

tachardiæ larva which was within a lac cell close to an *E. amabilis* larva was dislodged from its actual host *L. lacca* while dissecting the encrustation and came to lie

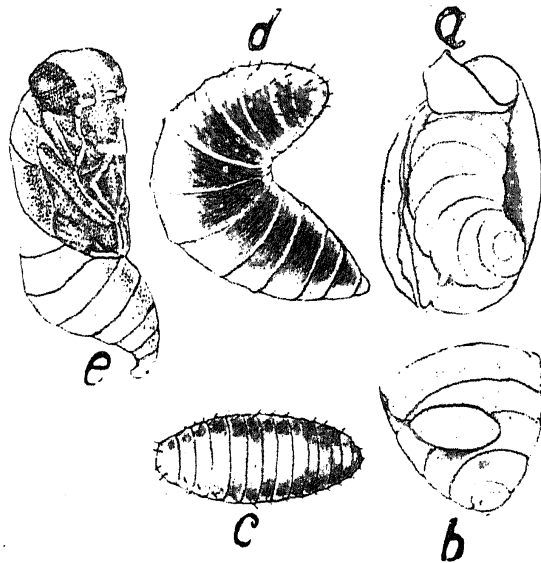


Fig. 1.

- (a) A *Microbracon greeni* cocoon opened to show the paralysed *B. tachardiæ* larva and the pencils and punctures formed between the larva and its cocoon as a result of the *E. tachardiæ* (*B. annulicaudis*) pricks.
- (b) The *E. tachardiæ* egg lying over the posterior end of the *M. greeni* larva.
- (c) Just hatched larva of *E. tachardiæ*.
- (d) Nearly full fed *E. tachardiæ* larva (details not fully shown).
- (e) The *E. tachardiæ* prepupa casting the larval skin to turn into pupa.

on the *E. amabilis* larva before it was observed by Mahdihassan.

If Mahdihassan is still not fully convinced may we suggest that he try to breed *E. tachardiæ* in the Laboratory on both insects, *M. greeni* and *E. amabilis* and he will discover for himself that the former is a host of *E. tachardiæ*.

As regards Mahdihassan's other observations, we prefer at present to disregard them as they are of secondary importance and merely confuse the issue of the present discussion regarding the host of *E. tachardiæ*.

We should like to point out, however, that our specimens of *Eupelmus tachardiæ* were identified by Dr. Ch. Ferriere of the Imperial Bureau of Entomology, an expert on the *Chalcidoidea*.

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Alkaline Quartz-Dolerites, from Bijawar, and Their Chemical Relationships.

FOR some time the author has been working on the trappean¹ rocks which are found associated with the Bijawar system in the type area. Certain interesting results of chemical nature have been obtained and it has been thought desirable to publish them in the form of a short communication. The results of detailed investigation will be published later. A collection of rock specimens was made from intrusive masses occurring in the central part of the Bijawar outcrop. Under the microscope the rocks present a very decomposed appearance and are found to be medium-grained quartz-dolerites with a pale brown pyroxene and plagioclase felspar as their main constituents. Uralite, chlorite, biotite and epidote occur as secondary minerals. Micropegmatite occurs in the interstices, and needles of apatite are generally present. Iron oxides are very prominent and have crystallised later than the pyroxene and plagioclase. The pyroxene has been considerably altered to uralite and the plagioclase looks extremely clouded. Some plagioclase laths are so much crowded with decomposition products that they are indeterminable. Fresh felspar is rare, but when it is present it gives an extinction angle corresponding to labradorite.

TABLE I.

Chemical Comparison of the Bijawar Quartz-Dolerite with Deccan Basalt and Spilite.

| | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------------------------------|--------|--------|--------|--------|-------|-------|
| SiO ₂ .. | 50.30 | 51.00 | 49.50 | 50.27 | 49.68 | 51.22 |
| Al ₂ O ₃ .. | 11.53 | 13.38 | 12.02 | 12.31 | 12.95 | 13.66 |
| Fe ₂ O ₃ .. | 2.16 | 1.68 | 3.20 | 2.35 | 3.47 | 2.84 |
| FeO .. | 10.66 | 9.36 | 9.36 | 9.79 | 10.10 | 9.20 |
| CaO .. | 10.15 | 9.86 | 10.15 | 10.05 | 10.09 | 6.89 |
| MgO .. | 6.07 | 5.32 | 6.97 | 6.12 | 5.69 | 4.55 |
| Na ₂ O .. | 6.14 | 6.33 | 5.59 | 6.02 | 2.27 | 4.93 |
| K ₂ O .. | .89 | .64 | 1.12 | .88 | .52 | .75 |
| TiO ₂ .. | 1.23 | 1.13 | 1.17 | 1.18 | 2.00 | 3.32 |
| P ₂ O ₅ .. | .35 | .42 | .14 | .30 | .33 | .29 |
| MnO .. | .09 | .08 | .08 | .08 | .20 | .25 |
| H ₂ O(+) | .75 | .90 | .73 | .79 | 1.71 | 1.88 |
| H ₂ O(-) | .10 | .16 | .22 | .16 | .29 | |
| CO ₂ .. | N. D. | N. D. | N. D. | N. D. | .. | .94 |
| Incl .. | .. | .. | .. | .. | .04 | .. |
| TOTAL. | 100.42 | 100.26 | 100.25 | 100.30 | 99.94 | .. |

(1) Quartz-dolerite, Chopra, Bijawar. (2) Quartz-dolerite, Rampur, Bijawar. (3) Quartz-dolerite, near Bajno, Bijawar. Analyst: M. P. Bajpai. (4) Average of 1, 2, and 3. (5) Average Deccan basalt, H. S. Washington's analyses, 4, 12, 13, 15, 16 and 23 in *Bull. Geol. Soc. Amer.*, 1922, 33, 774. (6) Average spilite, *Geol. Mag.*, 1930, 67, 9.

¹ Mahdihassan, *Curr. Sci.*, 1934, 3, 260.
² Glover, Negi, *Curr. Sci.*, 1934, 3, 426.
³ Mahdihassan, *Curr. Sci.*, 1934, 3, 562.

Ilmenite, too, has been altered to leucoxene. Ophitic and sub-ophitic textures are well developed.

Three chemical analyses of the Bijawar quartz-dolerites (Nos. 1, 2 and 3) and their average analysis (No. 4) show that there is not much chemical difference between the Bijawar quartz-dolerites and Deccan basalt (No. 5) except that the percentage of Na₂O is considerably higher in the former (6.02 per cent.) than that in the latter (2.27 per cent.).

The percentages of silica, alumina, ferrous oxide, lime and magnesia in the average

analysis of the Bijawar quartz-dolerites compare well with those of the same constituents in the Deccan basalt. Richness in alkali is a remarkable chemical feature of the Bijawar quartz-dolerites.

Except for the percentages of CaO, MgO and TiO₂, the analyses of the Bijawar quartz-dolerites compare fairly well with an average analysis of spilite (No. 6). In containing a high amount of soda and low percentage of potash, the Bijawar rocks exhibit some of the important chemical characteristics² of spilites.

TABLE II.

Chemical Comparison between Bijawar, Gwalior and Singhbhum Dolerites.

| | T/1 | T/2 | T/84 | T/86 | T/59 | T/14 | 7 | 8 | 9 |
|-----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| SiO ₂ .. | 51.15 | 49.20 | 49.90 | 50.82 | 50.27 | 49.76 | 50.18 | 50.27 | 51.37 |
| Al ₂ O ₃ .. | 12.20 | 11.20 | 11.11 | 13.06 | 11.32 | 11.51 | 11.73 | 12.31 | 14.61 |
| Fe ₂ O ₃ .. | 2.70 | 1.92 | 2.59 | 1.24 | 1.74 | 1.90 | 2.02 | 2.35 | .90 |
| FeO .. | 11.66 | 12.24 | 12.10 | 10.27 | 12.38 | 12.96 | 11.94 | 9.79 | 9.87 |
| CaO .. | 9.85 | 10.76 | 10.34 | 10.20 | 10.05 | 9.08 | 10.05 | 10.05 | 8.72 |
| MgO .. | 5.38 | 6.02 | 5.25 | 5.80 | 5.68 | 4.58 | 5.45 | 6.12 | 6.01 |
| Na ₂ O .. | 4.07 | 4.06 | 5.17 | 3.69 | 5.07 | 4.75 | 4.47 | 6.02 | 3.24 |
| K ₂ O .. | .58 | 1.24 | .84 | 1.01 | 1.06 | .94 | .95 | .88 | 1.36 |
| TiO ₂ .. | .99 | 1.65 | 1.05 | 2.24 | 1.09 | 2.50 | 1.59 | 1.18 | .89 |
| P ₂ O ₅ .. | .76 | .47 | .44 | .86 | .75 | 1.14 | .74 | .30 | .13 |
| MnO .. | .36 | .45 | .75 | .48 | .38 | .56 | .50 | .08 | .12 |
| H ₂ O(+) | .46 | .78 | .75 | .67 | .49 | .52 | .81 | .79 | 2.34 |
| H ₂ O(-) | .24 | .17 | .20 | .19 | .26 | .16 | | .16 | .07 |
| CO ₂ .. | .. | .. | .. | .. | .. | .. | .. | .. | .29 |
| S .. | .. | .. | .. | .. | .. | .. | .. | .. | .04 |
| TOTAL .. | 100.40 | 100.16 | 100.49 | 100.53 | 100.54 | 100.36 | 100.43 | 100.30 | 99.96 |

T/1, T/2, T/84, T/86, T/59—Quartz-dolerites and T/14 Basalt—from neighbourhood of Gwalior. Analyst: M. P. Bajpai, *Jour. Geol.*, 1935, 43, No. 1, 69. (7) Average of the six Gwalior rocks. (8) Average of three Bijawar quartz-dolerites. (9) Newer dolerite from N.E. of Belma. Analyst: L. A. N. Iyer, *Rec. Geol. Surv. Ind.*, 1932, 65, pt. 4, 528.

The quartz-dolerites from Gwalior, which have been previously studied³ by the author, and those from Bijawar are composed of the same mineralogical constituents. The presence of micropegmatite and ophitic and sub-ophitic textures, and indications of late crystallisation of iron oxides are three very important microscopic characters common to the rocks from both the areas. Table II shows that, as far as the percentages of silica, alumina, ferric oxide, magnesia and lime are concerned, there is a close chemical agreement between the Gwalior and Bijawar quartz-dolerites. It has already been shown⁴ by the author that the Gwalior trap contains a higher amount of soda than the Deccan basalt. High soda content in the Gwalior and Bijawar rocks, together with fairly uniform percentages of other constituents, indicate a close relationship between them. Average soda in the Gwalior trap is 4.47 per

cent. and that in the Bijawar dolerites 6.02 per cent. The maximum amount of soda in the Gwalior and Bijawar rocks is 5.17 per cent. (No. T/84) and 6.33 per cent. (Table I, No. 2) respectively. The relatively higher amount of soda in the Bijawar quartz-dolerites seems to be related with their highly altered state because in other respects they closely resemble the quartz-dolerites of Gwalior.

Holland, in his paper, "On some Norite and associated basic dykes and lava-flows in Southern India" has shown that the trappean rocks which are found associated with the Gwaliors and Bijawars remarkably agree⁵ with the augite-diorites of the Cuddapah lava-flows in petrological characters. A chemical study of the rocks from Gwalior and Bijawar shows that richness in alkali seems to be a regional feature of these supposed equivalents of the Cuddapah

lavas. Recently L. A. N. Iyer has described some "Newer dolerites" from Singhbhum which also resemble⁶ Holland's augite-diorites. It is interesting to note that they also show alkaline tendencies, the total of soda and potash being considerably high in all the analysed⁷ specimens of the Newer dolerites. Iyer's specimen from Belma is particularly rich in alkalis (Table II, No. 9).

The Bijawar quartz-dolerites contain an abnormally high amount of soda. An advanced stage of decomposition of their plagioclase feldspars arouses suspicion that the enrichment in soda is probably due to the partial albitization of the original labradorite feldspar. The feldspars (with their decomposition products) and the pyroxene are under detailed investigation.

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June 10, 1935.

¹ *Mem. Geol. Surv. Ind.*, 2, 43.

² *Geol. Mag.*, 1911, 43, 205.

^{3, 4} *Jour. Geol.*, 1935, 43, 61-75.—On page 69 of the Journal two mistakes have unfortunately occurred in the statement of analyses of the Gwalior trap. The value for MgO in T/14 is 4.58 and not 5.58 as printed, and the values shown against H₂O (—) are those of H₂O (+) and *vice versa*. The author has taken this opportunity of correcting these mistakes and revising the average analysis in Table II of the present communication.

⁵ *Rec. Geol. Surv. Ind.*, 1897, 30, 36-37.

⁶ *Rec. Geol. Surv. Ind.*, 1932, 65, 530.

⁷ *Rec. Geol. Surv. Ind.*, 1932, 65, 528.

Sir Montagu Webb and Silver.

SIR MONTAGU WEBB has drawn my attention to what he describes as one little inaccuracy on page xi of my paper on "Energy and Economics"¹. I represented him as having *put aside for a time* his advocacy of an increase in silver currency. He writes that he is, as a matter of fact, pressing with greater vigour than ever for co-operation with President Roosevelt in re-opening the world's mints *to the people* to the free coinage of *unlimited legal tender silver coins*.

Actually I had no intention of suggesting that Sir Montagu had in any way abated his campaign. I merely meant that in the particular case of Karachi, silver was not specifically mentioned. If I had said "for the moment" instead of "for a time" it might have better conveyed my meaning. In any event I am glad to have the opportunity of correcting a possible false impression.

I may mention that Sir Montagu has just sent me the first five numbers of his new

bulletin entitled "*Better Money*" which are full of valuable information on the subject of Monetary Reform. He tells me that he will be glad to send copies to any student of this, the most important problem of the day.

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June 26, 1935.

¹ *Curr. Sci.*, 1935, 3, No. 11, Supplement.

Magnetic Susceptibility of Ice.

IN a letter¹ regarding the diamagnetic susceptibility of water polymers, the susceptibilities of (H₂O), (H₂O)₂ and (H₂O)₃ have been computed using the temperature-susceptibility data of Cabrera and Fahlenbrach and the polymer abundance data at different temperatures obtained by Ramakrishna Rao. The computed value for the susceptibility of ice works out to be -0.7080×10^{-6} . At that time I was not aware of any experimental value for the susceptibility of ice. Recently, however, my attention has been drawn to a paper by Ishiwara² where the susceptibility value for ice is given as -0.699×10^{-6} . The calculated value shows a deviation less than 1.5% from the observed value; this in itself is a striking agreement in support of the theory. Ishiwara has further observed that the susceptibility of ice remains unaltered between -120°C . and 0°C . This would require the polymer constitution of ice to remain fairly constant between -120°C . and 0°C . It is quite probable that in ice no variation occurs, for it would demand a rearrangement of the crystal lattice. Modifications of ice, *viz.*, ice II, III, V and VI observed by Tammann and Bridgman at low temperatures and very high pressures are perhaps due to this cause. But ice I, *i.e.*, ordinary ice, cannot possibly be modified by the lowering of temperature alone. Such a hypothesis would explain the observed constancy of the magnetic susceptibility of ice between -120°C . and 0°C . at atmospheric pressure. It must, however, be admitted that the above assumption requires experimental confirmation.

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¹ *Curr. Sci.*, 1935, 3, 421-22.

² *Rep. Tohoku Imp. Univ.*, 1914, 3, 303.