freedom, $P=0.155$. Thus on the basis of this analysis there was no significant difference between the properties of the two tablets.

More detailed analysis necessarily limits the number falling into each group. Figures for pain suffered immediately after the anaesthetic wore off compared with that occurring later in the day, and presence against absence of pre-operative pain, showed a remarkable similarity of properties in the two tablets in the series. A possible sex difference in perception of pain is demonstrated in Table III, where it can be seen that 62.5% of the females complained of pain compared with 48.3% of the males.

TABLE II.—Percentage Analysis of Pain Indicated on Cards Returned

	None	Mild	Severe
Codeine compound ..	60.5	35.2	4.3
Ap. 674 ..	56.3	36.7	7.0
No tablets ..	40.8	47.6	11.6

TABLE III.—Percentage Analysis of Pain Groups Against Sex

	None	Mild	Severe
729 males ..	51.7	41.6	6.7
361 females ..	37.5	50	12.5

Discussion

Because of the difficulty of estimating critically the amount of pain a patient suffers, it is possible to make a useful comparison of analgesics only by recourse to a large number of patients and by limiting the choice of description by a suitably designed return card. It was found that less than 1% of the patients indicated that their pain fell outside the choice of "mild" or "severe."

The thanks of many patients written on their postcard in the space available for comment and the high return achieved in this series suggests that the method used forms a useful contribution to the estimation of prophylactic properties of analgesics. The large number of patients attending for extractions also allows a rapid survey to be made. This clinical trial, involving 1,500 patients (including the 500 who had no tablets), was completed in less than eight weeks.

It is hoped that a complete analysis of the details recorded (sex, age, teeth extracted, operative difficulties, indication for extraction, antibiotic cover, etc.) will indicate which patients suffer the most pain. This is to be the subject of another paper.

Though there is no significant difference in pain-killing potency shown between the two tablets in this series, Ap. 674 may be recommended because, unlike the codeine compound, it has not been shown to cause constipation, gastric bleeding, or other undesirable side-effects.

Summary

In a double-blind trial covering 1,000 patients 901 returned a questionnaire. Compound benzmethoxazone tablets and codeine compound tablets were found to be of equal value in the prophylaxis of post-extraction pain.

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TOXIC CATARACT

BY

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A man aged 42 complained of blurred vision and double vision for a week. Both lenses showed uneven opacities throughout, the best corrected vision being 6/6 and 6/9. He was a fit and energetic games-player, and his doctor reported his health to be perfectly normal. Surprisingly, the blood-sugar tolerance was normal, and so were the blood count and E.S.R.

It later transpired that the patient had been taking a whole or half capsule of "carbital"—pentobarbitone, $\frac{1}{2}$ –1½ gr. (50–100 mg.), and carbromal, 2–4 gr. (130–260 mg.)—every night for five years. He himself decided to see whether this was causing his symptoms, stopped it for three nights, and noticed an immediate improvement, which ceased when he took carbital again. He then informed his doctor of his experiment, was given butobarbitone instead, and has taken no more carbital. His eyes were examined after a further two weeks, and the lenses were practically clear; the vision was 6/5 with each eye, and a small change in his weak hypermetropic astigmatism was noted. After a further 10 days there was no lenticular opacity and he has been free of symptoms in the eight weeks since.

Toxic cataracts are, of course, well known: Duke-Elder (1940) discusses those due to dinitrophenol, ergot, thallium, naphthalene, lactose, galactose, and paradichlorobenzene. It has been shown (Fitzhugh and Buschke, 1949) that various naphthalene compounds are more effective in producing cataracts than is naphthalene itself. Elaborate biochemical studies (Ogino and Ichihara, 1957; Ogino, Tojo, Fujishige, and Katumori, 1957; Ogino and Yasukuru, 1957) have been carried out to try to determine the effective agents in both experimental and human cataracts.

2:4-Dinitrophenol was first used in the U.S.A. in 1933 as a slimming agent; it accelerates metabolism. By 1938 150 cases of permanent bilateral cataract resulting from its use had been reported. Only 0.86% of patients taking the drug develop cataract (Horner, 1942), and there is no correlation between dosage or duration. One pair of identical twins were both affected, and two people in the same family were also affected. Some species of animals are susceptible and others not; there must be some genetic susceptibility. Efforts to produce cataracts experimentally with 2:4-dinitrophenol were unsuccessful for some time; later work with ducklings and chickens (Rigdon *et al.*, 1959; Buschke, 1947) gave acute and reversible cataracts, unlike the insidious, delayed, and irreversible type seen in man.

Work with rabbits and guinea-pigs shows that lethal amounts of 2:4-dinitrophenol can readily be absorbed through the skin (Spencer *et al.*, 1948). During the first world war, 2:4-dinitrophenol, in use as an explosive, caused 27 deaths from poisoning in France, 3 in the U.S.A., and 1 in England.

3:5-Dinitro-*o*-cresol is also an accelerator of metabolism and has been used in the treatment of obesity, causing several deaths, and in one case cataract

and glaucoma (Gilbert-Dreyfus and Onfray, 1937). It is also widely used as an insecticide, fungicide, and weed-killer, when it has been found severely toxic, though no case of cataract has been recorded from agricultural or industrial use (Barnes, 1953).

Dinitrobenzene has caused reduction in visual fields, retinitis, and optic neuritis, but no recorded cataracts (von Oettingen, 1941).

Paradichlorobenzene is widely used against the clothes-moth. It is toxic, and may cause delayed bilateral cataracts; in one case bilateral cataract occurred 14 months after the onset of general toxic symptoms and 12 months after contact had ceased (Berliner, 1939).

Weinstock *et al.* (1958) and Butterworth *et al.* (1959) have tested a number of drugs for their ability to produce experimental cataract in mice, with positive results from DL-methadone hydrochloride, pethidine hydrochloride and three of its reversed esters, and morphine sulphate and some of its analogues. The cataract in mice is reversed by N-allylnormorphine (Butterworth *et al.*, 1959).

No experimental cataract resulted from the use of pentobarbitone, phenobarbitone, or cyclobarbitone, but carbromal has not yet been tested (Weinstock, personal communication). In view of this, and as butobarbitone has not caused cataract in the patient in question, it may be supposed that it was the carbromal which was responsible for his condition.

It would be instructive to give him carbromal alone as a clinical trial, but not justifiable, as there is no certainty that a recurrent cataract would be fully reversible.

Unlike the compounds already mentioned, which are aromatic benzene derivatives, carbromal is an open-chain ureide, 1-bromo-1-ethylbutyrylurea.

Carbromal has been regarded as a relatively safe hypnotic, but doses in excess of the therapeutic range may cause acute toxic symptoms, and deaths have been recorded. Long-continued administration may give rise to chronic poisoning resembling bromism (Martindale, 1958). Two deaths are recorded from 20 and 50 tablets (10 and 25 g.). Among cases of acute poisoning admitted to the psychiatric division of the Copenhagen Municipal Hospital in 1943-6 it was the third most common agent, with a mortality of 6%. Chronic usage leads to loss of energy and ability, and to depression (Magnussen, 1948). Purpuric eruptions are not uncommon, and are usually seen after a dosage of from 3 to 20 gr. (0.2 to 1.3 g.) taken nightly for between a few weeks and a year (Borrie, 1955).

Mental depression, with slurred speech, was found in a woman taking six to eight "persomnia" tablets nightly for six months (Stroh, 1955). Steel and Johnstone (1959) have reported a case of addiction ending in death, and have emphasized the concern felt over the unrestricted sale of carbromal and the difficulty in dealing with addicts.

No previous account of carbromal-induced cataract has been found in the literature.

Summary

Reversible cataracts were seen in a man who had taken carbital daily for five years; this toxic effect has not previously been described, and appears to have been

due to the carbromal. The known toxic effects of carbromal and other causes of toxic cataract are briefly discussed.

Proprietary Preparations Containing Carbromal, with their Other Ingredients

With acknowledgments to Dr. B. A. Young

Abasin (Bayer Products) ..	Acetylcarbromal
Carbital (Parke, Davis) ..	Pentobarbitone sodium
Carbromal compound tablets (Bencard)	Phenacetin, caffeine, codeine
Carmerin (Napp)	Mephensin, reserpine
Dormiprin (Clinical Products)	Bromvaletone
Fydalex (Boots)	Ephedrine, theophylline
Hyperysin (Hommel) ..	Papaverine nitrite, hexamine, and chloral hydrate
Menopax (Clinical Products)	Ethinyl-oestradiol, bromvaletone
Menovo (Clinical Products) ..	Belladonna, ephedrine, hydrochloride, phenacetin, codeine phosphate, bromvaletone
Noctynol (Moore Medicinal Products)	Mephensin, bromvaletone, ascorbic acid
Persomnia (Clinical Products)	Bromvaletone
Relaxa (International Laboratories, Chessington, Surrey)	Bromvaletone, calcium phosphate
Sedaltine (Clinical Products)	Bromvaletone, aluminium hydroxide, mephensin, rauwolfia
Sedumax (Calmic)	Bromvaletone, phenacetin, aneurine hydrochloride
Slumbrin (Rybar Laboratories)	Bromvaletone
Somnotil (Allied Laboratories)	Bromvaletone
Viredrin (Clinical Products) ..	Methyltestosterone, ethinyl-oestradiol, dexamphetamine sulphate, bromvaletone

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The out-patient clinic for the treatment of alcoholism, established by the Church of England Temperance Society at 14, Gloucester Place, W.1, is now to be known as the Reginald Carter Foundation. The number of patients, seen by appointment and without fee, has recently increased considerably and the Bishop of London has launched an appeal for £50,000 to enable the Foundation to meet the demands being made upon it.