, only some of which were of the specific frequency involved. Failure to report on these was taken as evidence on which it was reasonable to proceed further with the experiment. The auditory thresholds of the subjects were then measured by one or other, or both, of the two methods described, and the deafness present was also investigated by other means.

In two cases positive conditioned reflexes were established beforehand. The subject attended daily at the same time for eight days and was presented alternately with tone of 310 c/s and 130 c/s for five-second periods, at one-minute intervals, during one hour. The hearing of the higher tone of 310 c/s was constantly reinforced during the first 0.05 second of the fourth second with an electric shock, produced by a short transient condenser-discharge (time constant = 50 msec. ; peak current 4 mA). Evidence of a conditioned response in the heart rate was looked for on the ninth day.

The apparatus consisted of a two-channel cathode-ray-tube assembly, one channel of which displayed changes in cardiac potential, using only the standard E.C.G. lead II (right arm, left leg). The electrodes through which the electric shock was given to the subject during conditioning were attached to the left hand. The second channel displayed a one-second time trace as well as the time and duration of the conditioning stimulus. The results were recorded by a cine camera on film, both tubes being photographed at once.

In early experiments cardiac period was measured from R to R wave, using a photographic enlarger and working from the second scale on the film. But this was found to be inaccurate as well as laborious, and in later experiments the associated amplifier was rearranged so that the deflection of the trace was proportional to the cardiac period between any two heart beats.

Conditioned-reflex Experiments

Three conditioned-reflex experiments in all were performed on the two subjects chosen for this part of the work. In C.R. Experiment I (Subject 6) records were made of the conditioned reflex 48 hours before the experiment, 10 minutes before, during the experiment, and 10 minutes afterwards. During the experiment the subject was hypnotized and presented initially with the tone of 310 c/s, to which he had been conditioned, and a record was made of the cardiac response. Deafness to the tone of 310 c/s was then suggested according to the standardized technique. The tone was again presented and four records were taken. Still under hypnosis, the subject was then cleared of all previous suggestions and, with normal hearing restored, a further record was obtained. Finally the subject was woken up and after an interval of five minutes another record was taken.

In C.R. Experiment II (Subject 1) evidence of the established conditioned reflex was obtained 24 hours

before, half an hour before, and 45 minutes after the experiment, which was otherwise identical.

In C.R. Experiment III (Subject 1) evidence of the established conditioned reflex was obtained 24 hours before, 10 minutes before, and 50 minutes afterwards. In the course of this experiment, post-hypnotic suggestions of selective deafness were also made and an independent witness was called in to examine the subject clinically while she was in the waking state but still showing evidence of being deaf to the conditioned stimulus—namely, tone of 310 c/s.

Throughout these conditioned-reflex experiments records with the cine camera were made during one minute before and for one minute after the conditioned stimulus, in order to provide ample material from which to analyse the results. In calculating the true deviation attributable to the response, both the general trend of the heart rate and the mean of the normal variation under the conditions of the experiment were taken into account.

Results

These results may be divided into three groups: (*a*) the evidence of selective deafness produced by D.S.U.H.; (*b*) the apparent significance of the words used, or the semantics involved, when making the suggestions of selective deafness to the hypnotized subjects; and (*c*) the results of the conditioned-reflex experiments aimed at further objective confirmation of the selective deafness.

Evidence of Selective Deafness

It was found that the hearing of tones at the specific frequencies tested (F_0) between 250 and 1,000 c/s and at a maximum intensity of 100 dB S.P.L. (the maximum considered safe for the subjects at the duration used) could be inhibited by D.S.U.H. It was found that in some subjects this inhibition tended to decay after periods varying from 10 to 30 minutes, while in others inhibition remained until removed by counter suggestion. In those subjects giving evidence of short-term decay, certain records made with the Békésy audiometer had to be abandoned when the period of inhibition was less than 15 minutes—the time required for the machine to sweep from 100 to 10,000 c/s.

Fig. 1 shows the change in the auditory threshold of a hypnotized subject to whom deafness to tone of 575 c/s (F_0) had been suggested under hypnosis, as recorded by Method I. It expresses, therefore, the difference between the waking-state threshold under the conditions of the experiment and that produced by D.S.U.H. Fig. 2 shows a similar result as obtained in an experiment with the Békésy audiometer (Method II). Here the change of threshold followed D.S.U.H. of deafness to tone of 500 c/s. To derive this curve, each Békésy tracing was rendered first as a line joining the mean points of the successive excursions of the recording pen in the y axis —characteristic of this instrument—and the difference between these two curves was then plotted. Fig. 3 shows the actual Békésy record of the experimental result in this case, superimposed on the preliminary control tracing of the normal ante-hypnotic threshold, rendered here as a dotted line.

On examination of the subjects when selectively deaf in this way, no response to startle situations created with tone at F_0 was elicited. There was also no evidence of voice-raising in the presence of continuous loud tone at F_0 presented at the maximum intensity permissible, and voice-lowering did not occur on cessation of loud tone at F_0. Examination with tuning-forks showed that hearing by bone conduction was also inhibited at F_0 or frequencies near to F_0, and there was thus no response to the Rinne or Weber tests. Unfortunately, tuning-forks vibrating at the precise frequencies of the various values of F_0 selected were not always available.

In some subjects it was noted that hearing by bone conduction was also inhibited at frequencies far from F_0, although hearing by air conduction at these other frequencies was present. Peripheral vibratory sense was also absent in all subjects at F_0 or frequencies near and in some subjects at all frequencies tested.

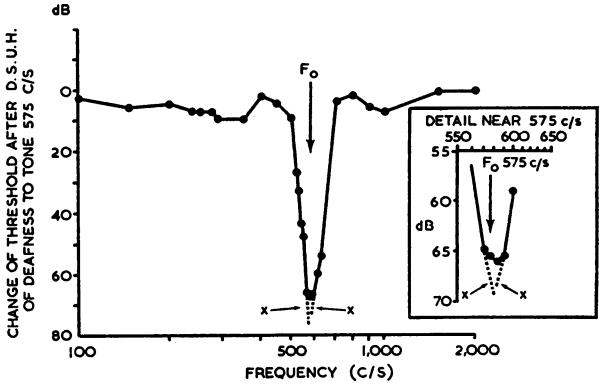

FIG. 1.—Change in the auditory threshold of a hypnotized subject. (Method I.)

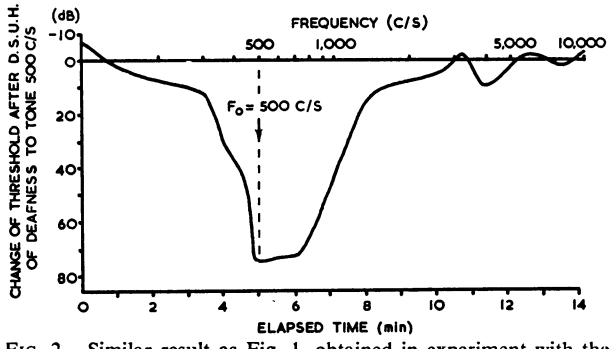

FIG. 2.—Similar result as Fig. 1, obtained in experiment with the Békésy audiometer. (Method II.)

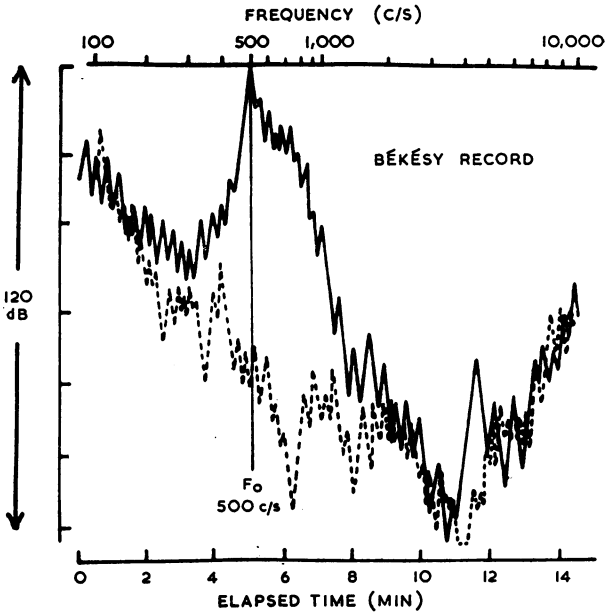

FIG. 3.—Actual Békésy record of the experimental results in same case as Fig. 2.

Apparent Significance of Words Used

It became evident that in certain subjects this selective deafness at F_0 sometimes included not only the test frequency but also half ($\frac{1}{2}$ F_0), occasionally twice this frequency (2 F_0), and in the case of one subject a third of this frequency ($\frac{1}{3}$ F_0) (Fig. 4: Method I). Examination of the suggestions made as recorded, then indicated that these discrepancies might be due to inadvertent variations in the actual words used prior to the count down. In particular there appeared to be a distinction between the effect of the words "you will not hear this note" and "you will not hear this sound."

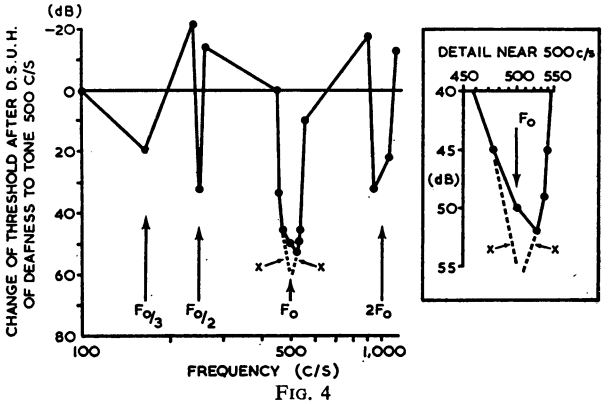

FIG. 4

This was investigated further, and it then became apparent that some such relationship did exist. All subjects were deaf to F_0 whatever the words used. But in experiments with five subjects out of six there was a predominance of inhibition of deafness to F_0 alone when this was described as a "note." When, however, F_0 was described to three of these five subjects as a "sound" they tended to include deafness to $\frac{1}{2}$ F_0. In one subject, a Welsh medical student with a good singing voice and an "ear for music," the distinction as between "note" and "sound" was reversed: in his case deafness to F_0 suggested with the words "you will not hear this sound" produced only a single trough at F_0 in the auditory threshold record. The words "you will not hear this note," however, produced troughs at $\frac{1}{2}$ F_0 and 2 F_0 as well. In one experiment (Fig. 4) he also became deaf to $\frac{1}{3}$ F_0.

Questioned in the waking state about the sort of distinction they might make between the words "note" and "sound," none of the six subjects provided an answer which could be related to the observed phenomena. Questioned under hypnosis, however, all six were able to make an immediate and significant distinction. The subjects giving predominantly F_0 only to the word "note" said, in effect, that to them a note was a single pure musical experience, and that therefore it included nothing but the single tone presented in the headphones. The one subject giving $\frac{1}{2}$ F_0, F_0, and 2 F_0 to the word "note" (and F_0 only for "sound") stated under hypnosis that, in effect, to him the word "note" also had a musical connotation, but that in music he always expected to hear harmonics whenever he heard a note. "I have never heard middle C on the piano without hearing it reflected in at least the C above and the C below," he said.

The accompanying Table gives a record of the results as the selective deafness could be related to the semantics involved in the course of making the suggestions during the different experiments.

Results of Conditioned-reflex Experiments

The two subjects (Nos. 1 and 6) selected for the conditioned-reflex experiments were one giving predominantly F_0 alone to the word "note" and the one giving F_0 alone to the word "sound" respectively, and these words were appropriately employed to give the F_0 response only. Satisfactory conditioned reflexes were established in both subjects to tone of 310 c/s, so that they showed a significant increase in heart rate (decrease in cardiac period as measured) when presented with this tone unreinforced. There was no evidence of a response to tone of 130 c/s in either subject.

The average results of four tests with Subject 6 (C.R. Experiment I) are shown in Fig. 5. A more effective and simple way of revealing any significance in the heart-rate data recorded, however, is to superimpose a number of groups of data as in Fig. 6—C.R. Experiments II and III. In curve A two sets of data from the two experiments have been averaged and the increase in heart-rate (the conditioned response) associated with the conditioned stimulus (tone of 310 c/s) is clearly demonstrated. In curve B six sets of data have been averaged from the records made in both experiments when the subject was hypnotized and direct suggestion had been given with the words "you will not hear this

TABLE I

Subject	Method of Presentation of Tone	Semantics: "You will not hear this *note*"			Semantics: "You will not hear this *sound*"		
		½ F_0	F_0	2 F_0	½ F_0	F_0	2 F_0
1 F	Pulses I	−	+	−	+	+	+
					+	+	−
					+	+	+
	Békésy II	−	+	−	+	+	−
		−	+	−			
2 F	Pulses I	−	+	−	+	+	*
		−	+	−	+	+	−†
		−	+	−	+	−	−†
	Békésy II	−	+	−	+	+	−
		+	−	−†	+	+	−†
		+	+	−	+	−	−†
3 F	Pulses I	+	−	−†	Not tested		
		−	+	−			
	Békésy II	−	+	−	,,	,,	
4 F	Békésy II only	−	+	−	,,	,,	
		−	+	−			
		−	+	*			
5 M	Pulses I only	Not tested			+	+	*
					+	+	−†
					*	+	+
					+	+	*
6 M	Pulses I	+	+	+	−	+	−
	Békésy II	+1/3 F_0			−	+	−
		+	+	+			

* Test did not include this frequency.
† Decay of inhibition prior to completion of test.

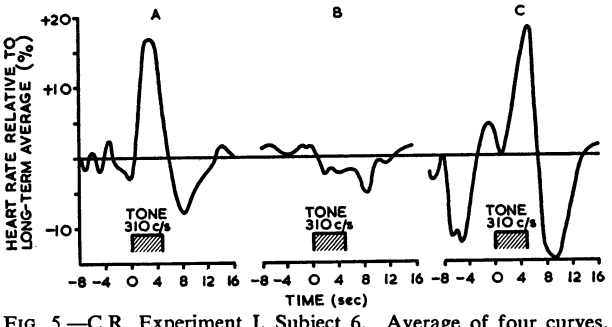

FIG. 5.—C.R. Experiment I, Subject 6. Average of four curves. A, Conditioned response. B, Response after D.S.U.H. of deafness to tone 310 c/s. C, Response after clearing suggestions of selective deafness.

note" (Subject 1). The result clearly fails to reveal any trace of the conditioned response pattern shown in curve A. None of the six individual curves, of which curve B is the average, indicated the presence of the conditioned response, and it was decided that no further analysis of a statistical nature was necessary to reinforce this evidence. This response, as in curve B, was throughout remarkably similar to the responses recorded when the subject was presented with tone of 130 c/s—to which, of course, no conditioned reflex had been established.

During C.R. Experiment III, suggestions of post-hypnotic deafness to F_0 were made after the records

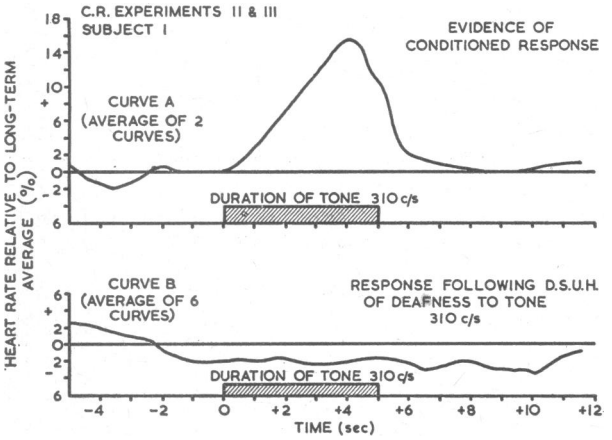

FIG. 6.—C.R. experiments, Subject 1.

included in curve B had been taken. The subject was then woken up, and, when apparently perfectly normal, an E.N.T. surgeon (Mr. R. K. Jones) was called in to see her. Without his having any detailed knowledge of the experiment, he was asked to examine the subject. His report was as follows:

History.—The patient was a married woman with two children. She made no complaint whatsoever of hearing disability. Her tonsils had been removed at the age of 18 months. She claimed to have been subjected to some excess of noise in her home—namely, the sound of an electric saw and drill, and musical sounds, her husband being a composer. She was fully awake and apparently in normal possession of her faculties, but, in the presence of a loud noise from electrical apparatus in the room, she made no response and seemed unable to hear it, although the noise was clearly audible to all present.

Membrana tympani: normal.

Response to ordinary speech: normal.

Response to tuning-fork (128 c/s): markedly reduced absolute bone conduction.

Vibration sense (medial malleoli, knuckles, and forehead): no response.

The first clinical examination completed, the subject was rehypnotized and cleared of all previous suggestions of deafness. She was woken up.

After a second clinical examination the surgeon then reported:

Weber.—Central.
Rinne.—+ Right and left.
Absolute bone conduction.—Normal.
Vibration sense.—Normal.
Hearing.—Normal.

Discussion

Apparent selective deafness to tones of specific frequency can be produced by D.S.U.H. in suitable deep-trance hypnotic subjects. There is also some evidence, as in the Table, to show that the actual words used when making the suggestions may have a special significance under hypnosis, even if this escapes the hypnotist and his subject when awake.

In psychological terms, we are dealing under hypnosis, almost by definition, with the unconscious mind. According to Freud's (1935) own account, it was while in Nancy in 1889, when watching Bernheim's experiments with hypnosis, that he first "received the profoundest impression of the possibility that there could be powerful processes which nevertheless remain hidden from the consciousness of men." In view of the inability of any of our subjects to distinguish significantly between "note" and "sound" in the waking state, it would appear possible that to the unconscious mind the semantics of the hypnotist's suggestions may have a special significance which remains otherwise hidden from consciousness. If this should be the case generally, in respect of all physiological responses produced by D.S.U.H. apart from those recorded in audiometry, it is hardly surprising that the clinical use of hypnosis has had up to date such a chequered career.

In particular our findings might presumably prove relevant when attempting the relief of a hysterical state presenting as a conversion symptom in the form of psychogenic deafness. In general they may also be relevant to all treatment under hypnosis and especially to the use of hypnosis by obstetricians for the production of anaesthesia during childbirth, when the unconscious interpretation of the semantics involved in such words as "you will feel no pain," for example, might possibly produce a number of unwanted physiological responses at the same time.

But the question still remains regarding the origin of the auditory experience of the subject who, presented with $\frac{1}{2}$ F_0 or 2 F_0 or other harmonic, is able to interpret this—for whatever psychological reasons—in terms of the frequency F_0, concerning which suggestions of deafness have been made. It might be argued that since 2 F_0 is a harmonic of F_0, this at least could have been presented unintentionally along with the test tone. Well aware of this possibility, however, we had included a filter in the circuit which, as stated above, would reduce 2 F_0 and any higher harmonic to less than 0.1%. In addition the effect of the filter itself was investigated, and it was found that its presence or absence made, in fact, no significant change in the subject's responses.

It must therefore be assumed that the responses were due to the presence of aural harmonics. However, although this might explain the subject's response to twice the test frequency, it is more difficult to find an adequate reason for any experience of half this frequency. Nevertheless, it could still be argued that when the test tone was $\frac{1}{2}$ F_0 the second harmonic then became F_0 itself, or the actual frequency of tone to which deafness had been suggested. It is therefore postulated that when the semantics of the suggestions conveyed to the subject the necessary information—whatever this may have been—the presence of F_0 as an aural harmonic of $\frac{1}{2}$ F_0 produced deafness to $\frac{1}{2}$ F_0 by association. A similar explanation could be offered to the finding of a single response of deafness to $\frac{1}{3}$ F_0.

We are dealing here, apparently, with some degree of auditory agnosia, but, while there is ample evidence of the genuine existence of aural harmonics (Egan and Klumpp, 1951; Lawrence and Yantis, 1956), there is no record of the subjects of such experiments reporting any

conscious experience of these harmonics. This being the case, the use of D.S.U.H. as a research tool in this field could open up the possibility of labelling the sensation of pitch as distinct from the total auditory experience, thereby facilitating research into the general mechanisms involved in hearing and the conscious distinction of different sorts of sounds.

The evidence of the conditioned-reflex experiments would seem to support the clinical and audiometric evidence that deafness to tones of specific frequency can be produced by D.S.U.H. However, it is recognized that the case is still, in some respects, unproved. Further work with conditioned reflexes, involving a variety of physiological responses other than heart rate, is now in progress.

Finally, it may be important that such selective deafness produced by D.S.U.H. appears to have been extended in all cases to include a loss of peripheral vibratory sense to the same frequency and in some cases to other frequencies. We are not, however, aware of evidence that any kind of deafness of psychopathological origins shows this association, but clinical investigation of this possibility could presumably settle the point.

Summary

The auditory thresholds of six deep-trance hypnotic subjects were measured in the waking state and again after deafness to tones of specific frequency had been suggested under hypnosis. This deafness was then further examined clinically and by means of experiments with positive conditioned reflexes, using heart rate as the conditioned response. In certain subjects this selective deafness sometimes included not only the test frequency but also half and occasionally twice this frequency, and on one occasion one-third of the frequency. Some evidence was found to support the thesis that these variations in responses were related to the semantics of the words used by the hypnotist when making his suggestions, although the subjects were not aware of any such distinctions in the waking state. There was also evidence of an associated loss of peripheral vibratory sense to the same frequency as the test tone, and in some cases to other frequencies.

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CONGENITAL ICHTHYOSIFORM ERYTHRODERMIA TREATED BY HYPNOSIS

REPORT OF TWO CASES

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[WITH SPECIAL PLATE]

A novel and spectacularly successful approach to the treatment of congenital ichthyosiform erythrodermia (Brocq, 1902) was made when Mason (1952) treated a patient by direct suggestion under hypnosis. The clinical diagnosis had been confirmed by biopsy. Except for the skin of the chest, face, and neck, the whole body of the patient, a boy of 16, was covered by a thick, blackish horny layer. Transplants by plastic surgery of apparently normal skin from the chest soon became ichthyotic in their turn, and contractures resulted. However, five days after hypnotic suggestions of improvement had been given the horny layer started to soften and be shed, but only in that area to which the suggestions applied. It therefore seemed improbable that the resolution had occurred spontaneously. Subsequently the other affected areas were included in suggestions of cure, and showed a similar response. The improvement, assessed at between 95% and 50% in different parts, had been maintained four years after treatment had been completed (Mason, 1960). Mason concluded either that there is a hitherto unrecognized psychic factor in the aetiology of the disease or that a congenital organic condition had been affected by a psychological process, or that a combination of both these factors obtained.

Schneck (1954) used hypnosis in treating another form of fish-skin disease, a case of ichthyosis simplex in a 33-year-old man whose whole body was affected to a varying degree and who suffered the typical winter exacerbation. The patient was rather sceptical of hypnotherapy at first, and tended to underestimate the beneficial results which seemed attributable to it. These results were variable and irregular, but the patient largely escaped the next cold-weather deterioration. When his attitude of "healthy scepticism" was altered to one of strong desire to prove responsive to treatment there was an over-all improvement assessed at between 40% and 45%. The patient himself related the efficacy of the treatments to the depth of the trance state achieved on each occasion. Schneck commented on the significance of this attitude, and remarked on the need for biochemical and physiological investigations with the experimental use of hypnosis in ichthyosis and other skin disorders.

Two further cases of congenital ichthyosiform erythrodermia treated by hypnosis are described here. The patients are sisters; there is no family history of this or any other ichthyotic manifestation or ectodermal defect. Twin brothers delivered at home in May, 1960, appear so far to be normal, and there are no other siblings.

Case 1

The patient, a female, was born at full term by spontaneous delivery after a normal pregnancy on March 8, 1952. At birth the skin of the trunk, palms, and soles was seen to have a dusky-red hue, but the infant was otherwise normal in appearance. No peculiarity of the vernix caseosa