react with heptafluorobutyric anhydride (HFBA) to form derivatives which are preferentially extractable into organic solvents. The extent of reaction is related to the amount of fluphenazine or morphine when excess HFBA is present, and to the amount of HFBA when excess drug is present. Thus for each compound, when varied quantities of unlabelled drug are added to a constant quantity of labelled drug, and an amount of HFBA is added sufficient to form the derivative of the quantity of drug added to the sample in labelled form, a varied proportion of the radioactive drug is converted to the derivative. Each derivative can be preferentially extracted into an organic solvent, and the proportion of radioactivity extracted is related to the total amount of drug present. Standard curves have been plotted of proportion extracted against overall concentration. These curves provide the basis for isotope dilution methods for the analysis of fluphenazine and morphine in the nanogram range. They could also be used as models for general application of the, technique in drug analysis. The sensitivity of the technique would be limited only by the specific activity of the labelled drug.

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Quantitative infrared studies of inflammation in rheumatoid arthritis

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The human skin is a highly efficient radiator of infrared energy (Hardy, 1934). Recent developments have produced mechanisms for scanning and recording skin temperatures by the detection of emitted infrared radiation. Point temperature measurements or two dimensional maps (thermograms) may be made, without regard to skin pigmentation and as a passive method, it avoids errors caused by contact of thermistors with the skin.

The skin temperature over an inflamed arthritic joint is raised, and displays a characteristic thermal pattern (Cosh, 1966; Cosh & Ring, 1967). This pattern can be altered by surgery, simple aspiration of joint fluid or more dramatically by the inter-articular injection of drugs. Scanning techniques, when standardized and used with isotherms, giving quantitative pictorial records of the course of the disease and its modification by drug therapy.

Close relationships between the biochemical events associated with inflammation in the joint fluid and the thermographic pattern over the joint have been demonstrated. We have found this method provides a harmless, reproducible, and accurate means of quantitating the course of inflammatory disease and the effect of anti-inflammatory drug therapy.

Four infrared detecting systems have been evaluated. Currently in use is a scanning system which allows good standardization, and has the following specifications:

Camera

Focusing	1 m$\rightarrow\infty$
Field of view	width 25°
	height 12·5°

Lines per frame	125
Elements per line	250
Frames per s	4
Thermal resolution	0·1°–0·2° C at 30·0 °C

Display unit

Oscilloscope with 35 mm or " Polaroid " camera attachment.

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Trial of etorphine hydrochloride (M99 Reckitt) in carcinoma pain: preliminary report

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The thebaine derivative etorphine (M99, Reckitt) has a potency in laboratory animals approximately 1,000 times that of morphine (Blane, Boura, Fitzgerald & Lister, 1967). Like morphine it is addictive in monkeys (Deneau & Seevers, 1964), and can cause respiratory depression. Nevertheless, ultra-rapid upt ke without untoward side-effect after intramuscular or sublingual administration to rats (Blane, 1967) and dogs (Dobbs, Blane & Boura, 1969), combined with extensive experience of safety in a vast variety of species where etorphine in high dose is used as an immobilizing agent, indicated the desirability of a clinical trial to assess possible therapeutic utility.

In a pilot study of safety and efficacy, etorphine was given by intramuscular injection to twenty-seven patients for relief of pain in terminal malignant disease. Three patients received more than one dose of the drug and two were more satisfactorily stabilized during their last weeks on etorphine plus heroin than they had been on heroin alone.

The drug was found to be a clinically efficacious analgesic at doses of 1 μg/kg, having rapid onset (less than 10 min after intramuscular injection) and moderately short duration of action (about 2 h). There was a high incidence of sedation at effective analgesic dose-levels and a significant incidence of undesirable light-headedness at the top dose levels. Bradypnoea caused clinical anxiety on one of the 185 occasions etorphine was injected. Nalorphine proved to be effective in restoring the respiratory rate to normal within a few seconds of injection. The dose rate in this subject was close to 2 μg/kg.

Sublingual etorphine (tablets) were prescribed for thirty-two cancer patients. In more than 5,000 treatments the dose was most commonly 100 μg (per man) but varied between 50 and 400 μg. The only side-effect was occasional slight sedation. Etorphine was found to be an effective analgesic and was preferred to alternative