

using them in their own homes, but surely they should not be *advised* to do so. Suppose, for example, that it were a part of the regular equipment of a household, and normally healthy children were periodically given doses of this radiation, could it be looked upon as anything short of an experiment? If so, are such domestic experiments on a large

scale to be encouraged? There are many who will feel that the balance of health is maintained by so many factors, many of which are clearly recognised, that on such slender grounds it is better not to bring into this delicate balance a kind of radiation that no living race has been accustomed to before.

Medical Aspects of 'Artificial Sunlight' in Private Houses.

By P. R. PEACOCK, M.B., B.S.

THOUGH ultra-violet therapy has been practised in an empirical way from the earliest times, the association of sunshine with good health being in the nature of a primitive instinct, it is only during the past thirty years or so that any serious attempt has been made to establish it on a scientific basis.

Systematic clinical observation gradually led to an appreciation of the value of the alpine climate in the treatment of tuberculosis of the bones, joints, and lymph glands, and the establishment of centres for treatment of this crippling disease by heliotherapy in the Swiss Alps was largely a result of the patient work of Bernhard, followed by Rollier and others. The notable extension of ultra-violet therapy by Finsen brought the curative rays within the reach of those in comparatively sunless countries and marked the start of the modern practice of artificial actinotherapy.

The success of ultra-violet treatment for 'surgical' tuberculosis, saving as it has many children from mutilating operations, is undoubtedly one of the reasons for the popular desire for ultra-violet rays, but the more recent and far more spectacular series of discoveries linking the demonstration by Mellanby of the nature of rickets with the subsequent rapid strides of research, culminating in the synthesis of vitamin D from ergosterol by Rosenheim and Webster, probably constitutes an even stronger influence.

It is as well to have a clear idea of the real justification for ultra-violet therapy before considering the type of pseudo-medical publication or manufacturers' advertisement, from which it might be concluded that ultra-violet rays will not only prevent and cure all known diseases, but will also regulate even minor variations from the physiological standard of normality. Such one-sided propaganda has been much in evidence in recent years, and that it has borne fruit is easily judged from the number of hairdressers and beauty specialists who make a fine thing out of ultra-violet and 'violet-ray' treatments, not to mention the

bottles of 'ultra-violet lubricant' and 'radio-active' bath salts, for both of which commodities the writer has been assured that there is a good demand.

In addition to the specific cure of rickets and the successful treatment of surgical tuberculosis, the value of ultra-violet rays in the treatment of septic wounds and burns was abundantly proved during the War. There is evidence that actinotherapy is of value in disturbances of the parathyroid gland and deficient calcium metabolism; possibly the rôle of ultra-violet rays is the same in these conditions as in the case of rickets, since there appears to be an intimate association between vitamin D and the absorption of calcium from the alimentary tract. Certain conditions are also directly benefited by the local reaction of the exposed part, increasing the blood supply and facilitating the removal of toxic products of the morbid state; the successful treatment of chilblains and of varicose ulcers is probably to be explained on these lines.

The powerful bactericidal action of ultra-violet rays is well known, but this property is rarely made direct use of in practice, owing to the very slight penetration of the rays, and to the fact that many of the bacteria that normally infest the skin are effectively screened from the rays in the sweat-glands or hair-follicles.

These few points have been selected from a great many known facts in order to emphasise the importance of recognising that actinotherapy is based on established facts, and it is only on such lines that it should be used. There are, however, many who would spoil a good case by overstatement, or hide their ignorance of the facts, and a dislike for critical investigation, behind a mass of plausible speculation as to some mysterious property of this or that type of arc lamp, and hinting darkly that science cannot detect properties of the rays with which nevertheless they themselves are familiar.

As there are specific cures, so there are specific diseases due to light and ultra-violet rays, and, although these are fortunately rare, they should be

considered by the advocates of wholesale light therapy. Xeroderma pigmentosum is the worst of all 'light' diseases and, in the unfortunate children affected, manifests itself as a malignant spread of pigmented spots under the influence of light, usually terminating fatally in early adolescence.

Equally rare are those cases of excessive sensitivity to light due to the presence of hæmatoporphyrin in the blood as a congenital abnormality, resulting in an eruption not unlike that of smallpox on the regions of the skin exposed to light.

Probably the greatest danger to the public from careless use of arc lamps is that of damage to the sight, a very real danger which, if not guarded against, may lead to many cases of permanent injury. Exposure of the unprotected eye to intense sources of light such as the tungsten or mercury vapour arc leads to acute conjunctivitis within a few hours, an experience that would probably induce greater caution on subsequent occasions, as few conditions are more painful. Deliberate staring at powerful sources of actinic light may lead to permanent blindness, or short of this to restriction of the visual field, the so-called 'ring scotoma.' There is a good deal of evidence that repeated exposure to unshielded arc lamps may lead to the development of cataract, and this is not surprising, since it is the lens of the eye that absorbs most of the ultra-violet rays.

If the dangers of this form of treatment have been rather stressed, it is only with the idea of emphasising that means of protection should never be neglected by anyone frequently exposed to the rays. As regards the skin, over-exposure is not as a rule followed by any permanent damage, though very painful burns and blisters are the penalty of careless handling of the lamps.

As there is no restriction of the supply of arc lamps or other apparatus for the production of ultra-violet rays to the public, the position is similar to that of patent medicines other than those scheduled under the Dangerous Drugs Acts. In-

evitably, as in the case of proprietary drugs, a certain amount of amateur experimental medicine would follow the installation of arc lamps in private houses, and it cannot be too strongly pointed out that these rays are not to be regarded as practically foolproof, and should be treated with as much respect as a redhot poker or a loaded firearm.

Those who install lamps and wish to take regular doses of ultra-violet rays, would be well advised to begin by being medically examined and passed as fit for such treatment. Lamps should never be switched on until the eyes have been protected by goggles, which should be of glass tested and certified as cutting out the ultra-violet rays, and these should not be removed until the lamp has been turned off again. The technique of treatment does not come within the scope of this article, but it may be remarked that individual susceptibility varies greatly, and that this should be tested cautiously before starting general irradiation, otherwise extensive light-burns may result. The best thing would be for those who contemplate the installation of a source of ultra-violet rays to ascertain in the first instance whether they really benefit from such treatment, as by no means everyone is obviously improved by it.

One cannot help wondering whether the people who can afford to install arc lamps in their homes are those who would derive most benefit from the rays, since they are probably taking ample vitamins in their diet and live in relatively open and healthy neighbourhoods.

For the poor, whose diet is short of butter, eggs, milk, and fresh foods generally, there are already a number of clinics where they can be treated, with the best results, under proper medical supervision.

Extension of such clinics would appear to be the safest way of overcoming the defects of the rather sunless climate of Great Britain, though the intelligent use of artificial 'sunlight' in the home may be a means of improving the national health.

Lamps for Light-Baths.

By T. C. ANGUS.

ULTRA-VIOLET light between well-defined wave-lengths is one of the necessary accompaniments of primitive life in natural surroundings the tonic effects of which the human body is not only able to withstand, but without which it suffers a definite want. There can be no objection, therefore, to town-dwellers, during a European winter, who, while not being 'ill,' are still often in need of light

and its good effects, making use of occasional light-baths from sources which emit ultra-violet light of moderate intensity. In fact, many such persons have followed this course for some time with considerable benefit, and there is little doubt that others will follow their lead.

A practical biological measure of the strength of ultra-violet light is the time for which it is necessary