sterilized at 130° C. for 30 minutes without appreciable decomposition. Samples so treated and stored at room temperature in the dark for three months showed only slight increases in peroxidized compounds and acidity and no increase in acetaldehyde. The authors pointed out that J. S. Toal[2] had shown that some samples of paraldehyde decompose rapidly, especially when acidity is high, peroxidized compounds showing a very considerable increase. They concluded that the good keeping properties of their samples were probably due to the negligible presence of initial acid. They emphasized that paraldehyde for injection should be first examined by the *B.P.* method for impurities and only samples requiring less than 0.1 ml. of N/10 sodium hydroxide used—especially if the injection is to be stored for any time. The injection should be placed in ampoules, since it attacks rubber.

This work suggests that ampoules of paraldehyde should be stored in the dark in a cool place and used within three months.

REFERENCES
[1] Marston, A. E., and Allchin, J. P., *Pharm. J.*, 1942, **149**, 152.
[2] Toal, J. S., *Quart. J. Pharm.*, 1939, **12**, 573.

Local Complications of Influenza Vaccines

Q.—*Has the risk of sterile abscesses or oedema of the injected arm after the use of water-in-oil adjuvant influenza vaccines been eliminated?*

A.—Oil-emulsion influenza virus vaccine was introduced for general use with an improved formula which had not produced reactions in the course of extensive trials. Over a million doses were distributed and some severe local reactions were observed. It is still impossible, as it was at the time,[1] to say at all precisely how frequently this occurred, and it is still not known whether the reactions were noted simply because the rate is very low—so that they are observed only when a million doses have been given—or because there were so far undetected imperfections in the vaccine or in the way it was administered. The rate of severe reactions is probably not more than one in many thousands; it cannot be precisely defined at the moment, but is probably greater than the risk of a healthy adult suffering from serious influenza, but possibly less than that of some patients with chronic cardio-respiratory disease being seriously upset by the infection.

REFERENCE
[1] Tyrrell, D. A. J., *Prescribers' Journal*, 1965, **5**, 64.

Greasy Hair

Q.—*What is the current treatment for greasy hair?*

A.—There is unfortunately no new treatment for a greasy scalp. Sebum is present to protect the hair and there is no satisfactory way of reducing its quantity. When there is loss of hair the quantity of sebum produced does not fall in proportion, so that the remaining hair feels greasy. This is probably the usual cause for hair being greasy, and the only way to treat it is by shampooing. The shampoo may be either spirit soap or one of the many simple detergent shampoos on the market. The selenium sulphide shampoos are not recommended for a greasy scalp. It is usually sufficient to wash the hair once or at most twice a week.

Oestrogenic Progestins

Q.—*I understand that norethynodrel may be called an oestrogenic progestin. Are there any other examples of oestrogenic progestins?*

A.—Most of the synthetic progestins in general clinical use fall into one or other of two broad structural types—namely, the 17α-substituted oestrane type (also called the nortestosterone type) and the 17α-hydroxyprogesterone type. Certain progestins of the former type resemble in their effects progesterone plus oestrogen rather than progesterone alone. In that sense they may be regarded as oestrogenic progestins. Norethynodrel and norethisterone behave in that way. Oestrogenic metabolites formed in vivo may be the cause.

Some confusion has resulted from the fact that early commercial preparations of norethynodrel are believed to have contained appreciable amounts (0.15%) of a potent oestrogen (mestranol) as an accidental contaminant, and that of course resulted in considerable oestrogenic activity. Some progestins of the 17α-substituted oestrane type (or nortestosterone type) also have androgenic activity. This has been important mainly in relation to possible virilization of female foetuses.

Other examples of progestins of the 17α-substituted oestrane type (or nortestosterone type) are ethynodiol diacetate, lynestrenol, allylestrenol, and WY.3707. The exact spectrum of activities differs considerably from one compound to another and is difficult to assess precisely in relation to man. Animal tests, from which the greater part of the data must be derived, indicate considerable species differences. Certain progestins of the 17α-hydroxyprogesterone type have anti-oestrogenic and anti-androgenic properties. In animals, adrenal effects have been demonstrated after high doses. Examples of this type of progestin are chlormadinone acetate, medroxyprogesterone acetate, and megestrol acetate. Progestins which have had some extensive clinical use but which do not belong to either of the two main types discussed above are 6-dehydroretroprogesterone, enol-luteovis, and 6,17α-dimethyl-6-dehydro-progesterone. These compounds are not oestrogenic.

Progesterone and the physiological oestrogens all have multiple effects. Rather than speak of progestational activity or oestrogenic activity it is preferable to specify the aspect of progestational activity or oestrogenic activity in mind—for example, the endometrial effects, the effect on cervical mucus, on vaginal cytology, on gonadotrophin excretion, or whatever it may be. The full physiological effects of progesterone require the presence of some oestrogen. Nevertheless, there are senses in which the actions of oestrogen and progesterone are opposed. The appellation "oestrogenic progestin" may evoke the delights of oxymoron, but as a descriptive epithet its value is limited.

Copper Foreign Bodies in C.N.S.

Q.—*Is there anything known about the long-term toxic effects of pure copper foreign bodies in the substance of the nervous system, with special reference to one lying in an optic nerve?*

A.—Pure copper acts as a foreign body in the nervous system only provided copper salts are not formed from it. In the case of a pure metallic foreign body embedded in the optic nerve, this is unlikely. Ionized copper has been shown[1 2] to accumulate in neurones of goldfish kept in water containing it, in concentrations comparable to those found in Wilson's disease (hepatolenticular degeneration). Severe damage also follows the injection of copper salts into the cerebrospinal fluid.[3] Penicillamine and dimercaprol (B.A.L.) are thought to give some protection against the toxic effects of copper.

REFERENCES
[1] Vogel, F. S., *J. exp. Med.*, 1959, **110**, 801.
[2] —— and Evans, J. W., ibid., 1961, **113**, 997.
[3] Peters, R. A., Shorthouse, M., and Walshe, J. M., *Biochem. J.*, 1965 **96**, 47.

Notes and Comments

Test for Occult Blood.—Dr. S. LIPETZ (Edinburgh 8) writes: From your expert's reply to this question ("Any Questions?" 12 November, p. 1186) it could be inferred that the use of ortho-tolidine for stool-testing is dangerous. The much less satisfactory guaiacum resin test is suggested as an alternative. It is, of course, well established that those engaged in the manufacture of benzidine were in danger of developing malignant bladder changes. I am not aware, however, that there is any published evidence that the laboratory use of benzidine for occult blood-testing carries any carcinogenic risk. It would be a pity if this very valuable test were brought into disrepute without a very good reason.

I wonder if your expert has any evidence that the laboratory use of the benzidine test carries any carcinogenic risk.

OUR EXPERT replies: Like Dr. Lipetz, I am not aware of any case of bladder neoplasm occurring in a laboratory worker as a result of handling carcinogenic aromatic amines. However, I am inclined to conform with the code of practice for the guidance of laboratory staff which has been drawn up by the Harlow Industrial Health Service in conjunction with the Chester Beatty Research Institute and the University of Manchester, Department of Industrial Health. Copies of the code are available from the Chester Beatty Research Institute. Benzidine, ortho-tolidine, and ortho-dianisidine are particularly mentioned. It is suggested that there is an appreciable risk even when there has been exposure to the chemical for only a few weeks, and it is recommended that other chemicals should be used whenever possible.

Probably the risk with benzidine is greater than with the other two compounds. In my own laboratory we do not use benzidine, and take the appropriate precautions with ortho-tolidine and ortho-dianisidine.

Corrections

In the list of approved names published in the *B.M.J.* of 13 August (p. 405) carbochloral was wrongly stated to be a cytotoxic drug. Carbochloral is a hypnotic.

In the report of the Migraine Trust Symposium (19 November, p. 1257) Professor J. M. Robson was reported as suggesting that an investigation of cyclandeline should be undertaken. This was a misprint for cyclandelate (Cyclospasmol). We regret these errors.