sary to give inhalations, as many as four to five times daily, to maintain satisfactory quantities of penicillin in the lungs. Moreover, when Penicillin Aerosol is employed radiographic control of the location of the agent is not possible.

The primary purpose of this study has been to illustrate that after a single instillation of penicillin iodized oil, penicillin is present locally in the lungs for a minimum of 24 hours, as indicated by its excretion in the urine for that period of time. Further study is necessary relative to the frequency and interval of instillation of penicillin iodized oil as well as the therapeutic possibilities.

SUMMARY

(1) A suspension of calcium penicillin in 40 per cent. iodized oil produces a stable mixture which has been instilled in the lungs of 12 patients without adverse effect and has maintained penicillin in the lung for a minimum of 24 hours, after a single instillation.

(2) The penicillin iodized oil has maintained its potency for 60 days at ice box, room and 37° C. temperatures.

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CHROMOSOME MOUNTS FOR TEMPORARY STUDY

ZIRKLE'S[1] solution, or a modification of this, as a sealing agent for the temporary preservation of chromosome mounts has been found to be more effective and more convenient than any of the various paraffin or wax and gum mastic mixtures. With a pipette a small amount of Zirkle's solution—80 cc aceto-carmine, 10 cc Karo corn syrup (Dextrose), and 10 cc Certo (Pectin)—is placed around the edges of the cover slip and allowed to dry. By this method smears of leaves,[2] root tips and anthers have been preserved in good condition for periods varying from several weeks to several months. The procedure is equally effective with propio-carmine, Feulgen, and aceto-carmine smears.

The solution has been modified by substituting 45 per cent. acetic acid for the aceto-carmine and the resulting solution used as a sealing agent. While slides so sealed do not seem to remain in good condition as long as those prepared by the first method, excellent results have been obtained with slides kept for periods up to a week or ten days. Since the possibility of over-staining which might result from the presence of Zirkle's solution around the edges of the cover slip is thereby avoided, this modified solution is suggested for slides which are to be kept for short periods.

In addition to the effectiveness of these solutions as sealing agents and the ease with which they are applied, they are also recommended, for slides sealed by them can be made into permanent mounts by removing the solution from the edges of the cover slip with a moistened cloth, by inverting the slide in acetic alcohol (1:1) until the cover slip floats off, and by following from here Meyer's[3] procedure for making smears permanent, or by using any desirable modification of McClintock's[4] permanent aceto-carmine method.

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DISCUSSION

THE LAPLACE EQUATION

THE most important partial differential equation is

$$\frac{\partial^2\phi}{\partial x^2}+\frac{\partial^2\phi}{\partial y^2}=0, \tag{1}$$

known as the Laplace equation. The applications embrace gravitation, electricity, magnetism, hydrodynamics, conduction of heat, stream lines, isothermal families, conformal mapping.

In three dimensions, the corresponding equation is

$$\frac{\partial^2\phi}{\partial x^2}+\frac{\partial^2\phi}{\partial y^2}+\frac{\partial^2\phi}{\partial z^2}=0. \tag{2}$$

This equation is much more complicated analytically; in particular the powerful method of functions of a complex variable successful for (1) is no longer available for (2).

Although the analytic difficulties are well known, we shall point out new geometric aspects. Sophus Lie found the first geometric property of isothermal families of curves in the plane. We prove that this result is no longer valid in three dimensions. From Lie's work, Kasner and De Cicco found purely intrinsic geometric properties of isothermal families and isothermal networks. These have applications to stream lines in two dimensions.

Our object is to find analogues in three dimensions.

[1] C. Zirkle, SCIENCE, 85: 528, 1937.

[2] J. T. Baldwin, Jr., SCIENCE, 90: 240, 1939.

[3] James R. Meyer, *Stain Tech.*, 18: 53–56, 1943.

[4] B. McClintock, *Stain Tech.*, 4: 53–56, 1929.