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THE JOURNAL OF GEMMOLOGY

and

PROCEEDINGS OF THE GEMMOLOGICAL ASSOCIATION OF GREAT BRITAIN

THE GEMMOLOGICAL ASSOCIATION
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Vol. II, No. 8 OCTOBER 1950

MOUNTING A GEMSTONE COLLECTION

By L. C. TRUMPER, B.Sc., F.G.A.

MY interest in precious stones dates back to 1925, when as a schoolboy old enough (as I then thought) not to want to play on the sands at Newquay, and not old enough to want to do anything else, I bought a 5s. set of inexpensive stones mounted in a cardboard box. I still have that box.

The next and inevitable phase—being on holiday in Cornwall—was to hunt the beach for stones and also inevitably take them to that same jeweller's shop to be cut! I still don't know whether the poor amethyst pendants and somewhat roughly shaped cornelians did or did not come from the pebbles we found, but certainly the innumerable rock crystal pendants that appeared at the shop after a lapse or four or five days did not.

There then followed a period (akin to the dark ages) during which the mind was filled with the more pressing need somehow to carve out a career.

A latent interest in minerals, stones and fossils evidently remained and this, together with an interest in all things scientific, probably prompted me during the dark days of the war to turn once again to the possibility of adding a good collection of minerals to my other many but modest collections of nearly everything except postage stamps.

So it was that for my Christmas present in 1943 I decided to treat myself to a collection of minerals from Gregory Bottley & Co., Church Street, Chelsea. They built up for me a very good collection, nicely set out in cardboard boxes in well made wooden trays, arranged to lift easily out of an equally well made box, 17 ins. by $10\frac{3}{4}$ ins. by 12 ins. deep, six trays $16\frac{1}{4}$ ins. by $9\frac{1}{2}$ ins.

Now the interest of this collection was greatly enhanced by those minerals of approaching gem quality being polished on one side and by quite attractive and generous specimens being provided. This part of the collection soon revived my interest in gemstones, and not many days passed before I decided to embark on the acquisition of one of Gregory Bottley's standard collections of uncut and cut stones.

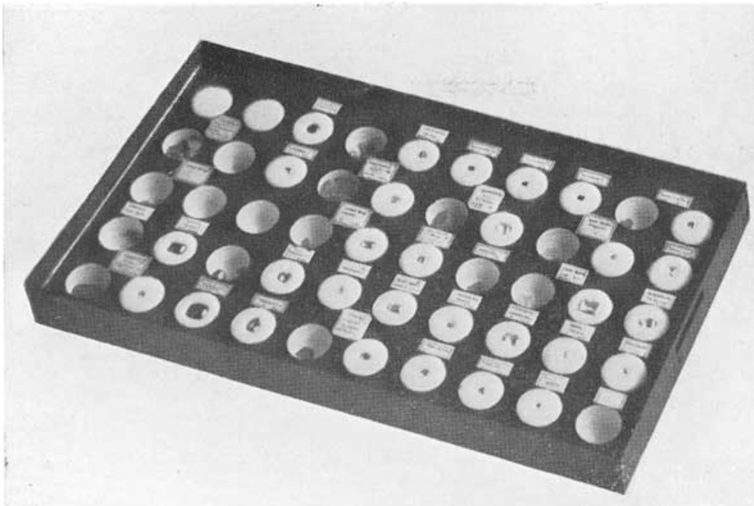
The first set to arrive was that of 50 uncut stones ; these were all in small glass-topped pill boxes, each one numbered and the whole in a small box about 6 ins. by 12 ins. with a list of the names and localities affixed to the lid.

What a glorious array of colour that collection was! Quite good specimens, too, almost all of which still find a place in my collection. Hour after hour of a dark and blacked-out evening I used to gaze at that collection, and day after day I waited for its counterpart, the set of 50 cut specimens.

At last that day arrived ; no doubt I had set my standard too high, for I must confess that I was rather disappointed at some of the specimens. Perhaps, however, in the long run it was a good thing as otherwise I might not have been so keen to improve upon it.

The stones as supplied were mounted on white cotton wool in similar pill boxes with glass lid. Somehow, all jammed up together in a box they did not look right, and I soon removed them and tried them on a single piece of cotton wool with a sheet of glass over the lot. I was still not entirely happy about it, however.

About this time I was introduced to a copy of "A Key to Precious Stones," by L. J. Spencer. This was my first introduction to the real possibilities of gemmology, and absorbing every word over and over again I resolved then and there to pursue it as a hobby. I also resolved that my collection should comprise side by side a specimen of the rough and a specimen of the cut or polished stone. I am sure that my real reason for this went back to my



experiences of 1925, because, so struck was I with the difference between the presumed rock crystal pebble and the apparently resultant rock crystal pendant that I had been bold enough to ask them to polish one half of a pebble and leave the other in its natural state. Needless to say, this was never obtained and every possible explanation was given as to why they could not possibly accede to my wishes.

Thus it was that with the aid of Spencer's " Key to Precious Stones " I concluded that my collection could and should comprise 100 specimens of rough and 100 specimens of cut or polished stones. I further decided that these should be contained in four trays, fifty specimens in each, and that each tray should be of a size that would go into the standard size of box as supplied by Gregory Bottley & Co., who kindly supplied me with a further box to match their others for the purpose.

Thus it was that I evolved my standard tray of overall dimensions $16\frac{7}{8}$ ins. by $9\frac{1}{2}$ ins. by $1\frac{3}{4}$ ins. deep. Now, as will be seen from the illustration, each tray was constructed by drilling holes $1\frac{1}{8}$ in. diameter through a piece of $\frac{3}{4}$ in. thick wood (actually several were drilled simultaneously), then glueing and nailing a base on one side and sides and ends to complete the tray.

The insides of the cells, $1\frac{1}{8}$ in. diameter by $\frac{3}{4}$ in deep thus formed, were painted with flat white paint and the whole of the rest of the tray flat dead black.

The boxes previously mentioned will hold seven of these trays. As will readily be seen, rough material, or wherever possible rough crystals of gem quality go into the cells as they are, and the cut specimen is placed upon a firm wad of white cotton wool, carefully pressed into the appropriate cell. In the case of black opals and a few other stones such as diamond, black cotton wool has been found to be preferable.

Each cell or group of two cells is labelled in Indian ink, giving the name of the stone, its number in the collection and, if room, the S.G. or R.I.

The whole of the tray is then covered with a sheet of clear white glass, giving clearance of 1/16th in. to $\frac{1}{8}$ in. from the sides and ends of the tray. This is quite heavy enough to keep all the cut stones firmly down on the cotton wool.

A slit in the ends of the tray is essential, not only to lift the tray in and out of the box, but also to enable the sheet of glass to be removed by lifting clear with the blade of a knife.

The general effect of the specimens in a small white circle against a matt black background is very good and the spacing of the specimens is just enough to allow the eyes to look at one at a time instead of seeing a jumbled mass.

In providing for a collection of 100 specimens I very soon found that I had not made allowance for colour variations, and after subsequently getting my hands on every possible publication on gemmology, I began to appreciate how wide of the mark this idea was ; indeed, I already have thirteen trays in occupation and others standing by in readiness for further eagerly sought specimens to turn up.

The size of cell has (perhaps wisely) set a maximum to the size of specimen to be collected, but I have since felt compelled to make a few trays with cells $1\frac{1}{2}$ in. by 1 in. deep particularly to take specimens of rough too large to fit into my standard cells.

My method of mounting has not blinded me to the possibility of better methods, and my first visit to the Gemmological Exhibition had as its prime objective the investigation of what I hoped might be better ones. In this I was disappointed, but realized that selected specimens for general exhibition called for a different treatment where ample showcase space was available.

Mr. B. W. Anderson suggests that a gemmologist's collection should be kept indexed in the usual folded papers ready for instant examination or comparison. There is much to be said for this if one's collection is confined to cut stones only, and this is essentially portable. It is not so suitable for rough specimens and I do not like the idea of one's collection being all hidden away.

A method in its essentials not dissimilar to my own is that used at Prague at the Bohemian National Museum and well illustrated on page 264 of Vol. 17, 1948, of " The Gemmologist."

Another excellent method may be seen at the Natural History Museum at South Kensington, and was ably described by Mr. Robert Webster in the same volume of " The Gemmologist." This consists in supporting a thin sheet of clear perspex some inches above the base of a box, the inside of which is in an off-white colour. The gemstones are supported in carefully shaped holes cut in the sheet of perspex and have the appearance of floating in mid-air.

So struck was I with this method that I went to a great deal of trouble and some expense to make a series of similar boxes, cut from opal and black perspex. The latter for stones calling for a black background, particularly opals and colourless stones.

I found that it was necessary to generate a matt surface by sandpapering to eliminate unwanted reflections. Perspex can be obtained in various thicknesses and my object was to obtain both a white and a black that would be as permanent as possible. White opal perspex, after sandpapering with very fine glass paper, produces a very good matt surface that is as near snow white as it is possible to get. Incidentally, if you wish, such a matt surface can be written on with Indian ink.

Perspex is moderately easy to saw, file or shape and can be polished with metal polish ; it is, however, very tough and it is well worth while in the long run to get the supplier to cut it to size for you, which they will do no matter how many small pieces are required, and the additional charge is more than saved by eliminating wastage from larger sheets. (In working out the measurements, do not forget to allow, where necessary, for the thickness of the material.)

Suitable boxes can be made up in this way very easily indeed by joining up with Tensol No. 2 Cement, which can be obtained from the perspex supplier, and by masking with gummed paper invisible joints can be made.

After completing a number of such boxes of sizes to fit suitably into a display cabinet that I had picked up in an antique shop, and after carefully arranging a number of stones, I nevertheless came to the conclusion that it was not suitable for my collection. For a jeweller's shop, yes ; for a museum display of specimen stones, particularly coloured ones, yes ; but not for a collection such as mine, with rough as well as cut, and small stones as well as large ones, and indeed often indifferent stones, in the collection for a specific purpose, for their inclusions for instance. No, it just would not do.

There is another most important consideration to be borne in mind: normally one sees a gemstone by reflected light ; that is, the light enters the stone by the table facet, traverses the stone and re-emerges at the front ; the light has, in fact, passed through the stone twice.

Now if the stone is floating on perspex against a white background some distance from the stone, most of the light will, in fact, be reflected from the background through the stone to the eye and the light will have thus traversed the stone once only. The result is that the stone looks washed out as the depth of colour is roughly halved.

Some stones, quite apart from this, look entirely different by transmitted light from what they do by light reflected mostly from the surface layers. Here, then, are further reasons why such a method has its limitations.

For exhibition purposes it is, of course, common practice for the stones to rest on an off-white velvet, but such a method, though admirable for an exhibition, a museum or a high-class jeweller's display, is not compact enough for the collector.

Yet another interesting method is that adopted by Mrs. V. Hinton, of Houston, Texas, U.S.A., and well shown in Vol. 2, No. 3, of the "Journal of Gemmology," on pages 84 and 85. Here again we have a method that is confined in the main to large specimens and on more or less permanent display within a glass cabinet.

Thus my more or less original method continues to reign supreme. That it has some disadvantages I am well aware, but they are not very serious ones.

One objection is that after you have arranged a number of stones in one or more rows and duly labelled them, a fresh specimen turns up that has to go somewhere in the middle where there is no space. Usually one can slip it in by making a few alterations only, carefully removing the labels and replacing them, but sometimes there is nothing for it but to re-arrange in an entirely new tray. When this happens the old tray is cleaned up and repainted ready for some other move or extension ; laborious, but after all part of the fun of the thing.

With a view to getting over this particular problem I have long designed a unit system of blocks, each of a size to allow for a label and the appropriate cell. By means of inserts, it would be possible to have a white or a black cell or a solid white or black disc which could be countersunk to take the stone ; such a mount would be permanent and they could be shuffled about in a tray to take, say, 40.

Such a method would call for die cast perspex or other plastic components and the cost would be prohibitive unless a very large number could be made at a time.

Finally, as white cotton wool, which I have not been able to improve upon so far, unfortunately does not remain white indefinitely, it is interesting to note that in America gemmologists can already obtain a plastic substitute termed " Snow foam," which I imagine will be more permanent. I have no knowledge of such a product being on the market in this country, however.

The successful mounting of a collection is one of the most important parts of any hobby, and I hope I may have contributed some helpful suggestions to an aspect that has not received nearly enough attention.

GEMMOLOGICAL NOTES

A SMALL GEM LABORATORY

FINE instruments are important, not only because of their superior performance but also from the standpoint of pride of ownership. Cheap goods are never satisfactory.

This does not necessarily mean that it is necessary or even desirable to make huge expenditure to outfit a costly laboratory before efficient work can be done. On the contrary, if the beginner accumulates his instruments slowly, a few at a time, and uses a little imagination and initiative in improving both their efficiency and their appearance, his collection will become, in a surprisingly short time, a source of pride and satisfaction.

A small gem laboratory in the process of evolution is shown in the accompanying photograph.

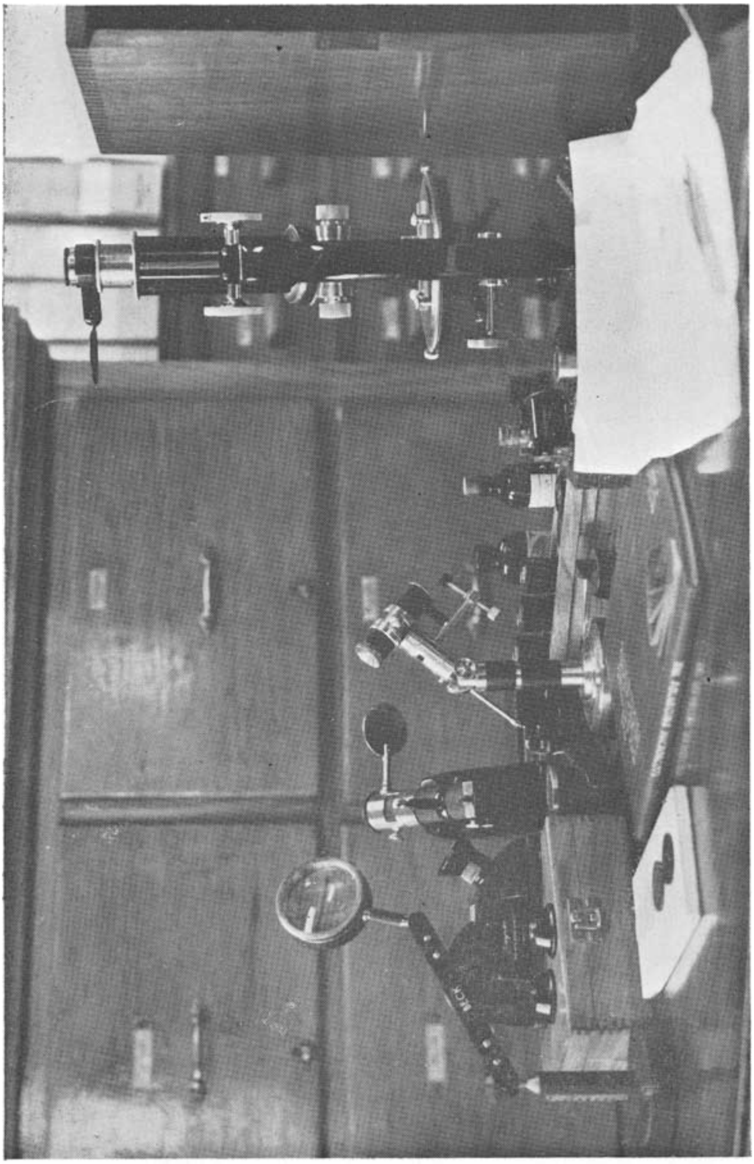
The following brief description of the instruments of which it is comprised may be of interest.

(Left to right): Bull's-eye condenser with variable focus. Lenses were purchased from war surplus. Stand adapted from a *Beck* dissecting arm.

Rayner refractometer with polaroid and monochromatic light filters.

Beck prism spectroscope on inclined stand with chromium-plated and black suede turntable. Barrel of instrument is covered in black English morocco. Ancillary apparatus includes chromium-plated eye-shade attached to metal collar, Beck cylindrical lens attachment for flooding slit with light, and universal post for small bull's-eye condenser. This post formed part of the dissecting arm mentioned above.

Instrument made to special order, embodying Chard dichroscope. The stand has a tilting handle and inclines through 90°. It can be fixed at any convenient angle by tightening the milled head. The instrument is finished in polished chromium plate and black English morocco leather.



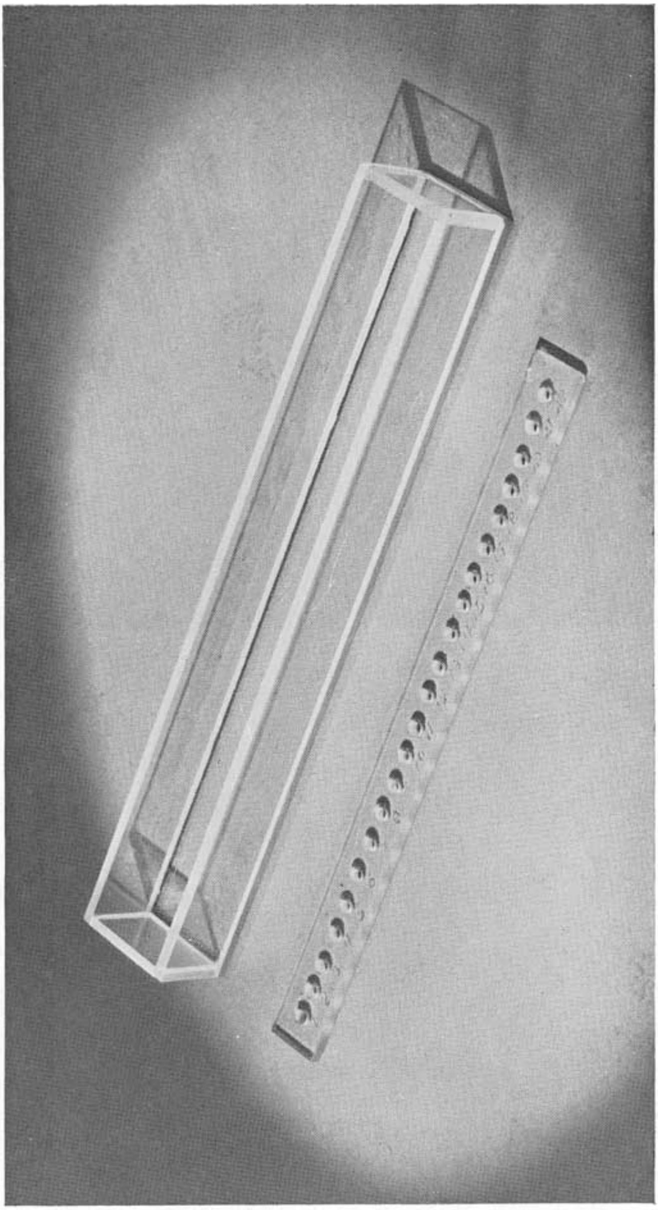


Photo: A. E. Alexander, Ph.D., Tiffany and Co., New York

Microscope accessories, including prism projector, dark-ground stops, eyepieces, filters and immersion liquids.

Beck grating spectroscope.

Polarizing microscope constructed to order by Messrs. R. & J. Beck, Limited. This instrument is equipped with quadruple revolving nosepiece, rack and pinion focussing and centring substage and centring revolving stage calibrated in degrees and numbered at 10° intervals, with vernier. Each division of the calibrated fine adjustment equals 0.005 mm. of movement. The 10 × (16 mm.) objective is of special construction, giving a working-distance of approximately 13 mm., and a sharp, colour-free image. For these reasons, it is unusually suitable for the study of inclusions in gemstones, where working-distance is frequently the prime requisite. The black "zylonite" eye-shade is a product of Messrs. Bausch & Lomb (Canada), Limited.

D. S. M. Field, A.G.A.

GLASS CELL FOR EXAMINING DIAMONDS

The accompanying photograph shows an optical glass cell especially constructed so as to be liquid tight. The inside dimensions of the cell measure 6 inches in length, three-quarters of an inch in width, and five-eighths of an inch in depth.

Also shown in the photograph is a glass plate, 5½ inches long, containing 22 evenly spaced holes, each slightly under one-eighth of an inch in diameter. This plate is laid in the bottom of the glass cell and the diamonds to be examined are placed, one in each hole, with table and crown facets up. (The stones rest easily in the holes, pavilion facets down.) If larger stones are to be examined they should be placed in every other hole. Any colourless, inert, immersion liquid (the writer prefers dibutyl pthalate) is then poured over the glass plate, sufficient enough to just cover the table of the diamonds.

Using a binocular microscope, it is then possible to examine the diamonds quickly, one by one, by merely moving the glass cell from left to right.

Use of the liquid aids in cutting down annoying internal reflections which tend to mask any minute carbon or white spots present.

Pnoto : A. E. Alexarder, Ph.D., Tiffany and Co., New York

Photograph of a flawed diamond. The inclusion is close to the culet and the reflections in and around the nearby facets give the appearance of birds or flies in flight.

In general, it is better to first look for flaws at a higher magnification than 10 × . The author uses 22.5 × . Then adjust the optical system to 10 × .

If an inclusion seen at the higher magnification cannot be seen at the 10 × magnification, the diamond is adjudged perfect.

A. E. ALEXANDER, Ph.D.
Tiffany & Co., New York.

DOUBLE REFRACTION AND THE DISTANT VISION METHOD

One of the curious features of the valuable distant vision refractometer technique, developed by Lester Benson and G. R. Crowningshield for taking readings with cabochon stones, is that generally only one shadow-edge can be seen crossing the contact disc even in doubly refractive stones. This represented a considerable drawback compared with the standard method of reading the refractometer which is possible with stones having a flat contact facet. Under these conditions, as is well known, maximum and minimum refractive indices for the stone can readily be obtained by appropriate orientation of the contact surface.

Some weeks ago, Sir James Walton informed the writer that he had been able to detect two distinct edges on a cabochon peridot, using the distant vision method with a Herbert Smith refractometer. More recently still, Mr. C. J. Payne, while using this method on a large cabochon specimen of chatoyant scapolite, noticed an unmistakable double shadow-edge. That this effect was indeed due to the birefringence of the stone was confirmed by use of a polaroid disc, which, when appropriately set, enabled first one and then the other edge to be seen as a single dividing line crossing the contact disc. It was found possible to take fairly accurate readings of the two edges on a spinel refractometer, the figures being approximately 1.53 and 1.58.

The scapolite had a very highly polished surface, and trials were accordingly made with other well-polished cabochons. A clear double edge was seen, *inter alia*, with a flat cabochon of quartz, but with several other stones one had to confess to failure.

Conditions favourable for the double edge seem to be (i) a highly polished surface, (ii) a monocrystalline specimen, (iii) not too steep a curvature of the surface. A fairly large contact disc is here desirable to allow space for both dividing edges to be seen in the same field ; it is not so necessary, therefore, to limit the contact liquid to the tiniest possible droplet.

These experiments, though not thorough or complete, are reported in the hope that others may be encouraged to make attempts in this direction, perhaps with greater success.

B. W. ANDERSON.

NEW BOOKS —REVIEWED

"*Leitfaden fur die Exakte Edelsteinbestimmung*" (Guide to the Exact Determination of Precious Stones). By Professor Dr. Schlossmacher. Schweitzerbart'sche Verlagsbuchhandlung, Stuttgart, 1950. 174 pp., illustrated.

This is the first new book on determinative gemmology to appear in Germany since the beginning of the war. In this ten-year interval many discoveries of importance to the science have been made, particularly in America and Switzerland, and it is interesting to note how far Professor Schlossmacher has succeeded in his avowed aim of incorporating the new knowledge in a text-book of less than 200 pages.

Though many new instruments are mentioned and briefly described, there are considerable omissions. Thus, no account is given of the important "distant vision" technique developed by Benson and Crowningshield in America, whereby refractometer readings are made possible with cabochon stones, and neither the spectacular new synthetic rutile nor synthetic star corundums are mentioned, though both were publicized before the book was completed.

The balance of the book is curious in many ways. Crystallography is entirely omitted, and the word "Kristall" does not even appear in the index. The detection of double refraction by means of the polarizing microscope is fully treated, but the very important and practical observation of the "doubling" effect with a pocket lens is nowhere mentioned, nor is sufficient stress given to the great diagnostic importance of accurate measurement of birefringence on the refractometer.

Again, dichroism and the dichroscope receive unusually handsome treatment: no less than eleven pages in the text and a very fine four-page table of the pleochroic colours shown by different species at the end of the book. This is excellently done, but it shows a false sense of proportion to devote 15 pages to a method whereby no single gemstone can be positively identified, and then to accord less than four pages to the spectroscope, with which so many unequivocal determinations can be made. One could understand this being done for simplicity's sake, but this plea loses force when one finds several pages and an illustration are given to the Zeiss Abbe-Pulfrich total reflectometer. This beautiful and accurate instrument is invaluable for laboratory research, but is quite unsuited for the jeweller, owing to its complexity, cost, and liability to damage, particularly if an attempt is made to test mounted specimens upon its very vulnerable hemisphere.

In a good chapter on specific gravity determination, Professor Schlossmacher points out the fallacy of quoting a density result to four places of decimals in cases when, from the known accuracy of the weighings, a result correct to only one place can be assured. He points this moral with two tables in which the effects of a weighing error of 1.0 milligram and of 0.1 milligram is shown for stones of different weights and densities. These considerations lead the author to suggest that results to one place of decimals are all that can normally be expected by the hydrostatic method, and that such are usually all that are needed for purposes of identification. Though there are sound reasons for this view, the keen gemmologist will always strive to obtain at least second-place accuracy, as it is only in the second place of decimals that the figures become interesting either by their constancy or their diversity.

Professor Schlossmacher is right in ascribing greater accuracy (for small specimens at least) to flotation methods in heavy liquids, backed by indicators or the Westphal balance, the latter instrument being well described and illustrated in this book. It is curious, however, that the poisonous and messy Thoulet's solution (potassium mercuric iodide) should be recommended for the lower ranges, and no mention made of bromoform or of acetylene tetrabromide, which are so much cleaner, more mobile and relatively inexpensive. An upper density value of 4.6 is given for Clerici's solution. This figure can be attained or even exceeded by heating, but at room temperatures 4.15 is about the limit for this useful though unpleasant fluid.

In the chapter on the microscope a good account is given of the instrument specially designed by the author for the examination of precious stones. The main feature of this microscope is that it is horizontal, which means that a stone, gripped in a vertical holder, can be immersed and rotated with great ease in a cell of liquid placed on a small platform in front of the objective. Observations can be made either in ordinary or in polarized light.

The only descriptions of particular gemstones in the book are those in a short " dictionary " of the gem minerals given towards the end. There are other tables of species arranged according to colour, S.G., R.I., etc., as well as the excellent table of pleochroic colours already mentioned. Exact figures for birefringence, and also the wavelengths of important absorption bands might usefully be incorporated in a future edition. At the end of the volume there is an attractive selection of photo-micrographs of gem inclusions from Dr. Gübelin's incomparable collection.

In conclusion, it may be said that the book is most interestingly written, and, as one would expect from such an author, contains much of value for the keen gemmologist who can muster sufficient German to read the text.

B. W. ANDERSON.

"*Jade of the Maori.*" By Elsie Ruff. Gemmological Association of Great Britain, London, 1950. 89 pp., illustrated.

Books about jade, of which one or more seem to be published each year, are usually distinguished by their lavish use of illustration, their slender text, and their high cost. Often they are little more than picture-books, in which superb museum pieces of carved jades appear in sumptuous but rather monotonous succession. Works embodying original research and true scholarship, which really contribute to our knowledge of the subject, are rare indeed.

One of these, Howard Hansford's " Chinese Jade Carving," was reviewed in the last issue of the " Journal." The importance of this unpretentious book will grow rather than diminish with the years, and it must always remain of value as a source-book of accurate information on the origins of jade and the technique of jade carving.

As its title suggests, Hansford's book was concerned primarily with jade as it affects the Chinese. Elsie Ruff's little volume attempts much the same task with another jade-loving people—the Maori of New Zealand. This, too, is the result of years of patient research carried out while actually living amongst the people concerned, and should add considerably to our appreciation of a rather neglected material (New Zealand nephrite) and to our knowledge of its historical and prehistorical background.

The book opens with a chapter emphasizing the tremendous importance of jade to early cultures, comparable to the importance of gold in more modern civilizations. The author shows how jade was used for weapons, for tools, for ornament, and as a medium of exchange. She relates how the search for this coveted mineral served as a stimulus for adventure and exploration, in particular amongst the Polynesian peoples and amongst the ancient cultures of South America from which (as the Kon-Tiki Expedition has suggested) some of the Polynesian cultures may have been derived. These pages make one realize that the modern Western appreciation of jade is but a pale shadow of the mystical near-adoration accorded to the material by ancient man, to whom, indeed, the modern thirst for gold would have seemed grossly materialistic.

Next comes a chapter on nomenclature, in which the three minerals, jadeite, chloromelanite and nephrite, are accorded formal permission to use the coveted name. Nephrite was undoubtedly the original jade: the use of jadeite, despite its present popularity, is comparatively recent, while chloromelanite is nothing more than an iron-rich variety of jadeite, though it appears to have some importance in archaeology. The Maori word *pounamu*, like our word jade, is a collective term, since it covered nephrite, bowenite, and possibly other green serpentines used by the old craftsmen.

In the third chapter the author discusses the occurrence of the jade minerals ; a peculiarly difficult subject on which some of the greatest authorities have gone astray. Although nephrite is widely distributed, the only authenticated source of jadeite seems to be in Upper Burma, and these mines were not in contact with the civilized world until trade with China began in the eighteenth century.

The remainder of the book is concerned more specifically with the nephrite of New Zealand—the primitive methods by which it was cut, and the names given by the Maori to the various qualities of the jade and to the weapons and ornaments fashioned from it. The principal weapon was the *mere*, an implement about a foot long, pierced at one end to allow a thong to pass through it and round the wrist. This was used either for striking or for thrusting, with distinctly lethal effect. The most important tool was the axe, or adze, used for felling timber and the construction of wooden canoes. The general form of neolithic axes with their curved cutting edge varies very little, but the dimensions ranged from that of a small chisel which could be suspended from the ears to monsters of five, seven, or even sixteen pounds in weight.

Of the ornamental jades of the Maori, the curiously formed *hei-tiki* (i.e. a *tiki* to be worn round the neck) is at once the most famous and the most mysterious. This is usually a contorted squatting figure with enormous owl-like eyes in a head which is set peculiarly awry. The head is pierced to allow the figure to be suspended from the neck.

Being limited to tools far more primitive even than those used by the ancient Chinese, the work of shaping, polishing, and particularly of drilling these artifacts must have been incredibly laborious. But Miss Ruff points out the deep satisfaction derived from the work, which (apart from the specialist) could be carried on by almost any member of the tribe in their leisure moments, as is knitting by the modern woman.

In his first look through " Jade of the Maori," the gemmologist will inevitably be attracted to Chapter VIII, headed " In the Laboratory," where the author gives a good account of the colours, composition, physical and optical properties of the jade minerals. Though listing fourteen minerals (and even more might be added) which resemble jade more or less closely, she is probably wise in singling out only one of these—serpentine—for description. Bowenite, a pale-green, unusually hard form of serpentine, is particularly likely to be confused with jade, and was in fact thought to be nephrite by the Dr. Bowen after whom it was later named. Bowenite is particularly relevant to Miss Ruff's theme, since the material is found in Milford Sound, in the South Island, and was extensively use for carvings by the Maori.

The book ends with a short bibliography and index. In the bibliography it is a pity that no dates or other particulars are given for the books mentioned.

" Jade of the Maori " is obviously written by a true jade-lover, and, moreover, by one who is interested in the philosophical implications of the jade story. The writing is lively, and in many passages really excellent, but is sometimes marred by over-use of the full stop. This tendency to over-punctuate, added to the rather wide spacing between the paragraphs, gives an air of discontinuity, of scrappiness, to (for example) the opening of the first chapter and the close of the last.

For the rest, the book is well printed on good paper: it is adequately illustrated and neatly bound. It represents altogether a creditable achievement on the part of the Gemmological Association in its first essay in the field of book production.

B. W. ANDERSON.

"*Handboek voor Edelsteenkunde.*" By J. Bolman. H. J. Paris, Amsterdam, 1950. 1,037 pp., illustrated, 4 pp. colour.

An elaborate book which adds little to the existing gemmological literature. It has been reviewed in the Netherlands not too favourably. That such a large book should lack an alphabetical index is hardly credible, and throughout the text there are inaccuracies and inconsistency of spelling. There are four excellent colour plates.

S. F. K.

DIAMOND PIPE DISCOVERED IN INDIA

According to "Indian Information Services," Ottawa, a diamond bearing pipe—believed to be of volcanic origin—has been discovered near the town of Panna, in Central India.

Reporting on the find, the Geological Mining and Metallurgical Society of India says that recent work has resulted in the exposure of the pipe which consists of a basic igneous rock in which diamonds have crystallized and occur as a primary mineral.

It is believed that this occurrence may be one of several primary sources supplying diamonds deposited in conglomerates of the adjoining areas.

Diamonds from the deposits worked in Panna for several centuries have been extracted from rocks known as conglomerates and are regarded as of secondary origin. The primary source from which these diamonds were transported and deposited in conglomerates had not previously been known.

The surface exposure of the newly discovered diamond pipe is oval in outline with irregular boundaries, and has an area of 150,000 to 200,000 square feet.

D. S. M. FIELD.

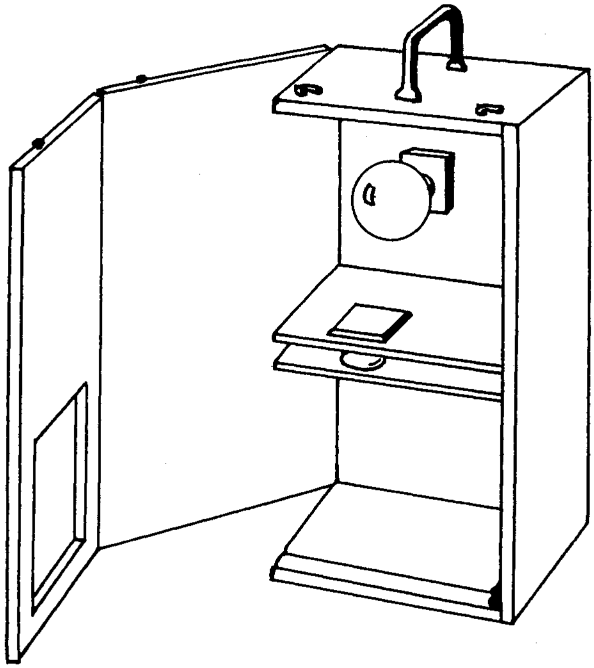
NOTES ON AN ULTRA-VIOLET RAY CABINET

By T. H. BEVIS-SMITH, F.G.A.

THE behaviour of gem minerals and other substances when exposed to the influence of ultra-violet radiation is a subject well worthy of serious study by gemmologists and students.

Fluorescent phenomena, the emission of visible light rays of various wave-lengths (colours) by certain substances when exposed to invisible ultra-violet radiation (that is, radiation lying beyond the violet end of the spectrum and having a wave-length between 1,000 and 3,800Å), is a familiar one nowadays. Most museums which house important gem and mineral collections exhibit an ultra-violet cabinet. This is a darkened showcase in which are placed certain selected minerals. By means of simple switch-gear controlling an ultra-violet light source and also filament lamps, the visitors are allowed to examine the specimens under ultra-violet and ordinary light. The minerals, some of which are often gem minerals, are usually carefully chosen and arranged so that the exhibit as a whole presents an uncanny and startling panorama to the lay public. Most gemmologists will recall the uncanny effects that are achieved on the stage by the use of fluorescent dyes.

To the " working " gemmologist these practical applications of the fluorescent effect are interesting, but they do not provide him with a means of studying the phenomena for himself, and with this idea in mind and appalled at the cost of a proper analytic lamp, I evolved a fairly satisfactory ultra-violet cabinet which cost about £2 10s. The idea is not original ; its first practical application so far as gemmology is concerned was in the first post-war Gemmological Exhibition, when B. W. Anderson and Robert Webster used the idea to demonstrate the fluorescence of natural and cultured pearl. But one of its most practical applications was in the recent war, when it was used for the illumination of fluorescent aircraft instrument markings. The Woods glass filter filament lamp holder, using ordinary aircraft filament lamps, replaced most successfully a low voltage ultra-violet lamp of the mercury discharge type,



which was both expensive and in short supply. Fluorescent instrument markings were found to be more restful to the pilots' eyes than the more conventional luminous (phosphorescent radium compound) markings. And possibly, what is quite as important, the fluorescent preparation, which I believe was a zinc compound, was nothing like so dangerous to the health of those who had to apply the compounds to the instrument dials.

Sources of ultra-violet light of this nature do not possess the penetrating power of a proper quartz mercury discharge tube lamp like the Hanovia Analytic lamp or a carbon arc source using specially prepared carbons like the Kelvin Bottomley and Baird ultra-violet apparatus.

If the gemmologist feels inclined to invest, say about £10, possibly a better proposition than the apparatus described would be the purchase of a Phillips or G.E.C. Ultra-Violet Filter Mercury Lamp, together with the auxiliary equipment ; even with this equipment a quartz lens is a most useful auxiliary. Whatever the type of ultra-violet light source, the fluorescent effects are best seen in complete darkness.

It is most important to remember that prolonged exposure to ultra-violet radiation is harmful, particularly to the eyes. Some form of dark cabinet fulfils a dual purpose ; it prevents undue exposure to the extremely penetrating rays and shields the specimens, if required, from direct daylight or overhead lighting.

A photoflood lamp No. 1 is used as the light source in the apparatus for three main reasons—at the time it was built (1946-7) the Phillips or G.E.C. special lamp was not available, and secondly a photoflood lamp is cheap and easily obtained. Thirdly, the electrical connections are of the simplest and the lamp can be plugged directly into a light socket or point without the need for a separate switch. The lamp is readily available in all standard voltages, with a Bayonet or Edison Screw Cap.

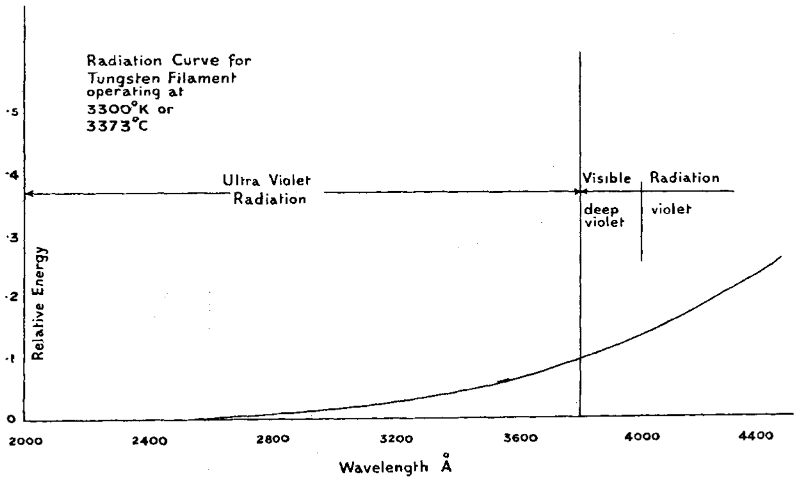
Technical data of the lamp is as follows:—

270 watt ; 33 lumens per watt ; life 2 hours ; operating temperature of filament 3,250° to 3,300° Kelvin or 3,525° to 3.573° C. Bulb envelope—soda lime glass.

In actual practice the life of the lamp is much more than two hours, but the manufacturers will only guarantee an efficiency of 33 lumens per watt for this period.

The No. 2 lamp is not such an efficient generator of ultra-violet because it operates at 31 lumens per watt.

As it will be seen from the diagram, the cabinet is of very simple construction ; it consists essentially of a light-tight box 9 ins. by 7 ins. by 13 ins., divided into three compartments. The upper compartment contains a No. 1 Photoflood Lamp, the emission from which is very rich as compared with normal filament lamps in " actinic " or ultra-violet radiation. Let into the floor of compartment is a piece of " Woods " glass, 2 ins. by 2 ins., which is opaque to visible light rays (4,200Å to 7,800Å) but allows the invisible ultra-violet rays, mostly 3,750Å, to pass. In the top of No. 3 compartment is a 2 ins. quartz, double convex converging lens. Quartz, as it is very well known, is transparent to the short ultra-violet light rays. No. 1 compartment is painted with a white heat-resisting enamel and the other two compartments blacked with optical black. The type of lamp holder is not important.. I prefer the Edison screw type, but it is important that the filament should be in the centre of the filter.

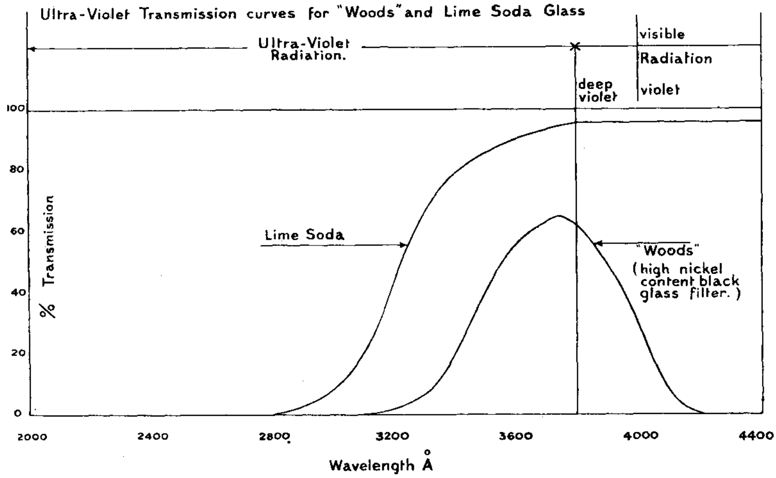


In use, a piece of black velvet or cloth (non-fluorescing) is placed in the bottom of No. 3 compartment. The box is then closed up, the specimen placed under the lens and the lamp switched on. A 4 ins. by 4 ins. opening is the most convenient size.

For diagonostic purposes the apparatus should be used with care. A dull violet colour should not be confused with a violet fluorescence as most filters let through a little visible violet light which is reflected by the plane surfaces of minerals and other gemstones and this can obscure very weak fluorescence effects. It has been suggested that a silver coin also placed in the ultra-violet beam will enable the observer to detect the difference between reflected visible violet light and violet fluorescence.

It is difficult, if not impossible, to enumerate the results that can be expected from the apparatus ; many writers have detailed specific results with certain minerals, but I would suggest that an attempt should be made to read papers on fluorescence as a whole and not confined to those upon gemstones. As with the spectroscope, a negative result does not necessarily mean the stone will not fluoresce under other conditions.

Most gemmologists would be well advised to study the appearance of a diamond brooch under an ultra-violet lamp. Experience in this field, as in most others, often pays handsome dividends.



REFERENCES

1. " Fluorescence Analysis in Ultra-Violet Light." Radley & Grant, third edition. (Sollux Publishing Co., Slough.)
2. " Rapid testing applied to foods, chemicals, etc., in industrial and scientific research by fluorescence with the Hanovia Analytic Lamp." (Hanovia, Ltd., Slough.)
3. " Gems in Ultra-Violet Light." O. Holsten, " Gemmologist," May, 1936.
4. Ultra-Violet rays and their use in the examination in the works of art." Rorimer, J. J., New York, 1931.
5. Schmidinger, K. " Farben-Ztg.," 1926, p. 31, 2,399.
6. " Practical Gemmology." Robert Webster, F.G.A. (N.A.G. Press), 1941, p. 73.
7. " Gem Testing for Jewellers." B. W. Anderson (Heywood & Co.), first edition, 1943, p. 93.
8. " Quartz Family Minerals." Dake, Fleener and Wilson, 1938 (McGraw-Hill Book Co., Inc., New York), p. 71.
9. " Gem Stones." G. F. Herbert Smith (Methuen & Co.), ninth edition 1940, pp. 68, 97, 194. Tenth edition, 1949, pp. 130, 132.

Gemmological Abstracts

GÜBELIN (E. J.). ***Are synthetic red spinels available?*** Gems and Gemology, Vol. VI, No. 10, pp. 307-309 and 332. Summer, 1950.

A review of the reasons why synthetic red spinel is not a commercial proposition. The Verneuil process does not lend itself to the manufacture of spinel of normal equimolecular composition, and synthetic spinels have the composition MgO $3.5Al_2O_3$, with the excess alumina in the cubic form of gamma-alumina. Due to the distinct difference in the chemical compounds of synthetic corundum and synthetic spinel, the addition of chromic oxide produces a red colour in corundum and a green colour in spinel. On heating ruby to 500-600° C. it assumes a green colour and reverts to its original red on cooling. On heating a synthetic green spinel to 950-1,050° C., part of the excess alumina is precipitated and the stone becomes cloudy. Raising to 1,075° C. results in weakening the spinel's structure with destruction of transparency—but the stone becomes red. The mechanism of these colour changes is fully discussed. Synthetic ruby red spinel can only be made if the ratio of Al_2O_3 to MgO is 1:1. Mention is made of experiments to produce a manufactured ruby red spinel with equimolecular proportions of alumina and magnesium oxide coloured with chromic oxide with the result that the tiny boules produced are cracked and shattered and no material suitable for cutting is obtained. Twelve references are given.

R. W.

SCHMIDT (P.). ***Der lapislazuli.*** (The lapis lazuli.) Uhren, Schmuck, und edles Gerät, 1950, pp. 235-236 (8).

Short historical review. Mentions important rôle played by lapis lazuli with the Sumerians (about 2030-2575 B.C.), the Egyptians, the Babylonians. It was also the favourite stone of Louis XIV of France and Ludwig II of Bavaria.

EHRMANN (Martin L.). ***Bombarded diamonds.*** Gems and Gemology, Vol. VI, No. 10, pp. 295-297 and 318. Summer, 1950.

Records the results of experiments on the colouring of diamonds by cyclotronic bombardment, the cyclotrons at the University of California and those at Harvard and Columbia Universities being used for the tests. Early experiments showed that the colours produced on Cape stones by two to six minutes' exposure to deuteron bombardment were light green to dark brown. The initial colour of the stone did not influence the resultant colour. A suggestion is made that the difference in induced colour may be due to any one of the trace elements which have been found to be present in diamond.

In the early experiments it was found that the colouring was only skin-deep but permanent. Small burn marks, shown as black pin-points, were seen throughout the stone. An initial radio-activity persists for thirty minutes to twenty-four hours, after which the stone ceases to show any sign of radio-activity. Slight recutting restored the original colour.

Ten diamonds placed in the cyclotrons for seven to eight days outside the area of the beam were found to be all coloured a light green by the gamma and neutron radiation. Such colouring was found to fade gradually to the original colour on exposure to daylight.

Some irradiated diamonds, showing fluorescence before treatment, were found to have lost all trace of it after they had been bombarded. Some retained their fluorescence. A diamond accidentally dropped in the cyclotron and left for about two weeks was found to have assumed a ruby-red colour which turned to a dirty brown when the radio-activity ceased.

Four diamonds subjected to a five-minute alpha particle bombardment with a 2 micro amp. beam current and 40 million volt energy showed that two of the stones turned whiter and the other two to a brown colour. With increase of current to 15 micro amp. and a four-minute exposure, another diamond turned to a tourmaline green colour. Ten stones bombarded with deuterons from a 10-15 micro amp. beam at 20 million volt energy produced colours ranging from olivine green, tourmaline green, bluish zircon green and light to dark browns. After recutting these stones kept their new colour, and it is therefore considered that the higher energy and current produce complete penetration of the stone. R. W.

DRAPER (Thomas). ***The origin and distribution of diamonds in Brazil.*** Gems and Gemology, Vol. VI, No. 10, pp. 298-306. Summer, 1950.

The second part of an interesting series of articles includes a general survey of the diamond localities in Brazil. Geological theories are mentioned and discussed and a comparison made of the associated minerals with those of the South African sources. Fourteen diamond fields are individually reviewed. Eight illustrations and one map. R. W.

FISCHER (W.). ***Etwas von Nephrit.*** (Something about Nephrite.) Gold und Silber, 1950, 18-19 (No. 7).

Historical review mentioning especially finds of tools made of nephrite in primitive paling huts on the Swiss seas. The material is still available in Europe, i.e. " Jordansmüller Nephrit " from Silesia.

TAYLOR (H. E.) & HILL (D. K.). ***The identification of stones in glass.*** Journ. Soc. Glass Technology, 1950, *34*, 25-39 (No. 156).

Techniques used in Department of Glass Technology, University of Sheffield, for identification of stone inclusions in glass are preliminary examination of the stone with a hand lens, microscopic examination of stone when immersed in liquid of refractive index similar to that of surrounding glass, microscopic examination of thin sections, and examination of X-ray diffraction pattern. Features which provide information at any stage as to the identity and origin of stone are indicated, and relative applicabilities of visual and X-ray tests discussed. E. S.

CHUDOBA (K. F.). ***Der synthetischen Edelsteine Entwicklung und Fortschritt.*** (Development and progress of synthetic gems.) Gold und Silber, 1950, 3, 18-19 (No. 5).

The principle of the Verneuil furnace is shortly described and the present stage of gem synthesis discussed, mentioning synthetic corundum, spinel, star corundum and rutile. Attention is drawn to the rod-boule. Also dealt with is the emerald synthesis by I.G.

Farben and by Carrol F. Chatham. Not mentioned are means of distinguishing between synthetic and genuine stone. E. S.

TRUMPER (L. C.). ***Measuring Dispersion.*** Gemmologist, Vol. XIX, 230, p. 199.

Describes an attempt to measure dispersion on a simply constructed instrument. The main purpose was not accomplished, but a good guide to the dispersive power of gems was obtained.

K. T.

KENNEDY (N. W.). ***The Genesis of Gemstones.*** Gemmologist, Vol. XIX, 230, p. 191 (Part 1).

A simply expressed article dealing with the formation of gems in the earth's crust in greater detail than K. Schlossmacher's recent article (Schmuck, 1950, 3—Journ. Gemmology, Vol. II, 7, p. 321).

K. T.

FIELD (D. S. M.). ***Arctic Gems.*** Gemmologist, Vol. XIX, 229, p. 177.

A restatement of details of some gem minerals found in Arctic regions originally published in Geological Survey of Canada Report, New Series, Vol. XI, and the Ottawa Naturalist (1915). A. G.

CROLL (I. C. H.). ***The Opal Industry in Australia.*** Commonwealth of Australia, Dept. Supply and Develop. Bulletin No. 17, 1950.

A description of the opal industry in Australia, with some suggestions for its stabilization and improvement. The bulletin emphasizes that opal production is less than 0.05 per cent. of the total mineral production in the Commonwealth and that there is no commercial use for the mineral other than as a gem. Part II of the bulletin (Part I deals with occurrence and production), dealing with cutting and marketing, is of interest for its comments on the controversies that exist regarding opal doublets. Opals seen in many Australian jewellers' windows are of inferior quality and create an unfortunate impression with the public. A proposal that a Committee of Control be set up to safeguard interests of all sections of the industry is made, though it is considered that it is the responsibility of the industry itself to carry out necessary improvements. H. G.

ASSOCIATION NOTICES

EDITORIAL JUBILEE

In October this year Dr. L. J. Spencer, C.B.E., F.R.S., completed 50 years as Editor of the "Mineralogical Magazine," the publication of the Mineralogical Society. The December, 1950, number of the "Mineralogical Magazine" will be a special number in honour of the Editor.

The Council of the Association has extended its congratulations and good wishes to Dr. Spencer.

GIFTS TO ASSOCIATION

The Council of the Association acknowledges the gift of various packets of gemstones, the generosity of Mr. E. S. Campbell, Jeweller, Brompton Road, London, S.W.7, a member of the National Association of Goldsmiths of Great Britain.

TALKS BY FELLOWS

K. Parkinson: Various talks to audiences in Ceylon, April to September, 1950. Mr. Parkinson has recently had a six months' visit to Ceylon and has obtained much information and experience regarding the methods of mining, cutting and marketing of the gems that are found in the Island.

G. A. Blythe: "Gemstones," Southend Inner Wheel, July 3rd, 1950. "Gems," at Westcliff-on-Sea, Monday, October 2nd.

1951 EXAMINATIONS IN GEMMOLOGY

The 1951 examinations in Gemmology will be held as follows:—

Preliminary: Great Britain and Overseas—Wednesday, June 6th.

Diploma: Theoretical papers—Great Britain and Overseas, Thursday, June 7th. Practical papers—London and Overseas, Friday, June 8th. Edinburgh, Monday, May 28th; Glasgow, Tuesday, May 29th; Birmingham, Friday, June 1st.

Examination entry forms are obtainable from the Association Offices and all applications for entry into the examinations must be received and registered before (*a*) Overseas, March 1st; (*b*) Great Britain, April 30th.

CEYLON

In August, Mr. Kenneth Parkinson, F.G.A., who has just completed a six months' visit to Ceylon, received a commission to rearrange the well-known gem museum of Messrs. Abdul Caffoor, the jewellers of Colombo. Mr. Parkinson received carte blanche to do the rearranging as he thought fit. Apparently the Museum has been somewhat neglected since its partial use by naval units during the last war and the task of sorting out the many superb gem specimens from the more dubious varieties is one which would appeal to any gemmologist.

AMERICA

The Gemological Institute of America have appointed Mr. R. M. Shipley, Jnr., to be an Honorary Research Member. The only other person to be accorded this distinction by the Institute is Dr. Edward J. Gübelin, of Lucerne.

COUNCIL MEETING

A meeting of the Council of the Association was held at 19-25, Gutter Lane, London, E.C.2, on Wednesday, August 16th, 1950. Mr. F. H. Knowles-Brown presided and welcomed Messrs. A. R. Popley and W. Stern, two new members of Council.

The following were elected to membership of the Association:—

FELLOWS

S. C. Dixon (Reigate).
E. E. Foskett (London).
Hans van Starrex (Colombo, Ceylon).

PROBATIONARY

D. K. Lynch, (London, S.W.).
Miss S. G. Warnes (King's Lynn).

ORDINARY

Heinz Goebeler (Munster, Germany).
Meyer Rosenbaum (Detroit, U.S.A.).

The Council set up a sub-committee to consider and report on the working of the Association since the date of Incorporation, with special reference to the examination awards, subscriptions, adequacy of Articles of Association and Bye-Laws and the improvement of services to members.

ASSOCIATESHIP

In view of the increased facilities that exist overseas for sitting for the practical section of the Association's diploma examinations, it has been decided to discontinue the Associateship examination. Entries for this examination have always been small and it has been found that nearly all candidates who have had a temporary difficulty in taking both sections of the examination in the same year have preferred to wait and enter for the Fellowship examination.

In future no award will be made except after qualification in the complete Diploma examination. A sub-committee of the Council is now considering the advisability or otherwise of permitting the theoretical and practical parts of the Diploma examination to be taken in different years.

1950 EXAMINATION RESULTS

A LARGE number of entries was received for the Preliminary Examinations of the Gemmological Association of Great Britain, 19 from Overseas and 120 in Great Britain, making a total of 139. Upon the recommendation of the examiners the Rayner Prize has been awarded to Mr. I. N. Instone, of Messrs. Biggs of Farnham, Ltd.

Ninety-eight candidates presented themselves for the Diploma (Fellowship) Examinations, of whom 81 sat in Great Britain and 17 Overseas ; of these, two did not take the practical part of the examinations and could qualify for Associateship only. The award of the Tully Medal has been made to Mr. H. L. Zwirs, of Messrs. N. V. Begeer van Kempen en Vos, for the knowledge of the subject displayed in his papers. The Anderson Prize has been awarded to Mr. A. Schaap, of Messrs. S. Spyer, for the best work in the practical section.

The following is a list of successful candidates, arranged alphabetically:

DIPLOMA

Qualified with Distinction

Akehurst, H. R. (Saskatoon, Canada)
Coote, J. W. (Los Angeles, U.S.A.)
Corfield, R. H. (London)
Gunters, H. D. (The Hague, Netherlands)
Jennings, J. D. (Windsor, Canada)
Katz, B. (Johannesburg, S. Africa)
O'Donoghue, T. J. (London)
Phillips, J. A. (Los Angeles, U.S.A.)
Schaap, A. (Amsterdam, Netherlands)
Schunk, J. E. (Los Angeles, U.S.A.
Shapshak, L. (Johannesburg, S. Africa)
Zwirs, H. L. (Utrecht, Netherlands)

Qualified

Aspinall, T. R. (London).
Aston, G. R. C. (Gt. Missenden)
Bailey, B. O. (Birmingham)
Batty, R. W. (Southport)
Best, J. (Stourbridge)
Boyes, K. A. (Scholes, Leeds)
Brady, R. C. (Ipswich)
Bruton, E. M. (Wembley).
Cassidy, R. F. (Worcester).
Chapman, V. K. (Perth)
Chisholm, J. R. H. (Leverstock Green)
Cornelius, A. R. (London)
Crosthwaite, S. A. (Glasgow)
Davidge, K. C. (Otford)
Davison, P. J. F. (Goodmayes)
Denton, G. W. (Clacton-on-Sea)
de Rosa, R. (London)
Doidge, R. J. (Tavistock)
Dyce, S. B. (Perth)
Falconer, H. S. (Edinburgh)
Fishberg, H. C. (Edgware)
Fishberg, J. M. (London)
Frake, W. J. (London)
Garner, L. W. (London)
Gribben, A. T. (Birmingham)
Hanslip, M. J. (Torpoint)
Hathaway,, Miss A. H. (Stratford-on-Avon)
Heighes, C. E. (Los Angeles, U.S.A.)
Hemachandra, P. (Colombo, Ceylon)

Henn, Miss B. M. (Bridgnorth)
Hollander, Miss J. C. (London)
Hurst, J. C. (Olton)
Hyde, J. L. (Hounslow)
Inch, A. R. (Currie)
Jarvis, C. A. (Ilford)
Jones, O. D. (Burton-on-Trent)
King, R. F. (Welling)
Modahl, O. (Oslo, Norway)
Pellett, W. (London)
Quartermain, J. F. (Westgate-on-Sea)
Raymond, P. (Kenton)
Rillstone, R. (Benalla, Australia)
Sawyer, J. B. (London)
Shaw, J. R. (Great Bridge)
Shipster, T. R. (London)
Siu, M. C. (Hong Kong)
Snell, J. S. (Ramford)
Speed, P. G. ((London)
Thomas-Ferrand, Mrs. J. M. (Bury St. Edmunds)
Tindall, E. H. (Pool-in-Wharfedale)
van der Loo, J. A. M. (Rotterdam, Netherlands)
van Starrex, B. (London)
Wainwright, F. (Hutton)
Warnes, Miss S. G. (King's Lynn)
Warren, F. W. (Bristol)
Watkins, A. G. (London)
Whitehead, M. W. (Surbiton)

Diploma (Associateship) Examination

Cunningham, F. M. (Toronto, Canada)
Lowe, R. W. (Broken Hill, N. Rhodesia)

PRELIMINARY

Akehurst, H. R. (Saskatoon, Canada)
Alexander, D. (Glasgow)
Armstrong, A. H. G. (Stirling)
Austin, W. F. (Rugby)
Belton, C. G. (Southend-on-Sea)
Bishop, E. A. (Southend-on-Sea)
Bowden, F. A. (Plymouth)
Bradbury, D. S. (London)
Bradfield, W. H. (London)
Bridges, R. J. (London)
Broadbent, Miss S. A. (Farnham)
Brotherton, C. (Buxton)
Browne, P. C. (Nottingham)
Caffell, E. W. (Old Woking)
Caffoor, M. A. N. (London)
Cater, C. W. (Thornton Heath)
Caudell, P. M. (London)
Clark, Miss J. M. (Sutton Coldfield)
Clark, L. D. S. (Surbiton)
Collinson, D. E. (Leicester)
Coote, J. W. (Los Angeles, U.S.A.)
Craik, E. D. (Edinburgh)
Crook, Miss W. E. (London)
Cuss, F. C. (London)
Cutler, M. (London)
Davis, G. W. (Birmingham)
Denyer, B. C. (Kenton)
Ekanayaka, F. L. D. (Colombo, Ceylon)
Fine, H. D. (London)
Franks, A. B. (Brighton)
Gauton, G. W. (Hadley)
Goodbody, R. F. (Petersfield)
Gulian, K. (Cairo, Egypt)
Gunters, H. D. (The Hague,, Netherlands)
Gush, Mrs. I. N. (Johannesburg, S. Africa)
Harris, D. I. (London)
Harrison, Miss M. A. (Lichfield)
Hattle, R. G. (Helensburgh)
Heighes, C. E. (Los Angeles, U.S.A.)
Hodges, J. F. (Chester)
Hunt, P. (London)
Instone, I. N. (Farnham)
Jackson, F. W. (London)
Jennings, J. D. (Windsor, Canada)
Jones, A. E. (London)

Kibe, V. R. (Indore, Central India)
Knowles-Brown, P. (London)
Kolb, H. F. (London)
Kutock, M. (London)
Leech, R. A. (Ilford)
Lerman, A. (Toronto, Canada)
Lewis, Miss B. E. (Bristol)
Lumsden, Miss J. G. (Edinburgh)
Lynch, D. K. (London)
MacDonald, D. (Airdrie)
MacDonald, H. F. (Glasgow)
MacDonald, Mrs. M. E. (Airdrie)
McIntosh, C. (Glasgow)
MacKenzie, I. (Greenock)
Martin, W. E. (Hull)
Mason, S. (Harrogate)
Mitchelson, A. (Gateshead)
Morris, H. (Edinburgh)
Mountain, Miss D. J. (Worthing)
Myers, G. (Wembley)
Myhre, H. (Ljan, Norway)
Neerincx, Miss R. (London)
Perry, J. A. (Southend-on-Sea)
Phillips, J. A. (Los Angeles, U.S.A.)
Pilling, Miss E. M. (Keston)
Pratt, Miss L. D. (London)
Rae, J. W. (London)
Randall, J. A. (Bath)
Russell, B. T. (London)
Schaap, A. (Amsterdam, Netherlands)
Schroeder , Miss V. (Birmingham)
Schunk, J. E. (Los Angeles, U.S.A.)
Scott, J. F. (Lincoln)
Sena, W. (Singapore)
Shepherd, G. T. (Birmingham)
Spence, C. R. (Taunton)
Stockwell, J. C. (Middlesbrough)
Stol, D. (Amersfoort, Netherlands)
Swettenham, G. W. (London)
Towe, E. G. (Edinburgh)
Turnbull, K. (London)
van der Loo, J. A. M. (Rotterdam, Netherlands)
van Loo, J. (Zeist, Netherlands)
Wakelin, R. J. G. (Birmingham)
Watkins, A. G. (London)
White, W. (Wembley Park)
Witherall, H. P. (Dunstable)
Wood, Miss E. A. A. (Edinburgh)
Wright, T. J. (London)
Wyatt, J. (Bromley)
Zwirs, H. L. (Utrecht, Netherlands)

REUNION OF MEMBERS AND PRESENTATION OF AWARDS

Over one hundred Fellows and Members of the Association met at Goldsmiths' Hall, Foster Lane, London, E.C.2, on Wednesday, October 11th, 1950, at a reunion gathering. Following the reunion the presentation of prizes and diplomas in connection with this year's examinations was made in the Livery Hall. Mr. F. H. Knowles-Brown, Chairman of the Association, introduced Mr. F. E. Lawson Clarke, Chairman of the National Association of Goldsmiths of Great Britain, who presented the awards. Dr. G. F. Herbert Smith, President, proposed a vote of thanks to Mr. Clarke and to the Wardens of the Worshipful Company of Goldsmiths for use of the Hall. The winner of the Tully Medal, Mr. H. L. Zwirs, and of the Anderson prize, Mr. A. Schaap, made a special journey from Holland, together with another diploma winner, Mr. H. D. Gunters, in order to receive their awards. It was the first occasion that the Tully Medal had been awarded to an overseas candidate, and Mr. D. Dresme, Treasurer of the Netherlands Gemmological Association, also attended to support his colleagues.

Vol. II
Nos. 1 - 8

INDEX TO CONTENTS

Vol. II
No. 8
October, 1950

C O N T E N T S

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