In the Salford comprehensive community mental health service vulnerable cases of schizophrenia have been treated with this preparation for nearly two years and experience has been gained in over 100 cases. This confirms results from elsewhere that it represents an important step forward in the community management of schizophrenia. The injections may be given in hospital clinics, at general practitioners' surgeries, or by nurses at the patients' homes. An interested family doctor can certainly make a big contribution to the community care of his schizophrenic patients by undertaking these injections, since it is possible to do a rapid check on the mental state at the same time, or perhaps receive a report from an accompanying relative. It may also be necessary to issue regular prescriptions for antiparkinsonian drugs, since side-effects are fairly common, at least in the early stages of the regimen.

The community care of schizophrenia is still in its infancy, but there is no doubt that the family doctor has a vital role to play in it, and it is likely that this role can only become more significant as time goes on.

FURTHER READING

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MEDICINE TODAY

Audiometry

"Medicine Today" is the television series for doctors produced by the B.B.C. Advice on the preparation of the programme is given by the Association for the Study of Medical Education.

The programme on B.B.C. 2 on 5 November was on the subject of investigation of adult deafness. Printed below is an article prepared with the help of expert contributors to complement the television programme, which will be repeated on B.B.C. 1 on 12 November at 11.27 p.m. approximately.

Audiometry has developed from a simple technique for the quantitative assessment of deafness into a versatile procedure for the investigation of various auditory phenomena. Ideally, audiometric examinations should be carried out in a soundproof room or booth so that background noise is effectively eliminated, and most modern ear, nose, and throat departments are equipped with such facilities.

Pure-tone audiometry provides the simplest method for the measurement of hearing loss. Sound impulses are generated by the audiometer at various frequencies and conveyed to the patient at an amplitude which he can hear via a head-set or a bone conductor placed on the mastoid process. The sound intensity is gradually reduced to a level which he can only just hear, and this is recorded graphically as the threshold of hearing for that particular frequency (Fig. 1). In this way a reasonably accurate assessment can be made of the patient's hearing loss, and this serves as a source of comparison for any future measurements. By performing preoperative and postoperative audiograms the surgeon is able, for instance, to gauge the success of procedures which are carried out for the relief of deafness.

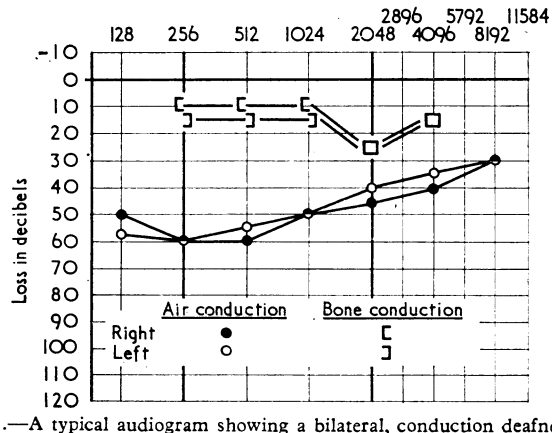

FIG. 1.—A typical audiogram showing a bilateral, conduction deafness due to otosclerosis.

Pure tone audiometry, like any other investigation, is subject to the introduction of errors. The patient's concentration may wander, so that his threshold level may not be entirely precise, and this is particularly likely to happen in the young and the old. Results may vary if the tests are carried out by different persons or if regular recalibration of the apparatus is neglected. Errors in the interpretation of audiograms may also arise, and perhaps the best example of this is the "shadow curve." This occurs in patients with normal hearing in one ear and a severe or total perceptive hearing loss in the opposite ear. Clinical testing indicates very poor or absent hearing on the affected side when the "good" ear is masked, but the audiogram apparently reveals only a moderate deafness of mixed conduction-perception type. This is an illusion which is created by the "good" ear overhearing the signals conveyed to the deaf ear, often in spite of appropriate masking.

Differential Tests

The phenomenon of phonophobia is a useful one to investigate in differentiating cochlear from purely neural lesions. Damage to the outer hair cells of the organ of Corti is responsible for intolerance of loud sounds, the mechanism being attributed to the so-called "recruitment phenomenon." When this condition is present the deafened ear is found to be progressively more sensitive to sounds of increasing loudness in a way which the normal ear is not. For instance, in a patient with normal hearing on one side and a cochlear deafness on the other, increasing the amplitude of a tone presented alternately to both ears to a level when it is equally loud in both requires a smaller increment on the deaf than on the normal side. This phenomenon, which is seen typically in Ménière's Disease, is made use of in Fowler's alternate binaural loudness balance test. Its absence in a case of perceptive deafness signifies that

it is the acoustic nerve which is at fault. A similar phenomenon, if not the same one, is the uncanny ability of patients with a cochlear lesion to detect very small increments of sound, which a normal person or a person with a conduction or neural deafness cannot do. This is the basis of another test which is called the short-increment sensitivity index, or the S.I.S.I. test. In this the patient hears a steady tone 20 decibels above his threshold for two minutes. Every five seconds the intensity jumps exactly one decibel for two-tenths of a second, and the patient is expected to note the sudden increase by pressing a button. The final score is the percentage of 20 increments heard by the patient. Patients with normal hearing, middle ear deafness, or eighth nerve afflictions usually score between 0 and 20% at all frequencies. Patients with cochlear disorders score between 60% to 100% at frequencies above 1,000 cycles per second and often below this frequency as well.

Bekesy Audiometry

This phenomenon can be depicted graphically with Bekesy audiometry, in which the patient records his own threshold of hearing automatically. When the audiometer is switched on a pure tone of low frequency is heard in one earphone, and a motor which comes on automatically gradually increases the pitch of the sound. At the same time another motor increases the loudness of the tone, and as soon as this increase in loudness becomes perceptible to the patient he presses a button. This reverses the motor so that the tone diminishes in intensity to a point when it is scarcely audible, at which time he releases the button. Once again the tone becomes louder, and the process is repeated continuously, while at the same time the tone is changing in frequency. The performance is traced on a blank with a recording pen. Generally two tracings of this kind are made, the first with a pure tone which is turned on and off rapidly and the second with a continuous tone (Fig. 2).

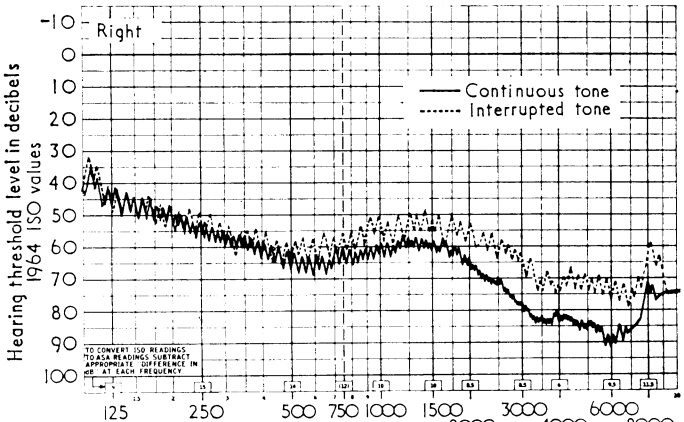

FIG. 2.—A Bekesy audiogram, showing the tracings of the interrupted and continuous tones. There is a diminution in the excursions of the continuous tracing at the higher tone level, indicating an increased sensitivity of the cochlea.

The ability of the defective cochlea to distinguish very small increments in sound intensity can be recognized by this form of testing.

In patients with acoustic neurinomata the phenomenon of auditory fatigue or tone decay is frequently observed. The patient's ability to hear a continuous tone well above the threshold for hearing at a given frequency is impaired. The patient who suffers from tone decay hears the tone for a short time, but gradually it fades away so that the intensity has to be increased over and over again. Thus, the continuous tracing of a Bekesy audiogram in a patient with an acoustic neuroma shows a rapid drop-off as a result of the patient's inability to keep the tone within his auditory consciousness (Fig. 3). A simpler test for this phenomenon can be arranged by simply exposing the patient to a continuous tone from a pure tone audiometer and seeing if he can "hold" it for a full minute. If he cannot the sound intensity is increased by five decibels and the procedure repeated. The test is continued until the patient is able to hear it for a full minute.

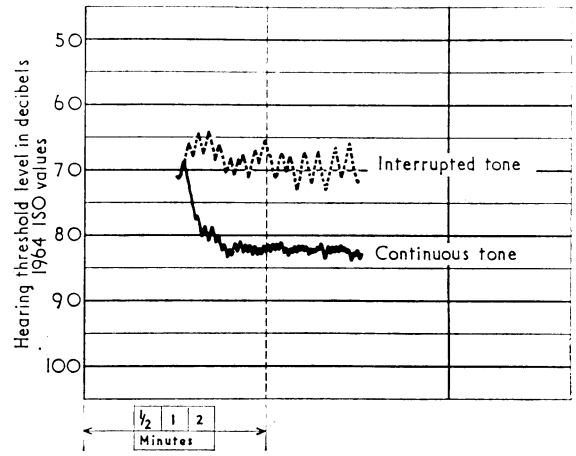

FIG. 3.—Part of a Bekesy audiogram, showing the rapid decline of the continuous tone tracing as a result of tone decay.

Speech Audiometry

Speech audiometry has a useful part to play in the diagnosis of hearing disorders and also in the assessment of patients for surgery or as potential candidates for hearing-aids. Lists of phonetically balanced words are fed to the patient's earphones, either by the live voice, a tape recorder, or a gramophone record. The amplitude of the sound is increased in graduated steps and the score of words heard correctly is plotted on a graph. In perceptive deafness the score at higher intensities is rarely as satisfactory as in conduction deafness, and may even deteriorate. This is probably a function of the distortion of hearing which results from a seriously deranged cochlea. It serves as a useful guide in the selection of patients for hearing-aids, for if the speech score is poor at higher sound levels the chances are that the patient will not do well with an aid.

Patients with otosclerosis, who may be referred for surgery, often present with a mixed conduction and perception loss, and a speech audiogram will help to distinguish those who are likely to benefit from an operation from those who are not. In cases of acoustic neuroma the speech scores are generally very poor, even when the pure tone losses are comparatively slight.

Newer and more sophisticated forms of audiometry have emerged in the last few years. The measurement of acoustic impedance—the resistance offered by the eardrum and middle ear to incoming sound—is such a test. It is helpful in the differential diagnosis of middle-ear deafness and the evaluation of the function of the eustachian tube. Evoked response audiometry or the electroencephalographic response to auditory stimuli is another new field which is being rapidly explored. It offers great potential in the diagnosis of deafness in young children and infants and cases of functional deafness.

Malingering

The diagnosis of malingering is a difficult one to make in otological practice, since many patients are extremely adept in their deception. The "acoustic feedback" test was designed for the purpose of picking out the malingerer from the genuine

case of deafness. In this test the suspected malingerer reads aloud from a book, his speech being monitored by a microphone and relayed to a tape recorder. This is triggered to convey the speaker's voice back a fraction of a second later to the suspect ear through a headphone. If hearing is unimpaired the patient becomes confused and is unable to continue reading, or the pace and tone at which he is reading suddenly become accelerated. If hearing is genuinely defective the patient is unable to hear his own voice being relayed back to him, and he continues reading without embarrassment.

ANY QUESTIONS?

We publish below a selection of questions and answers of general interest.

Urine Tests for Drugs

Q.—*Are there any simple urine tests, suitable for routine use in the consulting-room, that will show whether a patient has been taking heroin, morphine, or methylamphetamine? If so, what are these tests?*

A.—Heroin is converted in the body into morphine and excreted as such in the urine.[1] Therefore patients who have been taking heroin or morphine will both have only morphine and morphine conjugates in their urine. There are no simple urine tests suitable for routine use in the consulting-room that will detect morphine in urine. Similarly there are no simple urine tests which will detect methylamphetamine in the urine.

A spot test for urinary amphetamine has been described[2] and is as follows: make 50 ml. urine alkaline to phenol-red with 10% sodium hydroxide; extract with 20 ml. ether by shaking for at least 1 minute; wash ether layer twice with 50 ml. water; evaporate washed ether down to 0.1–0.2 ml. but *not* to dryness and spot on to a filter paper in an area not exceeding 1 cm. in diameter; add or spray on 1% *p*-dimethylamino-benzaldehyde in methanol; heat paper in oven at 90–100° C. for 3 minutes; positive gives a yellow spot.

The test is sensitive enough to detect concentrations as low as 1 μg. of amphetamine per ml. of urine. However, this is only a general test for ether-soluble aromatic amines, of which methylamphetamine, dexamphetamine, and amphetamine are only three. While a negative result with this test can be useful information under certain circumstances, a positive result is not very helpful because of the other ether-soluble aromatic amines which also give positive results with this test.

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1 Goodman, L. S., and Gilman, A., *The Pharmacological Basis of Therapeutics*, 1965, 3rd ed. New York.

2 Eastham, R. D., and Cox, P. A. G., *Brit. med. J.*, 1965, **1**, 924.

After or Before Meals?

Q.—*In general, which drugs should be taken after meals and which should be taken before? Is there any risk in the matter?*

A.—With most modern preparations it probably does not matter when drugs are taken. At least one standard textbook[1] states that oral drugs should always be taken after meals. This makes for more regular absorption of the drug, but, since factors other than absorption are important in determining the clinical effects and duration of action of a drug, this is seldom of great clinical importance.

What is important is that drugs which are apt to cause gastric irritation, of which the most important is aspirin, should not be taken on an empty stomach. It is generally accepted that the risk of haematemesis with such drugs is greater when they are taken neat when the stomach is empty. If such drugs are to be taken some time after a meal they should always be well diluted with water, milk, or some other suitable vehicle.

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1 Dilling, W. J., *Clinical Pharmacology*, 1960, 20th ed., revised by S. Alstead, *et al.* London.

Seborrhoeic Patches

Q.—*Is there any local application which will cure or disguise dark seborrhoeic patches on the forehead?*

A.—If the question refers to pigmented seborrhoeic keratoses (seborrhoeic warts or basal-cell papillomata) curettage will produce a complete cure with an excellent cosmetic result.

Senile lentigo, however, is a much more difficult therapeutic problem. In this condition there is an increased number of deeply pigmented melanocytes at the dermo-epidermal junction, and effective treatment would have also to destroy the overlying epidermis and would inevitably produce scarring. Treatment with carbon dioxide snow, applied for 20–30 seconds, or painting with concentrated solutions of phenol are rarely adequately effective, and most female sufferers from this complaint use proprietary brands of covering make-up to camouflage the disfiguring patches.

Athlete's Foot

Q.—*Has athlete's foot a predilection for the space between the fourth and fifth toes, and, if so, is there any explanation for this? What is the best treatment, particularly for somebody who cannot avoid getting his feet wet daily?*

A.—The species of ringworm fungi which cause athlete's foot are also responsible for tinea cruris. They are adapted to the moist conditions of the skin folds. Most cases of athlete's foot involve the toe clefts, and it is true that the cleft between the fourth and fifth toes is almost always affected. The explanation seems to be that the fourth and fifth toes are set more closely together than the others, and the conditions in the cleft are in consequence more moist than in the more medial ones—a situation accentuated by wearing shoes, which limit the tendency of the little toe to splay out on walking.

Treatment essentially involves trying to keep the feet as dry as possible. Open sandals without socks should be worn whenever possible, and Whitfield's ointment, zinc undecenoate ointment, or tolnaftate cream applied twice daily for several weeks. Griseofulvin by mouth may be given, but it is surprisingly disappointing in eradicating fungus from toe clefts. The general measures of foot hygiene should be maintained after clinical cure.

Infection from Eyedrops

Q.—*Are single-dose preparations of cocaine and fluorescein eyedrops available which would avoid the danger of transmitting infection?*

A.—Fluorescein eyedrops are available in single-dose, disposable applicators in the form of Minims and Opulets. Papers impregnated with fluorescein are also available as Fluor-I-strip A.T. No single-dose preparation of cocaine is available at present, but amethocaine hydrochloride is included in the Minims series.

Ménière's Syndrome

Q.—*Would sea or air be the best mode of travel for an elderly man suffering from Ménière's syndrome?*

A.—I do not think that Ménière's disorder is likely to be affected by air or by sea travel. However, all being equal, I would have thought air travel to be the best.

Notes and Comments

Sensitivity to Bee Stings.—Dr. W. WILKINSON (Bury St. Edmunds) writes: With reference to the answer to this question ("Any Questions?" 12 October, p. 103), I have kept a hive of bees for some years, but before I open it up I take a tablet of Histantin. I get stung, naturally, but I suffer no unpleasant effects and such swelling as occurs soon disappears.

OUR EXPERT writes: If a severe reaction to a bee-sting is feared, chlorcyclizine may prevent it. Whether this or ephedrine is better should be determined by trial. Dr. Wilkinson does not say how badly he would react without chlorcyclizine, and possibly he does not really need it. Most beekeepers get an occasional sting when handling bees (and more if they mishandle them) but do not react badly.