The Letters of Samuel Henry Meakin

to Charles Leslie Odam

(1948 - 1950)III Locking ring Dia. ARTIKET Dia. of hole HEFFIE Diameter of coverglass used? Alucakin

Transcribed and formatted by Steve Gill

INTRODUCTION

The following letters had been typewritten and collected together by an unknown archivist. These have been transcribed into the current format.

The whole comprises those letters from Samuel Henry Meakin to Charles Leslie Odam in the period 1948 to 1950. Unfortunately, except in one instance, the corresponding communications from Dr. Odam are not included in the archive.

Nonetheless, the material and views expressed in the letters provide an interesting and informative insight into the opinions and techniques of S. H. Meakin and also the way in which Dr. Odam's diatom interests were heading.

As a Yorkshireman myself (Stanley Meakin was such) I can see in some of his views and commentary the Yorkshire bluntness (and stubborness) often attributed to Yorkshire folk, and in some instances in these letters it is difficult not to see that self-professed bluntness used as an excuse for rudeness. The fact that the interval between letters became longer and also that Meakin expressed some somewhat surprising views was probably the cause of what appears to be an abrupt cessation of communication.

Whilst the 'social commentary' is interesting and indeed sometimes riveting there is much technical information that still has value today.



54 Pingle Rd., Sheffield, 7. Aug. 31st.1948.

Dear Mr. Odam,

Many thanks for your letter and kind offer of Anchor muds. I shall be very pleased indeed to have these to clean.

If you don't clean material for yourself, I shall be pleased to clean some for you also.

I expect you will have heard my old friend J.W.Barker of Eltham died in Hospital last week. He fell down and broke his femur on July 31st, and was found lying unconscious.

I shall miss his correspondence very much, as we have been close diatom friends for about 25 years. Yours very sincerely,

heakin

[Editor's Note: J.W. Barker = John William Barker = Mr. B. – see Quekett Microscopical Club Journal Obituary reproduced in Appendix A]

Dear Mr. Odam,

Sept. 6th, 1948.

Many thanks for the S(outh) African muds. I have several tubes of the Walvis Bay material already. It must be very easy to obtain I should suppose.

The Beira material is very nice, but yield of diatoms very small unfortunately. It needed treatment with weak caustic soda. It was unusually quiet and did not pop once. But just as I was taking it off the bunsen, it gave an extra large pop and blew about half my cleaned diatoms down the sink. So, although I am sending you about half my cleaned diatoms, the amount is very small indeed, for which I am very sorry.

As I don't know your interests in diatoms, I am sending you a small quantity of Singiliewsky Russian stuff, and I hope it proves of interest to you.

Your *Triceratium* is *T. contortum*, you will find it figured Sch(midt's) Atlas (Atlas der Diatomaceenkunde) 87/11. Sometimes it is found in the square form also. Re: your list, the frequent \Im square *Tric(eratium)* in the material is *T. junctum*, not *pentacrinus*.

Mr. Barker & I had another Quek(ett) paper in hand & I may finish it, if he has completed the photos. But it will be the last because I do not do photography.

Again, many thanks and best wishes,

heakin

P.S. Diatoms in 5% carbolic acid. Must be well washed if you use Formalin as a preservative.

54 Pingle Rd., Sheffield, 7. Sept. 14th, 1948.

Dear Mr. Odam,

Thanks for your letter. Glad tubes reached you safely.

Re: your wish to obtain Sch(midt's) Atlas. I have negatives for plates 1 to 400 - sample prints herewith which please return.

Mr. Barker bought copies of many plates from me years ago, and these are now for sale. His son, G.H. Barker, 'Glenside', Lea Rd., Highcliffe, Hants., is handling the business, so if interested you might write to him. There are also other Diatom books for sale. I also have negatives of many other out of print diatom plates, but altho' I can't remember, I think Barker had copies of most of them.

Shall be pleased to render any help I can on diatom matters, and will answer promptly any letters. Kind wishes,

Yours sincerely,

Alucakin

Sheffield, 7. Sept. 23rd, 1948.

Dear Mr. Odam,

In reply to your letter re: Mr. Barker's (Mr. B.) diatom plate photos. It is many years since I supplied these to Mr.B., and I think he acquired them at various times so I can't tell you what the 250 photos consist of. Barker was careful what he bought, so you may expect most, if not all the plates to be the best in Sch(midt's) Atlas; and Grevilles Mic. Journal plates, Truan & Witt's Russian. I think Pantocsek's all 3 Vols.?. In fact I'm almost sure B. had all my very best plates, either by gift or by purchase.

I have 400 Sch(midt's) Atlas negatives - 1 to 400. I always advise friends to have only the first 1 to 212 plated. After this (Adolf Schmidts' death) Hustedt took over and went to insignificant fresh water diatoms, especially *Surirellas*, one can't obtain the material in which they were found, *Nitzschias*, many plates of *Rhizoselenia* and *Chaectoceros* of no interest to me, and I m sure, none to Barker; and he would not acquire these.

If you get B's 250 plates bound into books, for £6, you will get a great bargain. Why not get B. to send them to you on appro(val)? I am sure you will keep all of the Books. B's son wrote me this week & said my photos were in 10 books, with lists of names opposite each plate. The sample photo I sent you is a fair one of the first 212 Sch.At. plates, but of course they are of *Naviculas, Aulacodiscus, Triceratium*, - in fact, all the interesting sp:. If you must have the 400 Sch(midt's) Atlas plates, providing I can obtain photo-paper, I can always fill in the plates missing from Barker's books. You see, I don't know what your diatom interests are, so I'm not able to say if you would want any plates after No. 212.

My present price for Sch(midt's) Atlas plates 1 to 400 is £23-10s, always subject to my getting photo-paper, which is very difficult, but sooner or later the makers allow me some paper. They won't give any promise, so I can't.

To sum up, if you are interested in all the genera, such as *Aulac(odiscus)*, *Auliscus, Navicula, Actinoptychus* and similar forms, Barkers photos are just what you want at a bargain price. In case you are also interested in the small F.W. (freshwater) diatoms which require a $1/12^{th}$ obj. to reveal them, you could always ask for the extra prints. I'm quite sure Barker would not have these, as they would not interest him. Of course, I have the full set, but practically never open the books after plate 212. The sample I sent you is a fair sample of all my negatives, whether Sch(midt's) At(las). or Grev., Paul Truan etc,etc. By the way, all the prints are ½ plate size, except the Pantocsek 3 vols, which are ¼ plate size as there are 102 Paul plates, I wonder if Barker's books of 250 photos contain them. I hardly think they do. The Sch(midt's) At(las) photos are exactly ½ linear size of originals, so it is easy to judge size of actual diatoms when using them.

Hope this makes things clear, and helps.

Yours Sincerely,

Alucakin

54 Pingle Road, Sheffield, 7. Oct. 15th 1948

Dear Mr. Odam,

Pleased to get your letter and to hear I managed to help you & Mrs. B(arker) re: his books and photos. His son wrote me last week re: same and I told him to offer you B's text translations of the text belonging to some of B's photos. such as Brun's, Temperes "Japan", "Simbirsk" etc. etc. I'm sure you would find them useful with the photos. B. also did a good translation of Bergon's *Entogonia*. Carbon copies of all these he gave me years ago & I've found them very useful.

My stock of cleaned material is very low as so many folks have been acquiring it for years. C.C. Swatman can generally supply cleaned diatoms.

Ask for Inza, Kamischev, Simbirsk (I sent you Singiliewsky) all from Russia also Carlovo.

From Oamaru - Forrester's Hill (very good if you got a good sample)

From France - St. Laurent. LARGE if possible

From Cal(ifornia). U.S.A. Palos Verdes. 6 A. if possible. This is much better than any of the other Cal(ifornia) localities if it's a decent sample - fossil earths vary so much, every lump is different

From Hungary - Castel if possible - very good.

From Barbados. I doubt if S(watman) can help you with this. I have no good B(arker) material.

Tric(eratium) Lautorianum still stands. Fricke's Index to Sch(midt's) Atlas queries the name but goes no further.

I suppose your *Tric(eratium)* Barbadense is from Oamaru? in my experience a very rare diatom. I've never seen it with spines. I can send you, to look at, a slide with two specimens if you wish to compare with yours. I know of no other Oamaru diatom anything like *T. Barbadense*.

I have never seen anything in Singiliewsky like the diatom you sketch, but that is not saying much, because almost every spread of Singiliewsky contains something unusual. That material I sent you is my last cleaning (all earth I had left) and I've not yet done any searching of it.

I should very much like to see your slides of the peculiar *T. Barb(adense)*. & the peculiar Sing(iliewsky) form when you have mounted them, if you would not mind sending them for me to see. I will send you a safe box for posting & at the same time send you my *T. Barb*. and an interesting inside view of *Entogonia Jeremieanium* showing Bergon canals. A beauty.

I don't know if Swatman can help with Japanese material. I've none worth searching.

If Swatman has any Java 12 Y. left, it's very good, but the last lot of earth Reinhold sent to us was no good, at all!

Fossil earths are always lucky packets.

Best wishes, Yours sincerely,

Hucakin

54 Pingle Road, Sheffield, 7. Oct. 16th 1948

Dear Mr. Odam,

Thanks for your letter. Herewith the two slides & safe box for their return together with your two slides which I am keen to look at.

So you knew Mr. Fuge. He was a great friend of mine also. we visited each other, but he was too much of an invalid to come here much, so I used to motor over to Shipley to see him. We used to write each other about once a week, but sometimes when things got exciting, even two or three times. I sold all his books for Mrs. Fuge. I got nearly £100 for them. He used my photos for many years.

I expect Swatman will be able to send you some nice diatoms.

Don't hurry about return of my two slides & I have plenty of patience & can wait for seeing yours. Yours sincerely,

Alucakin

Put stamps on end of packet away from where box is, then post office cancelling stamps does not give box any knock.

Perhaps if you have not seen Bergon's canals on *Entogonia* a hint may help. The larger diatom on slide is purposely mounted inside next cover glass to show the canals. The smaller specimen is mounted outside next cover glass & only has traces of the canals left. The canals on *E. Jeremieana* are very fine spirals not coarse like those on *E. Davyana* so you need critical light & a th objective to see them.



Very fine spiral lines are the Borgon's canals. They need looking for. I once sent Morley Jones a specimen showing the canals, but he wrote back saying he could not see anything & did not know what to look for.

My last cleaning of Palos Verdes 6 A. gave me several fine specimens of *Auliscus speciosus*, up till then a very rare diatom in my experience, about 2 specimens in 50 years. Enclosed slide I send you with compliments.

heakin

Cotton wool packing only needed when one slide only is in compartment.

Dear Mr. Odam,

Oct.20th 1948.

Thanks for letter & 4 slides which I return herewith.

You are quite correct, your two Singiliewsky specimens are *Truania Archangelskiana*. If you have Brun & Temperes photos of "Diat(omees) du Japan" which Barker made for himself; I have the original book, you will see on PL.IV, fig.16, they call the same diatom *Cyclotella* (*Melosira*?) *Asiatica*. Brun. Evidently they had not seen or noticed Pantocsek figure, and were evidently puzzled about the Genus.

Your *T(riceratium)* Barbadense is quite correct. Evidently an abnormal form, but I would not consider the spines abnormal. They are very thin & would easily be dissolved with Caustic Soda during cleaning or they might get rubbed off by movement of the earth or mud after the valves fell to bottom of water.

Again, in my experience, it's a very rare diatom. I think I've only seen three or four altogether, so there is some excuse for my never seeing any spines. By the way, *Truania* is variable like all diatoms. I would consider your specimens better than average, thus the ribs go nearer to centre than in many specimens. Your *Triceratium* is new species, quite common in some Russian samples. It was one of those on our " Ba(rker) & Me(akin)" list for inclusion in a Quek(ett) paper which will now never be published.

As regards the Canals on *Entogonia*, so far as I know all *Entogonia* have them, but the cleaning process generally dissolves them. So far as my experience goes they always remain perfect or nearly perfect if one has the luck to find an *Entogonia* frustule (two valves joined together by their girdles). D.P. Fuge and some other diatomists mix "valves" and "frustules" up. A "valve" as you know is a single shell, whereas a "frustule" is two halves joined together - inside to inside - as they grew in the living state.

Of course one can only theorise about the use of the Bergon canals, but I think the lines are spiral reinforcement to what were tubes connecting the corner orifices in the living diatom. What purpose they would serve is difficult to imagine. Amongst Barker's translations there is one with photos of Bergon's monograph on *Entogonia* - unless someone has already acquired it. Let me know if you are not lucky enough to get B's translation, and I will lend you a photo copy of Bergon's plate showing the outline of the canals & his notes in French about the plate.

Yes, my slide is a very good specimen, the best of this diatom, *E. Jeremieana*, I've ever found, but I've had several others almost as good. I can't see the canals with the $\frac{2}{3}$ rd" I use for mounting, so I've missed seeing them before mounting, and thus the specimens have been mounted outside next cover - I inspect every diatom in girdle view before mounting so as to put them on slip right way up. The canals are not so distinct seen through the thickness of the valve. In this case when mounting, I thought I glimpsed the canals, so I inspected with a $\frac{1}{3}$ th obj. and saw they were almost perfect. So I mounted the valve with the inside, and thus the canals, next to the cover glass.

Glad the slides proved of interest. Shall always be glad to help if I can, and it will always be a pleasure to see your slides and get a letter from you about our hobby.

Best wishes,

Yours sincerely,

Hucakin

P.S. I've just remembered our Ba(rker) and Me(akin) plate , Ser4. vol2, Pl3. fig.5. showing canals on *E. Davyana*, but they don't show up very well. Perhaps the enclosed enlargement of same will interest you. As it is the only copy I have left, please return it. The canals of *E. Davyana* are quite different from those on any other *Entogonia* in that they are

definite cellular walled tubes, whereas all the other sp. have only very thin spiral lines. Perhaps they originally had cellular walls, but so very thin that they disappear in the cleaning process.

Sheffield, 7. Dec. 1st,1948.

Dear Mr. Odam,

It is nice to hear from you. I am pleased you are satisfied with the Barker photos and books. Sometimes it is difficult to be certain of identification from photos and drawings, but it comes easier with experience.

Generally speaking N.E. Brown's book on *Arach(noidiscus)* has taken the difficulties out of that genus. I'm very satisfied with his book, and it is a pleasing genus.

So is *Actinoptychus*, but there is no monograph here, and the specimens look so different dry, in styrax, and in hyrax, or sirax or Piperine. Sometimes they quite beat me, especially the *Splendens-Glabratus* forms, of which there are scores all slightly different from each other. Every different locality seems to have its own form of *splendens* or *glabratus*.

Yes, you can't mistake the grandpa of *Arach(noidiscus)* in Moreno, *A. auteguua* (?). However, how Fuge & Long, both having N.E.B's book, could name this diatom *A:Ehrenbergii*, PI 13. fig 6. L.F. & Smith, is beyond my understanding.

So you also think the *Actinoptychus* in Java is the auxospore of *A*. I know Swatman thinks the same, but Reinhold and Barker does and did not think so. I have doubts myself, 'not proven' is a good verdict I think. Better stick to the given name *A. affines* ? I think until someone is clever enough to bring forward some proof. Reinhold has had unique experience of *A. undulatus*, and *Debya insignis* in his Fisheries work for his Govt. for many years in the North Sea. He does not accept the auxospore theory. I'm content to doubt, and follow Reinhold, in preference to my old friend Swatman in this case.

As regards your rings. If you will use ${}^{3}/{}_{8}$ th dia. covers, or even ${}^{\prime\prime}$ " dia(meter) - things will be much easier for you. For cement, I always use ordinary shellac dissolved in meth. spirit - the purple coloured spirit from the chemist which anyone can purchase, NOT alcohol which you Doctors use - I dissolve black spirit dye in the mixture to make it black. I use the cement as thick as I can manage to work it. Don't add castor oil to the cement, hence not medical alcohol. while your T.T. (turntable) is revolving as fast as you can make it, hold the point of your penknife against the revolving cement ring, & push the cement Just where you want it, same principle as the potter pushing his clay on his revolving wheel.



You will succeed best if your T.T. (turntable) is a heavy ball-bearing, free running one. Mine is home-made and if set spinning as fast as possible will revolve 7 mins. before it stops. HEAVY free-running T.T. (turntable) secret of successful cement rings if you know the pocket-knife dodge.

As regards names:- knowing Cal(ifornia) material very well from much searching, I'm inclined to think both specimens on this slide are same sp: *A. Grundlerii*, one specimen having the broad rim missing. Slide No.758. I am inclined to think one valve is Cos(cinodiscus) sp.?, as with a %th obj. I fail to see any trace of a pseudo nodule.

Two Glyphodiscus simbirsk O.K.

I think the *Aulac(odiscus)* is a deformed and poor valve of *Aulac(odiscus) tuberculatus*, which is very common in Sing(iliewsky). Long thin processes too far from rim for *A. Latiuseni* or its vars. *Latiuseni* has its processes quite close to rim.

Slide No.462. If you are looking at Sch(midt's) At(las). 202 figs 10,11,12, *Ach. Marace* Deby is correct but these valves are really Pants., *A. Szoutaghi* as the Sch(midt's) At(las). 202 list of names indicates.

Slide No.761. I would accept your names for these diatoms. However, if I had seen the middle one (*glabratus*.?) in the dry and it had looked a dark colour of which there are many specimens in Cal. stuff, and they often turn very light coloured when in Styrax; I should call it *A. incisa* NOT *glabratus*. In my experience, what I would name *glabratus* is rather rare in most Cal(ifornia) stuff, but in Sharktooth Hill it's so numerous as to be a nuisance. Your label says P(alos) V(erdes) 6A, then I definitely think *A. incisa* NOT *glabratus*. As *glabratus* takes some finding in Palos Verdes whereas *incisa* is quite common. These *Act*. when mounted are very difficult. Seeing them in dry state is a great help.

Photos. As I seem to remember Barker sending me this many years ago, we queried it and left it there. I don't know what it is.

Practice the knife trick on cement rings made on bare slips until you get the idea. It is quite easy. Make the rings as rough as you like and then push them as and where you want them with point of knife.

Wheeler, the old mounter used to make rings this way. So do Morley-Jones and every pupil I've taught to mount diatoms and other slides.

By practising on bare slip you don't spoil a mount and you will soon see how it works and how easy it is. Then you can work on your own diatom slides.

Best wishes for Xmas and New Year,

(Rather early I know ,but it saves postage) Yours sincerely,

Hucakin

PS. Note my packing method. This saves cancelling stamp striking boxes. It falls on paper only - saves risk of breakages in post.

PPS. Should expect your black enamel to make rings O.K., with knife-point. But expect it is soluble in Benzol, and if so immersion oil will dissolve the cement. You need an alcohol-soluble cement, not a benzol-soluble one.

54 Pingle Rd. Sheffield, 7. Dec. 7th 1948.

Dear Mr. Odam,

I was pleased to get your letter re: the St. Peter *Actinoptychus*. It came the day I posted mine and your slides. As my letter almost answered your queries, I waited until you wrote again, as letters crossing in post are generally a nuisance.

I know these Hungarian - *splendens* type - *Actinoptychus* and altho' I have practically all the useful books on diatoms I can't give names to them, and I've never met anyone who could. I think Mann's way, see 'Albatross' page 279 under *Aulac. Kinkerii* is the best, and I've followed Mann for many years. I have no use whatever for variety names. Diatoms are such variable things that to give each var. a name seems to be quite useless. It is only when you get requests for slides that you realise how impossible it is to find a diatom to fit the name. See also the Quek(ett) Ba(rker) & Me(akin) paper Dec(ember) 1947, page 178. Your letter rec(ieved) this morning.

Please understand that Dingley Fuge was my dear friend (re: diatoms) for many years. When I first made contact with him he knew practically nothing about exotic and rare sp., which happened to be and still is my chief interest. But he knew a great deal about British F.W. (freshwater) sp. in which I was never very interested. However, I used to send him interesting material, and gradually he became quite interested in exotic forms. But he never became what I would call an expert on them and was very poor at naming them. This is what he always admitted, apart from my opinion. Long was not too good at naming either, and Smith, with whom I used to correspond, before the war 1934-1939, knew nothing much about diatoms. These three, - really Dingley Fuge in practice - with a little help and criticism from Long - no help whatever from Smith so far as naming went, except he collected, cleaned and mounted the diatoms and photo(graphe)d them -wrote their book. I'm afraid that it contains many glaring mistakes. Fuge used to ignore N.E.B's. Arach(noidiscus) Book. The reason was that Fuge knew nothing about Arach(noidiscus) & did not appreciate the good work N.E.B. had done. I tried to get Fuge interested in Arach. but never succeeded. I don't think the Arach(noidiscus). from Joe's River Barb(ados) can possibly be A. deficiens: the Oamaru sp. you are probably quite correct in thinking it 'cognatus'. I don't think Barb(ados) contains A. Ehre(n)b(erg)ii. However one must always remember diatoms are very minute things and it is very easy to contaminate material with diatoms from the pipette off other spread slides etc. So, whenever I find a stranger in material when searching, I ignore it unless it repeats itself several times. Then, I investigate with a view to contamination. If this proves blank, I suspend opinion until I have searched several carefully prepared spreads. Only then will I admit what I consider is probably a stranger. One can't be too careful. I never got anyone, except Swatman, to admit auxospores of Actinoptychus being Paul's Debya. D.P. Fuge kept an open mind. The only man who is definite about it, probably without much proof, is Swatman, as far as I know. My opinion is 'not proven'. It seems to me to be foolish to be dogmatic about diatoms, we know so little about their life histories. my attitude is to be as careful as possible about naming, don't create any variety names, get as much fun as possible out of exotic and pretty forms, and don't waste time on forms like Brit(ish) F.W. (freshwater),which have been worn threadbare by being done over and over again. It gives me a thrill to find a good specimen of some known and rare diatom, and a bigger thrill to find a good specimen of something new. I'm also keen to discover the construction of the diatom shell, and of course very keen to make better diatom slides than anyone else can. I'm also very keen to help other folks to make slides as good as possible, and to help them with any other diatom problems. I look on diatoms as a hobby, pure and simple. It has never been treated seriously as a science. Its literature is full of theories - unproved - and its nomenclature is in a chaotic state. In spite of this, it is a grand hobby, providing you don't take it too seriously.

Actinoptychus glabratus and vulgaris cannot be mistaken for each other. Vulgaris is pretty constant wherever found, but glabratus is different in every locality where found and the same applies to *splendens* forms. I will try to send you a slide with a few of these key forms – typical as far as my knowledge goes - but you must expect to find all kinds of variations, often in the same material and in such cases , one must be broad minded & not rush in & create new variety names. N.E.B. was, I think, quite correct in stating one should always take locality into consideration when trying to name diatoms.

This is rather a rambling letter, but I want you to understand, if possible, the kind of fellow I am. I'm sure I make mistakes about the identification of diatoms, altho' I always do my best, am cautious and often prefer to say 'I don't know' when in doubt. I will always be pleased to do my best to help you with the hobby in every way, and will be pleased to receive your queries.

The Letters of Samuel Henry Meakin to Charles Leslie Odam (1948-1950)

As regards postage for replies, well, if it makes it easier for you to ask your questions, I won't mind. Folks generally do enclose a stamp for reply when asking for help. But I should reply if you sent no stamp. Best wishes,

Yours sincerely,

heakin

P.S. I always reply by return post if possible. I'm nearly 75 years old, and of course, have plenty of time on my hands.

54 Pingle Road, Sheffield, 7. Dec. 9th 1948

Dear Mr. Odam,

Herewith the slide of "splendens" type of Actinoptychus, with compliments.

It is very difficult to name these diatoms from figures on diatom plates because one cannot say if the drawings were made from "dry" diatoms, in Canada Balsam or Styrax & they look very different when dry from what they do in Styrax.

I think many of Sch(midt's) Atlas drawings (they are not photomicrographs of actual diatoms) were made from "dry" valves because Canada Balsam destroys much of the detail Sch(midt's) At(las) shows. I have made a list of names so far as I can with certainty & also given the localities.

Nos. 1 & 2 top row are what I understand to be "*glabratus*", No. 5 bottom row typical "*splendens*" and No. 6 & 7 "*vulgaris*".

No. 6 middle row is *A. incisa*. Sch(midt's) At(las) 154/2-5. Sch(midt) calls it *A. glabratus* var. *incisa*, but later authors have dropped the "*glabratus*" & call it *A. incisa*. Mill's "Index" confirms this and I heartily agree, because "*glabratus*" and "*incisa*" look so very different when dry.

Such things as *incisa, glabratus, vulgaris, splendens, spinifer, fuscus, interpositus, elegantulus*, are easy and fairly reliable when you know the locality also, but you get variations of most of them in other localities & often doubts then creep in.

The slide will give you some idea of the difficulties when trying to find names for these *Actinoptychus*. If you actually try to find figures to fit these diatoms on this slide I think you will realise how very difficult it is to feel sure about their identity.

Slide only made yesterday so please don't wipe it for a couple of days so as to give cement ring time to get a little harder.

Yours sincerely,

Hucakin

Later. Another difficulty is to know at what focus the drawing was made. The artist may have combined all the different views in one drawing, or he may have used only one focus. If you focus these diatoms with a ¹/₆th obj., it is possible to get several distinct and different pictures of each specimen. The more you play about with them the more doubtful you become. My policy is to enjoy looking at them, and not worry too much about naming them.

54 Pingle Rd. Sheffield, 7. Dec. 14th 1948.

Dear Mr. Odam,

Thanks for your letter, box, and stamps.

I'm a retired Engineer, age 73. All my equipment, - Microscope, Lamp, Turntable, Slide and mounting Cabinet, - in fact, everything except optical equipment, - is home-made.

After about twenty years, (since 1903) with a Watson's Edinburgh Students Microscope, I decided to design and build for myself a microscope specially for Diatom work. Then I sold the Watson, and have used my own make ever since.

My optical equipment is an interchangeable Watson High—Power Binocular. I seldom now use the monocular body which has two draw tubes, - one rack operated, and extends to about 12 inch tube length: a 2 inch, $\frac{1}{2}$ Apo, $\frac{1}{2}$ th metallurgical, $\frac{1}{12}$ th Holos O.I. (Oil Immersion), all Watson's: a $\frac{1}{2}$ inch Reichert, No.7 Leitz, No.8a Fluorite,. and a Beck $\frac{1}{2}$ th with correction collar: a Watson's Holos O.I. and Universal, also O.I. Cassegrain D.G. (Dark Ground) Condensers. Eyepieces - all sizes Holos, and two pairs Watson's X5 and X8.

The X8 in constant use, the others hardly ever. Beck Micrometer X8 eyepiece which works on Binoc., with one X8 Watson.

I use a $\frac{3}{4}^{rd}$ Apo. for searching and mounting. When diatoms are very small, I use $\frac{1}{2}$ inch for searching. For detailed inspection when searching, I use an $\frac{1}{4}^{th}$ Leitz Fluorite which I have adjusted for uncovered objects, because it gives a larger picture than the $\frac{1}{4}^{th}$ Met. Eyesight and old age you know!

For finished slides, the $\frac{3}{7}^{rd}$ Apo., and the Leitz No.7, (about a $\frac{1}{7}^{rh}$). I seldom use the $\frac{1}{12}^{rh}$ Holos. I have an Electric "Glass Rod" lamp, - home made - for ultimate resolution, *A(mphipleura) pellucida* into dots, you know with $\frac{1}{12}^{rh}$ Holos and Cassegrain Dark Ground Condenser, but use a paraffin lamp - home made, for nearly all work, as I use a platform on top of lamp chimney for hot-plate. By altering size of lamp flame, I can

quickly get just the temperature I need.

Enclosed photograph shows my equipment just as I use it. Notice platform on top of lamp chimney, also the mechanical finger attached to limb of microscope, also foot of microscope which was specially made of heavy solid brass, two inches wide at back and one inch wide at the two sides, for use as a platform for slips shown dotted, and for quickly cooling hot slides.



Please return photo, as Barron kept my negatives. (no hurry).

(The photo mentioned is included in the booklet "Mounting Diatoms", by Swatman & Meakin.) I wrote a series of articles for Barrons "The Microscope", in 1939, giving full details of Mech(anical) Finger method of working-etc. If you are interested, I can lend you my copy which I extracted from "The Microscope" when articles were published. Barron talks of re-publishing them. Ask him about it.

There, that gives you a rough idea of S.H.M.!

Now for your letter.

I know very little about the names of Brit(ish) F.W. (freshwater) diatoms. Of course, I've collected them for many years and have many tubes of cleaned diatoms. Altogether, I've over 1500 tubes from all over the world. Watson's have now given up their slide dept., but for many years I made all their diatom and polycistina slides, also Bakers, so I needed to know names of Brit(ish) F.W. (freshwater) forms, so far as their slides went. Outside this, I never got interested. My hobby has always been rare and pretty diatoms, chiefly marine. There are not many people in this country working at diatoms now-a-days. Swatman, Hendey, Reeve, Morley-Jones, Wise, Ross of B(ritish) Museum, Ferguson and several other of my pupils, at the hobby. I think that is about the lot of serious diatomists. Can give you all their addresses if you want them.

Yes, D.P. Fuge was a gentleman, and very kind. I can quite understand him sending you sldes. I shall expect your Joe's River *Arach(noidiscus)* to be *A. clarus*, because *A. cognatus* is very rare. By-the-way, all Joe's River earth probably came from me, as I used to get it direct from my friend Robinson, in Barbadoes.

As regards your Crescent City *Arach(noidiscus)* Ehrenbergii, Ehren. v. Monter-? ornatus, decorus. I don't accept N.E.B's and I exclude all Moreno Shale forms of which there are perhaps 4 or 5 quite different. All my Moreno material containing some of those forms is used up. I sent slides to Barker, and they will have gone to Brit(ish) Museum. We started to name them, but only did two. I've never kept my slides. When my cabinet gets nicely full, I generally sell the lot, and start afresh. I cleaned out every slide last spring for the umpteenth time. They went to the U.S.A. So now I've only about 2 doz(en) Slides made since last spring. I'm not a collector, and easily part with slides.

I expect your Crescent City Arach(noidiscus) is 'decorus', like all diatoms, Arach(noidiscus) is variable. I'm afraid N.E.B. did not fully realise this, hence some of his sp. or varieties won't hold water in my opinion. Some years back, Barker & I concentrated on Arach(noidiscus) Barker acquired All N.E.B's Arach(noidiscus) slides. I must have mounted and given him at least a hundred Arach(noidiscus) slides, probably every known sp(ecies), and some unknown ones. Our idea was to extend N.E.B's. book, and Barker made a great many photos for him, but for some reason we got tired and did not go on with it. Expect they have all gone to Brit. Mus.. So far as I know there is nothing published later than N.E.B. except our two sp(ecies) in Quek(ett) Reinhold and Hanna. I'm afraid Hanna's A. mannii is not valid, and I don't think some of Rheinhold's either, will stand investigation. I have searched a great deal of Reinhold's original material and have still many specimens unmounted on storage slides, but I candidly admit I can't name them from Reinhold's figures. Just a slight difference in focus and the diatom looks quite different. That and odd abnormal forms explains Reinhold's different species I think. One has to see many specimens and be very broad-minded & remember the variability of specimens before rushing in to create new species. As regards A(rachnoidiscus) ornatus N.E.B. seemed to quite understand this, then later he "went off the rails" with such things as A. adamsii, A. sendaicus etc. etc. You can find plenty of specimens you can't distinguish from living A. Ehrenbergii material in fossil Japanese material.

I used to mount slides to test Barker & D.P. Fuge on this *Ehren(bergii)-sendaicus* matter & I mixed them with the Hungarian *A. Ehren(bergii)*. They could not with certainty pick them out. Therefore they are ALL some species. Every locality has its own type of *Arach(noidiscus) ornatus*. All are a little different, but in my opinion all are ornatus pure and simple. Some of the Jap. *ornatus* are 5 or 4 times as thick as say, the Cape Town living specimens & look much denser and cruder, but I think they are all *"ornatus*". N.E.B.'s *hybridus* maybe O.K. You can get plenty of these by cleaning ordinary Jap(an) Agar-agar. A messy job, but treat small quantities at a time. I'm never quite sure in my own mind. Anyway, it's constant in form and makes you wonder whether to say *Ehren(bergii)* or *ornatus*. I fancy it's nearer *ornatus*.

You can get at least 12 months fun from *Arach(noidiscus)* and it's fairly easy thanks to N.E.B.'s cleverness & his book, that is, providing you are willing to follow N.E.B. But it's no good doing like D.P. Fuge did - buy N.E.B.'s book, casually look through it, and throw it aside as no good. And this mind you from a man who said quite openly "they all look like *A(rachnoidiscus) Ehrenbergii* to me". But!!! when you turn to *Actinoptychus* you are in for some headaches. I made the slide for you just to give you some little idea what you are letting yourself in for. I daresay, if I had gone to the trouble and spent a long time on the slide, I could have put on, say, 100 forms of the "*splendens*" type from all over the world. I only just picked a few off my storage slides to show you the difficulty. Then you have no useful monograph to help. Even with *Arach(noidiscus)* you will find it very difficult to feel quite certain especially if, as I knew you will, you seize on the forms which are slightly different from the usual run of forms. These are only natural variations of the same species, and if you see plenty of specimens you will ignore them. If you only work with slides of one or two specimens you may feel quite sure of your ground. But it is only by seeing scores of a species you can become broad-minded enough to ignore slight natural variations.

As regards growth of diatom shells - you evidently think N.E. Brown might be correct in saying they do grow larger. I'm afraid you won't find many, if any, folks will agree with you.

For many years before I ever heard of N.E.B. I had come to the conclusion that "the grow less & less by self division" theory was not correct. One can't search lots & lots of material and see tiny specimens perfect and robust & in the same material large forms ragged & worn out without thinking the small forms are children & the large worn & thin forms old men.

Nobody has ever proved the matter.

Artificial cultures grow less & less by self division. but would they do so in the natural state? Folks can't imagine the silica shells growing larger after self division, whereas they can imagine them getting slightly less by each division.

But what about the spores of diatoms which have been proved to exist. If they grow from spores then they must start life as babies & grow larger, shell & everything. I've often picked out examples of what I consider diatom shells growing & sent slides to Morley Jones, D.P. Fuge, etc. etc. but they are very kind and say nothing. They never agree. So I don't bother about it now. I can't prove anything. I wish I could. Some writers say they do grow, others say they get less & less - so take your 'pick. If you want an easy life join the "grow less & less by self division" folks . You will then have plenty of pals. If you say they do grow, well, so far as I know, S.H.M. is the only person who will say he thinks you are right. I won't say you are right because I can't prove it. Ask as many questions as you like about diatoms. It gives me pleasure to sit by the fire & answer your letters. I will always try to give you correct answers but I am not afraid to say "I don't know", and I'm afraid I shall often have to say it. We know so very little about theories & nomenclature which is in a chaotic state. You will already have gathered from my letters that my pen goes on & on about diatoms. If I tire you, you can always either stop writing or ask fewer questions.

Best wishes, Yours sincerely,

Alucakin

Later. 2 p.m.

I have Just received a list of books from Barker's son, which he wants me to help him to sell.

Hanna. 1927. Cretaceous Diat(oms). of Cal(ifornia) (5 plates) - these are Moreno Diat(oms).

Hanna. 1926. Miocene Diat(oms). from Maria Madre Island (11 plates)

Price 5/- each. If you can cancel Weldon & Wesley's order it might pay you to get these. It's doubtful if they are now in print.

There is also a lot of Quek(ett) Journals, including Vol.1, 1881, Vol.2, Vol.3 which contain the Grove & Sturt Oamaru papers; also unbound Vol. No.34 & No.50, 1902, & up to No.4 series 4, Vol.2. Price 15/-

Royal Mic. Soc. 1888, 1889 — 2 vols; 1890 - 2 vols; 1891 - 2 vols

1888 contains Rattray's monograph on Auliscus. dear at 20/-

He would accept offers for any of above.

I will delay replying to B(arker)'s son until tomorrow, so as to give you chance to write to him if any of these books interest you. His address is:

G.H. Barker, Glenside, Road, Highcliffe, Christchurch, Hants.

Don't think any other books will interest you, but he is making lists of all of them & will send you a copy if you ask for it. The above books will sell quickly & I'm giving him names of likely purchasers, so if interested act at once. S.H.M.

He says books sent on approval.

I think you could get a lot more fun & satisfaction out of Oamaru diatoms. Also I think *Auliscus* much easier than you will find *Actinoptychus*. Hence the above books. *Actinoptychus* is very, very difficult

54 Pingle Road, Sheffield, 7. Dec.28th 1948

Dear Dr. Odam,

I was very pleased to see your handwriting on your envelope this morn. I'm glad to hear you have my articles in 'The Microscope' - Re. mounting diatom slides it is all therein. All you have to do is read them, drop all your own methods where they vary from mine, don't be disappointed with your failures and you won't be long before you make good diatom slides.

I've often had men come to my house, knowing little about diatoms, who have under my instructions and using my equipment made their first passable diatom slide within 4 hours. It is easy if one adopts correct methods.

Some of my pupils are now making slides quite as good as I can make. It took me five years to develop my methods – it only took them five hours to reach the same stage.

I'm not a "big bug", just a simple person crazy about my hobby - diatoms - and I'm delighted to help folks as I'm able. Ferguson is my "star" pupil. He makes slides equal to mine. (Ferguson knows more about *Aulacodiscus* than perhaps any man. Has specialised on that single genus for many years, & knows very little about other genera).

Wise and Morley Jones are dabblers. Morley Jones, however, makes very good slides by hand methods. He is not good at naming diatoms. I've known him since the early 1920's. We don't see "eye to eye" on some diatom matters but are great friends & enjoy each other's letters. I have not much use for Wise. Ross earns his bread with diatoms at the B(ritish) Museum, knows little about diatoms, but I use him to sell slides to the B(ritish) Museum, otherwise I've no use for him. Swatman is genuine & a great friend. Reeve is a poor correspondent but keen on the hobby I think he has all his work cut out earning his living and not much time for diatoms. All the above, of course, is confidential, but the information lets you in on the ground floor".

Glad you identified the Crescent City '*decorus*'. Your Allens' diatom is *Stictodiscus Hardmanianum* var. *megapora* Grove & Sturt. It's figured in Sch(midt's) Atlas 147/5 and named at bottom of list for Sch(midt's) At(las) Pl. 143, photo returned herewith.

Mann is reliable generally, but I don't like his idea that Triceratium is Biddulphia. Fuge also had his doubts, but was never dogmatic about anything. I try not to be dogmatic, but so much bosh has been written about diatoms that I'm apt to become dogmatic sometimes, I'm afraid. 'Oh', I knew Actinoptychus would prove too difficult for you, that is why I made the slide for you. It is much too difficult for me. Trouble is, they are so very variable, look so different dry, and when mounted. One never knows if figures are drawn from dry valves, or in Styrax, or at which focus if they are photomicrographs. Then, no one has written a monograph on Actinoptychus. With Brown's Arach(noidiscus), and a broad mind, and plenty of material from many localities, it is possible to do fairly well with Arach(noidiscus). But even here you run up against difficulties due to variabilities of specimens. Ross, the other day, asked me to supply some Kamischev slides for Brit(ish) Mus(eum). The material is rich in Arach(noidiscus) russicus(?) so without going to any trouble, I put a few specimens on enclosed slide for you. I could, by searching, have picked out a long series of specimens, starting with those with very small and numerous cells, to those with huge cells so that with, perhaps 20 to 30 specimens, I could have shown you by small steps how they were all 'russicus' and nothing else but 'russicus'. Still, the slide will show you a broad mind is necessary when dealing with such a simple diatom as A. russicus. Slide with compliments. After making the slide, I amused myself by going thro' N.E.B's book and making a few notes for you - enclosed herewith. Perhaps you may think them too dogmatic. If so, please remember there are many years experience behind what I write. Also that, in my poor opinion, N.E.B. was misled by some of his friends who should have known better. In many cases, N.E.B. had to trust to their opinions, and it is very unwise to rely on single mounted specimens.

To anyone who cleans material, and also does plenty of searching, N.E.B's. A. longii is a glaring example. Long could not clean fossil material, and had to rely on Swatman, Meakin and others. Jeremie stuff is very difficult to clean, and so is some Java, and needs much caustic soda to obtain the diatoms. Both contain *Arach(noidiscus) ornatus*, which in cleaning suffer considerably from the prolonged caustic-soda treatment, so that specimens not protected by debris get all the thinner parts dissolved, and only the thicker framework remains. It is quite easy to mount a series from same material in steps, right from definite '*ornatus*' to definite

'Longii', and even further dissolved than *'Longii*'. The definite ornatus specimens were protected from the caustic by a covering of debris, that's all! Perhaps this also seems to you dogmatic, but it is quite true. Yes, Payne's *"Liostephania"* is a very good book. I never knew Payne. Wish I had! Taylor, whom I did know, was purely a "scissors & paste" man. I used to sell him slides. He was not a 'practical diatomist' but a 'book diatomist'. He did a good Job with his "Notes on Diatoms". D.P. Fuge called it a "hotch potch". I like Taylor's book but I look on it as a useful collection of good & bad notes, useful for quick reference. He does leave it to the reader to think what he likes.

There are *Liostephanias*, rare I admit, in Oran & Californian material - not contaminations.

Your sketch of *Spongioliths*. I don't think anyone has done anything about them. They vary a great deal. I think they are merely sponge spicules. Glad you got Hanna's books & the R.M.S. Journals with "*Auliscus*" & I expect also "*Aulacodiscus*" monographs by Rattray.

Perhaps you will get most satisfaction from *Arachnoidiscus* with Brown's book, *Stictodiscus* with Sch(midt's) At(las), *Aulacodiscus* with Sch(midt's) At(las) & Rattray's *Aulac*. and *Auliscus* with Sch(midt's) At(las) & Rattray. Your trouble with *Arach(noidiscus)* will be lack of material. *Stictodiscus* - Oamaru & the Cal(ifornia) material, *Aulac(odiscus)*. Oamaru, Cal(ifornia), Guano, Maryland, Barbados, etc. etc. Many *Aulac(odiscus)* are very easy. Some hard to identify. *Auliscus*; Oamuru & Cal(ifornia) & various.

Some of the exotic Naviculas are O.K. but please, oh, please leave Coscinodiscus alone.

Growth of Diatoms. D.P. Fuge and I had long arguments about this. His training as a priest made him a "book man". He tended to believe too easily what he read. He had a great belief in evolution, and tried to embody it in his naming of diatoms. It was not so difficult perhaps with Recent British Diatoms to trace, or believe he traced, evolution there, but when he came to fossil diatoms he was stuck, because he could not decide which form was the species, which the variety. He could not find out which was the original. Nor can anyone. When you find such things as *Nav(icula) praetexta*, 50 million years old, exactly the same in form and markings as living *N. praetexta*, it is evident some diatoms have not yet started to evolve. Perhaps evolution does not apply to diatoms. Darwin never got down to diatoms. Anyway, there are hundreds of examples like *N. praetexta*.

Auliscus sculptus & coelatus are same species. Yes, don't take the naming of diatoms too seriously. Get your fun by searching, and mounting diatoms which attract you. Name them when you can. If later you think another name more correct - well, it's easy to scrape off the label & write another. I like to get names correct, but "?" is very useful, and I am not afraid to use it.

Your *Kittonia tripodia* belongs to Kamischev NOT Palos Verdes. It is easy to get contamination. Swatman often does it in his cleaning, so it may not be your fault. I even do it myself. I'm sorry for the length of this letter. It seems impossible to make things clear in short letters.

Best wishes for the new Year,

Yours sincerely,

Alucakin

Notes on N.E. Brown's *Arachnoidiscus*

Diatoms are variable things so it is unwise to make decisions on the viewing of a single specimen, worse still to do so from a drawing or photograph.

A. Longii. p.53. Merely a specimen of "ornatus" which is badly corroded, most probably in the cleaning process.

A. major p.54. ditto.

A. confusus p.54. A. Ehrenbergii. A poor figure of an abnormal specimen.

A-Sendaicus p.57. Merely A. Ehrenbergii

A. russicus p.59. N.E.B. says "no valves seen with linear cells at centre"

This shows how few valves he saw. Linear cells at centre quite common.

A. giganteus p.70 Only a large (old?) A. russicus.

A. similis p.63 Merely *A. Ehrenbergii*. Some Hungarian material is nearly pure *A. Ehrenbergii*, which if mounted mixed with recent *A. Ehren(bergii)*. From N.W. Coast of U.S.A. cannot be distinguished, if the observer is not told which specimens are fossil Hungarian. Same remark applies to *A. Sendaicus* if specimens are specially picked from the recent Pacific materials.

A. Adamsii p.63 Only one specimen seen and this comes from the "hometown" of A. Ehrenbergii. N.E.B.'s description could apply to a slightly abnormal *A. Ehren*, and unless he saw at least 6 duplicate specimens it was unwise to name this one. It should have been ignored.

A. abnormis p.75 Fairly common to find these abnormal forms if one has sufficient material. To pick them out & give them names is folly. More experience would have prevented N.E.B. doing this.

A. evanescens — A. decorus

v. *paulus* - How foolish to do this.

A. cibdelus. Certainly insufficient evidence to enable anyone to create a species.

The *A. russicus* slide herewith should give some idea of the value to be placed on size of cells, width & colour of rays. What a valve looks like depends very much on where the focus is taken. Just a little above or below, often entirely alters the looks of the whole of the details. Also inside or outside views, and it's difficult to say which was used when making a drawing.

P.S. As you ask for suggestions re: what to take up, unless you already have as many slides as you want of Oamaru, I should advise your taking up Oamaru:

1. This material is thoroughly worked over so that it will give you least difficulty regarding naming your finds.

2. Diatoms fairly large and easy to mount.

5. Material easy to acquire.

4. Plenty of specimens of same species, so if you have failures it is easy to try again.

Failing Oamaru either Californian or Russian diatoms. Both will be easy to name and both materials should be fairly easy to acquire.

Also sending you slide of *Auliscus speciosus*. Generally a rare diatom and a good start if you fancy *Auliscus*. With compliments.

Don't return box. I have plenty such. It may be useful if you want to send slides for inspection or help.

54 Pingle Road, Sheffield, 7. Feb.1st 1949.

Dear Mr. Odam,

It was nice to get your packet and letter this morning.

Have you tried Watson's for $\frac{3}{8}$ " dia. no.1 covers? They used to keep a good stock.

So it's to be *Auliscus*. Generally speaking it is an easy Genus. Of course we shall run up against problems even with *Auliscus*. *A. gigas* for instance, but *coelatus* always gives trouble. You have only to look at Rattray's string of varieties to learn that *coelatus* will give you some trouble.

Your questions:-

1. Yes. I agree with Mann. page 282 "Albatross".

2. *A. gigas*. Yes, I like to separate this from "*coelatus*" - *sculptus* & *coelatus* are alike.

3. Sch(midt's) At(las) 171/7. A. sigillum Brun. is a mistake - it is merely a thin (young ? or corroded ?) valve of Sch(midt's) At(las) 149/2 A. fulcratus.

4. *A. ovalis* & *A. ellipticus* I consider same species. I should label your Oamaru slide *A. ovalis*, but if you put "*ellipticus*" I should not consider it a mistake. You must cultivate a broad mind with these species names of diatoms. Everybody will never agree with you, whatever you say or do about diatom species.

A. coincidens Sch(midt's) At(las) 171/1, is, as you say, Hardmaniana.

I don't think I can give you any tips or anything special to look for in *Auliscus*. The only thing is to have a broad mind relating to species. If you follow Mann regarding variety NAMES page 279. "Albatross" under *T. kinkerii* (?) also lines 5 to 10, page 282 under *A. coelatus*, and in several other places both in "Albatross" &

"Philippines" you will make it much easier, and will get more pleasure from the hobby. Note I say HOBBY. -When I find an *Auliscus* which I don't know, I often do, you must understand, I look up all my books & figures of *Auliscus*. I have nearly all of them, either originals or photo copies. Then if I fail to find anything, I label the slide 'n.sp?' & let it stop there. One thing I WILL NOT DO i.e. label any find with a variety NAME. If it's near some *Auliscus* I know, but not the same, even looked at with a broad mind, then I put "*Auliscus * coelatus* VAR." and leave it at that. It is correct, no matter who sees the slide. If he happens to be a "variety name monger" then he can add his pet var. name. Don't misunderstand the "** coelatus*" above. I may put *Auliscus* any species Var." whichever species happens to nearly fit the particular diatom.

Enclosed a few discs. You need not go further than the aluminium caps off milk bottles for your sheet. Don't let your initial troubles & failures exasperate you. Treat diatoms as a hobby Just for our own pleasure. Don't bother too much about species names. Some diatoms have about 50 different names all correct or all incorrect depending which one you fancy.

With all my experience I make failures when mounting, and in my case it's generally very rare diatoms which "go West" - about 1% or less, but still very annoying because they are rare. If Just ordinary diatoms I forget about the failure & make another. My eyesight is not so good as it was, and I sometimes do like you did with the *Kittonia elaborata* and mount a bit of debris on the diatom. Very annoying indeed but age can't be helped. I would not mount debris if I could see it, unless it was on some rare thing which I was afraid to break if I persisted in trying to remove the debris.

Even I should think twice about mounting *Auliscus oamaruenses* showing girdle edge. It is quite easy to do, but the great depth of Styrax makes a very unsatisfactory mount in my opinion.

Thank goodness you have found a specimen of *Monopsia concentrica*. So far as I know it is the second specimen ever found. I've often felt a bit guilty about naming my original find; as I could never find a duplicate I thought it likely mine was an abnormal specimen. Thanks very much for telling me. It is a great relief to know. Names on your slides O.K. and have put pencil notes on back of your photos.

Re. A. ovales. Grev. gave it this name in 1865, so really you should ignore *ellipticus* Sch(midt's) At(las) 149/4 which is obviously the same Oamaru diatom. Of course Grev(ille)'s diatom was not from Oamaru & perhaps if you saw Grev(ille)'s actual specimen you might hesitate as to whether it was *A. Grevillei* Sch(midt's) At(las) 30/15, but knowing both diatoms I don't think so. Sch(midt's) At(las). 30/16-17 give very weak views of *A. ovales.* Grev(ille)'s fig. is much better. Anyway I should not say you were wrong if you write "*ovales*" or "*ellipticus*". I should write "*ovales*".

In Cal(ifornia) stuff, Palos Verdes in particular, you can find a whole series of valves of *A. Hardmanianus* all slightly different but probably all same species. Several times I've mounted slides containing up to, say, 50 varieties from Cal(ifornia) material. when on same slide side by side it is hard to pick out one as quite different from any of the others. Same remark applies to the different Oamaru forms of same species. Some Oamaru & Cal(ifornia) forms are very like each other.

Hope I've satisfied you. If not ask further questions. Diatom nomenclature & identification is not an exact Science like Mathematics.

Kind wishes, Yours sincerely,

Hucakin

Sheffield.7. Feb. 11th 1949

Dear Mr. Odam,

It is always nice to get your letter. Re your find of *Monopsia concentrica*. Yesterday a correspondent sent me a find he had made in some Singiliewsky diatoms I sent to him. It was broken rather badly but good enough to mount. The ocellus was almost touching the rim, was very small, and had one ring of definite tiny dots, circular dots elongated: not one as is more usual.



It may be an abnormal specimen, but if he can find another for confirmation then I tell him he has a new species. I was very relieved when you found your *Monopsia concentrica*. I always feel a bit anxious describing a first and only specimen.

The Watson mount you send is a Russian Singiliewsky diatom. It comes with two and three ocelli. Barker & I hesitated to describe it because we thought it might be related to the *Rattrayellas* so common in Sing(iliewsky). Generally it has dots round the circumference nearly on rim. The W. specimen shows traces of these dots at 10 o'clock, 2 o'clock and I think at 5 o'clock. It is not your Oamaru diatom which I've found several times- neither have been named so far as I can trace. I agree with you it's near the Sing(iliewsky) form, but the rim dots on the Sing(iliewsky) one separate them, & also the Sing(iliewsky) form always has the ocelli touching or nearly touching the rim.

Oh, so you like abnormalities. I always, or nearly so, pass them by without notice. Your *Asteromphalus* freak is not common in my experience but Castracane PI.IX.fig.2 shows a somewhat similar form which he calls "*Asteromphalus*" *challengerenses* (?) n.sp. forms *monstrosa* nov.". Of course he should have ignored it. Some weeks back in searching some Mann's Philippine's stuff I found two of these abnormal forms but did not trouble to mount them. Your specimen will be a single valve alright. Just an abnormality, that's all. Sometimes *Aulacodiscus* has valves with two centres:-



Yesterday one of my pupils sent me a Sing(iliewsky) Aulac(odiscus) tuberculatus with 8 processes.



It was on a slide of 12 different *Aulac(odiscus)* two of which were abnormal specimens. In my opinion they spoiled a good *Aulac(odiscus)* slide. I think if anyone is interested in these abnormal forms they should be kept on separate slides. Mount them by all means if they

interest you, but don't spoil a good slide with them, is my opinion. I've seen so many abnormalities in my many years of searching.

Oh, yes. I'm sure you won't stick entirely to *Auliscus* when searching. You will be sure to find other perfect, fine specimens and it's a pity not to mount them. Still you can more or less concentrate on *Auliscus*; Oamaru, & the Cal(ifornia) localities, particularly Palos Verdes are good hunting grounds for *Auliscus*. There are several forms in both localities which I can't find figured & named.

Kind regards, Yours sincerely,

Alucakin

54 Pingle Road, Sheffield, 7. Feb. 17th 1949

Dear Mr. Odam,

Many thanks for sending me the *M. concentrica* for me to see. Decidedly that species. I'm sorry to say the slide was broken in post, not necessarily due to your rubber packing, because sometimes there is initial strain in the glass slip & a jolt in post breaks it – although I'm not inclined to favour quite such rigid packing as the rubber gives.

Anyway, in future please use the enclosed box. From years of use I have found this type safer than anything else I've tried. But one can't insure against initial stress in the glass slip.

Abnormalities. I doubt if they have much connection with evolution. I often wonder if evolution applies to diatoms. Some species have done no evolving in 30 million years, as the shells of living specimens can't be distinguished from those 30 million years old. Some accident during growth is more likely to be the cause of the freakish form.

I agree with the names on your labels except the Szakal diatom, which is, in my opinion, Pant(ocsek)'s Hanckii. You find it in several of the Hungarian deposits, Bory in particular, where it is sometimes very large & fine. It varies somewhat and I don't think your specimen is quite typical, but I don't doubt it being Pant(ocsek)'s Hanckii.

Glad you can get smaller covers as they are so much easier to use for diatom work.

As regards a mechanical finger, I make them to fit each individual microscope. You will realise from the "Mic." articles that a mechanical stage is very necessary also. When Watson's got orders for fingers I was asked to make them. The price is £7. I would require two or three dimensions of your Mic(roscope) for which I would send a sketch for you to fill in the measurements. If you have not got a mechanical stage I don't advise a mech. finger. But I expect your mechanically minded friend would be able to fix you up with a finger, working to the sketch in "The Microscope". Quite a number of people have made their own fingers from that drawing. One man once sent me a drawing of one he had made for himself, from wood, & using a piece of flat clock spring for his return spring. He said it worked quite well, & Judging from his slides I think it did. Very few people use hand methods for diatoms.

It was nice to get your packet & know you are still finding these "little bits of dirt" (that is what my family call diatoms) of interest.

Keep the box against the time you next want to send slides. It is easier to pack than two separate boxes, & I think safer.

Kind regards,

Yours sincerely,

Alucakin

My idea in giving the drawing was to enable folks to make their own fingers if mechanically minded. In using my boxes I always use corrugated paper longer than the box & fix stamps at end of package where there is nothing but paper for the post office stamp to hammer.



54 Pingle Road, Sheffield, 7. Feb. 21st 1949

Dear Mr. Odam,

Thanks for your letter. Yes, I knew you would come up against the *coelatus*-type trouble sooner or later. There are two kinds of diatomists - "lumpers" & "splitters".

At first one is very puzzled, then if he gets the Rattray monographs he follows Rattray & becomes a "splitter". Then, with more experience, he begins to realise Rattray was an excessive "splitter", & he becomes inclined to think it would make things easier if he became a "lumper". Further searching convinces him that all species of diatoms are very variable & he comes to the conclusion that the "lumpers" have a much easier time than the "splitters". I'm a "lumper".

Of the Auliscus you mention A. coelatus, Rhipis, go under the coelatus label.

"*Intercedens*", in my experience, is always found with *coelatus*. It has been given several names. I wonder if it has something to do with the reproduction of *coelatus*. I've never found it except in association with well-defined & numerous *coelatus*. Of course *coelatus* & *sculptus* are definitely the same species.

A. Gigas. Sch(midt's) At(las) 117/4,5,6,7 - Rattray's "*splendidus*" & some even more robust similar forms sometimes found in Cal(ifornia) & other localities, generally where definite *coelatus* is either non-existent or very scarce. I lump under *Gigas*.

It thus simplifies matters & it's probably more correct than results arrived at by the "splitters". Re. the Mech(anical) finger. Please don't send cheque until you have received the finger. The Service Mech. stage is quite satisfactory for use with finger.

I have made several fingers for the Service Mic(roscope) but have never kept the dimensions, so must ask you to fill in those asked for on enclosed sketch. Those for the limb of Mic(roscope) $1^{1}/_{8}$ " above top surface of stage are the most important ones. I also want particulars of the knob for fine adjustment, so that I can give you plenty of room for operating same & also knob of finger. Will let you have finger as soon as I can. My workshop is wooden shed in garden, so if cold weather comes it puts a stop to my working in the cold shed. Kind regards,

Yours very sincerely,

heatin

54 Pringle Road, Sheffield, 7. Feb. 23rd 1949

Dear Mr. Odam,

I'm sorry to trouble you again about Mech(anical) finger.

Your first letter said your Mech(anical) stage was Watson's "Service" model, top of page 48 in their list 36th edition. Now your letter this morning says "Mech(anical) stage comes back to limb and beyond on the R(ight) side."

I can understand it coming "back to limb" but it's the "and beyond" which puzzles me, because I don't see how the "Service" model can come beyond the limb. Perhaps your M(echanical) stage is their "Alpha" model, at bottom of same page.

If it is either of these models with the two operating knobs standing out HORIZONTALLY from the Mech(anical) stage, it's quite O.K. either "Service" or "Alpha" models are like this.

But if your Mech(anical) stage is "Murray's" or "Students" model with the operating knobs standing up vertically from the Mech(anical) stage, then you will need a Mech(anical) finger fixed on the left hand side of your mic. or I am afraid you will not have enough room beneath the finger to operate the knobs of your Mech(anical) stage. From your photo I could not see detail of mech(anical) stage properly, but I feel sure knobs were not standing up vertically. Please confirm they are horizontal. If vertical please confirm you accept finger on left hand side of limb.

Yours Sincerely,

Hucakin

Enclosed photos (please return) show the M(echanical) finger fitted. to a Watson's Service H.P. (High Power) binoc(ular). model with a Service Mech(anical) stage. Notice the knobs for stage are quite out of way of finger.



54 Pingle Road, Sheffield, 7 Mar. 4th 1949

Dear Mr. Odam,

Many thanks for your two letters, cheque for finger, etc.

If you follow my hints I don't think you will have any trouble in fitting the finger, but if things are not just right, don't return the finger, just write to tell me your trouble. I don't expect any trouble.

As regards your friend making turntable – plenty of weight in the disc & a good fitting spindle of a good length with balls on top as my drawing. If it is O.K. it should spin for several minutes with one good push and run absolutely true. You can't make good rings with a light disc such as the opticians sell.

Re: your slides. Your lists of names for both slides are O.K. As regards the way you place your slide on mic(roscope) stage. When I left school I went to work for a bookbinder, & they taught me that book plates should always be put in the book thus:-



so I naturally place my slides on Mic(roscope) stage thus, and it seems to be the general practice of most microscopists to do this.

Some get over the trouble as you know, by placing labels thus:-



I think Moller & Thum always placed them thus, & generally D.P. Fuge did. Hope you don't mind my mentioning this.

Re. the Palos Verdes *Auliscus* slide I always call No. 2 *A. gigas* & 2nd line Nos. 1 & 5 are frustules, two valves joined together.

Your Beira Actinoptychus is a frustule, two halves joined together, of A. trilingulatum. The 3 valves beneath T. *junctum* were called A. Capronii by John A. Long, where he got the name I can't find out. Mill's index does not give this name, nor yet does Tempére's "Diat(omees) du Monde Entier". I've never found anyone who knew the name of this fairly common Madagascar diatom.

The brush I use for ringing is a No.1 sable with some of the outer hairs cut off with a razor. It is very thin and when I take up the cement it looks like this:

full size

I only dip brush in cement to where arrow points, & it brings up a round blob of cement about the size of a good thick pin's head. You can't make good rings with a thick brush. For making the ink rings I use the thinnest procurable best sable brush No. 00, and take the ink off a slip of glass fixed in ink bottle cork, & I draw brush to a fine point on edge of glass thus:



Of course I've rubbed the glass on a fine stone with water, so as to grind off sharp corners of glass, so it does not damage brush hairs. Are these really the best slips one can buy now-a-days? Other correspondents are sending me similar slips for help with names. I dread the time when I shall need more slips. Have you tried Flatters & Garnett, M'ter (Manchester). Deepees i.e. Swatman & Co. Are these Watson's slips? I think I shall write direct to Chance Bros., Birmingham, when I want more slips. I used to get mine from Watson's until they gave up their slide dept. Contra a/c. but the last 5 gross lot were poor, even Watson's said so, but they said they were the best they could obtain.

Don't hesitate about sending slides for names & don't be afraid to ask the simplest questions about use of finger or anything else. I'm always delighted to help if I can. DO NOT TRY TO MOVE diatom with bristle finger. Merely raise & lower bristle with KNOB. You place the diatom in position entirely with Mech(anical) stage, diatom being held against FIXED point of bristle.

Kind regards,

Yours sincerely,

Hucakin

P.S.

My correspondent, finding that peculiar *Monopsia* in some Singiliewsky cleaned diatoms I sold him - same material as I sent a spot to you -, set me searching that material. It was the cleaning of my last lump of earth done about 1943 - 1944. At the time I glanced at 2 or 3 spreads, but as it seemed normal stuff I bottled it up, & when asked for any Sing(iliewsky) I sold some of it, and it is nearly all gone now. However, I've searched about 50 spreads of it and found plenty of *Monopsia concentrica* & all the other Ba(rker) & Me(akin) *Monopsias* except *mammosa* which I can't be quite sure about. I also found 4 specimens of the new sp. which confirms my

correspondent's find. Also another (several specimens) with a broad hyaline ring round the ocellus. I also got plenty of *Huttonias*, one *Anthodiscus* (?) *elegans*, Ba(rker) & Me(akin) which confirms this diatom. I also got two *Pyrgodiscus ornatus*, an extremely rare thing, in Russian stuff.

54 Pingle Rd. Sheffield 7 Date: Before March 4th/49 and after Feb.23rd/49.

Dear Mr. Odam,

I trust you will find the enclosed. Mechanical Finger fits your Mic(roscope). In fixing Finger, first screw the frame B on to limb of mic(roscope) parallel to surface of stage, 1 inch above as shown is ideal.





Y & Z are variations of W & X (not copied)

but clearance of your highest point A of Mech(anical) Stage will control the fixing. Allow, about $1/_{16}$ th extra for screwing down of finger when you take out bit of cardboard. When satisfied everything will clear, screw up the frame to limb permanently. Unless you wish to remove finger from Mic(roscope) you never need to touch these screws again.

W.X.Y.Z. show alternative positions of bristle holder, W is ideal, as you get bristle lying at a suitable angle to slide.

Now put on stage a glass slip, about 1mm thick. Cardboard still in finger as dispatched. Put on bristle holder in position W. if possible, and partly screw up nuts C & D so that parts move stiffly but will turn where you want them. Turn them so that point of bristle is just touching surface of glass slip at centre of field using your ⁷/₃" or 1" objective, the one you will use for mounting. Be careful not to damage bristle point when making the adjustments.

When satisfied bristle point is in centre & just touching glass slip, screw up C & D permanently holding bristle holder so it does not move when screwing up. Now take out bit of cardboard & you are finished. Never screw the finger down tight when operating Knob E or you may damage ball races, & make finger move roughly. Reasonably slight pressure will do no harm.

The distance of frame B above surface of stage can be increased above the 1" if your mech(anical) stage makes it necessary. Everything is packed with grease & will not require any attention for years. If bristle wire gets too stiff for your liking after use, a touch of vaseline will make it easy. Too easy is a nuisance. Unless point of bristle shakes under Mic(roscope) do not touch screw E. It is there to adjust for wear. It should be many years before you need to touch it. Of course, if screwed up too tight it will grip the guide pin & spring will be unable to lift the finger. Preserving the point of your bristle will be your chief trouble as the slightest touch "end on" spoils the point. To clean the point of bristle DON'T withdraw he wire; instead, put a clean glass slip on the stage



after breathing on slip. Then lower bristle into moisture & revolve it. This will clean point, leaving dirt on slip if you withdraw bristle slightly at

same time as you revolve it. Of course you watch this operation under the Mic(roscope) screwing bristle down on glass will do it no harm. It will only bend it. You can revolve bristle when it's bent without , harm to bristle. To sharpen point of bristle or to repair a moderately damaged point, put a 3" x 1" finely ground glass slip on stage, dry or wet - I prefer wet. Screw down bristle until it's just touching ground glass then rack glass to & fro with cross motion (or course you turn bristle or you would grind it flat on one side only.) of mech(anical) stage. If you screw bristle down until it is bent, you will grind it this shape which of course you do not want. You will need to sharpen bristle point when you receive it, because I can't get the point as sharp as I like it except by using ground glass on your Mic(roscope). Only be afraid of "end on" damage to point. Side pressure in reason never does any damage.

Spun glass, nylon, natural bristle, all can be used instead of celluloid. It takes a long time to make a good pointed bristle, but with care it lasts for years.



To fix new bristle, withdraw wire, heat it on spirit lamp so as to melt sealing wax, & fix new bristle so that point is central when wire is revolved. I have rewritten this letter to try to make things as clear as possible, so that separate sheet 7 & 8 herewith was an afterthought to first letter. As it gives useful information I send it.

Kind regards, Yours sincerely,

eather

Ask questions if you run up against anything, but consult my "The Microscope" articles first. About everything is there I think. But I'm here to help.

I enclose spare bristle made as sharp as I can before it's fixed in wire holder.

I sharpen bristle by drawing it endwise on finest procurable emery paper, thus:-



Revolve wire at same time as you draw it on the paper, so as to get fine round point. To finish point lay ground glass on stage.

32

It is better to get point of bristle to revolve true when you turn wire to inspect a diatom on all sides. To get it as true as possible you can bend bristle with end of finger while you inspect it under the Mic(roscope). Celluloid is very springy & it will spring back to nearly same position. Holding it bent for a little while helps.

Bent bosnol-Brette

Trial and error is only method.

I sometimes use a piece of Joiner's finest oil stone - used clean and dry - to give a finish to bristle point, but if you use finest emery paper & finish point under Mic(roscope) as above you won't need the oil stone. You have to learn to preserve and make your own point to bristle. It always takes time and patience, but if you don't have accident, a good point lasts for years. I expect I've been using my present bristle for 5 years or more. Except for accident it will last forever.

> 54 Pingle Rd, Sheffield. 7. March 7th 1949.

Many thanks for your letter. Pleased to hear finger went on Mic(roscope) O.K. I've sold a good many in U.S.A., South Africa, N.Z., and up and down this country; and every one has fitted all right. I've never had one returned for any reason.

If both your mics are working well, I should plump for the built-in stage every time. But many Fingers are working on attachable stages. Of course you need a little practice to find out all the dodges. Too thick a film of fixative is always the trouble in the early stage of mounting - hand work or with finger. I always use the thinnest film possible. Always keep your bristle point as free from fixative as possible – clean it often. I never place the diatom flat down on the fixative, I always tilt it thus:

so that one edge touches the fixative first.

I can then tell just when diatom touches fixative and can then lower it carefully. If you lower it flat thus:



You are bound to break many diatoms.

To keep bristle point free from too much fixative, put a clean slip on stage, lower bristle point on to slip and revolve it, gently withdrawing it at the same time as you revolve it. Only lower bristle so that point only is only slightly bent then as you withdraw bristle in direction of arrow at



same time as you revolve it you leave surplus fixative on slip. If not satisfied repeat the process. Slip lies dormant on stage, but if you like you can clean bristle by moving stage, but its not so easy or quick.

Static electricity, especially on a cold frosty day, is always troublesome, not particularly so when using fixative but often very much so if 'picking out' & transferring to storage slide. A temporary cure for this is warming the slide, but the electricity is soon back again. Holding one end of the slide on tip of

your tongue also cures it temporarily. If diatom will not leave bristle, you can often get it to do so by lowering edge of diatom on to slip and then revolving bristle. It's difficult to describe but easy to demonstrate. If you look at those diagrams in the articles in the 'Mic(roscope)', they may help. But as I say there, - if a man is keen, he soon tries all kinds of dodges for himself.

It is nice to hear that you are pleased with finger. You will soon learn to overcome little troubles, and difficult hand-mounting becomes a thing of the past.

Always suspect every diatom when its on point of bristle raised up as far as it will go, by revolving it so as to see if its free from dirt, and which is the correct way to place it in the fixative.

Kind regards,

Yours sincerely.

heakin

P.S. Except in difficult cases, I dent expect you to send me any more slides with diatoms wrong way up. If you lay them down with their backs in the fixative they are nearly sure to be gummed up. You should find these girdle views of diatoms very interesting, I do!

54 Pingle Road, Sheffield, 7. Mar. 21st 1949

Dear Mr. Odam,

Thanks for your letter etc. I try to keep my letters to you as short as possible, but to be of use to you I feel I must explain things.

Unless your turntable runs freely & at a constant speed for several minutes you can't hope to make good rings, either ink or cement - opticians never make them heavy enough to keep up their speed long enough. Glad finger is proving useful, & especially to hear you have sharpened bristle point. Ink rings.

If diatoms are on slip, ring must go on cover glass. I seldom use separators, practically never. If diatoms are thick ones I use plenty of Styrax, then using a ¹/₄" obj. I focus highest point on diatom, then travel stage & focus ink ring. N.S.E. & West.



Usually one side of cover is higher than the opposite side, thus N &W high and S & E low. So with cotton wool soaked in Benzol I wipe off all the surplus Styrax at N W sides well round to E & S thus & reheat slide. Surplus Styrax oozes out again on N & W sides & lowers cover at these sides. Of course I've been doing this for many years now so I can Judge how far round edge of cover to wipe off the Styrax; If cover is very high

on one side I go well round the cover: if not very high as compared with low side then not so far round. Usually cover is quite level at first attempt, but if not, I repeat. If cover is level but too high then surplus Styrax is wiped off all round cover & it settles down equally on reheating. Every slide I make is treated like this. I like to get my covers down level & just barely touching the diatom.

To centre diatoms to ink ring - When hot, if you slightly tilt the slide, cover floats on Styrax just where you want it. I use a hand magnifier in good light but with dark carpet, trousers leg or something dark as a background to show up the diatom. Get ring as near as you can then cool quickly on level surface of metal turntable or something. If ring is not quite where you want it, slightly heat the slide & hold it vertically up to light. Cover with ink ring gravitates just where you want it very slowly if you don't heat too much. When Just right, bring horizontal & cool quickly. If not just O.K., repeat. Sorry I don't know how to tell you all this in a couple of lines.

My Mic(roscope) is home made specially for diatom work. The foot of my Mic(roscope) is 2" wide x $1\frac{1}{2}"$ x 1" thick - level surface specially for cooling slide quickly.

To get diatom in centre of slip I use m/m scales I engraved on my mech. stage 20/15 being the readings for centre of 3"x 1" slip. If you make a test you can find out your readings on stage for centre of slip. If

you use separators you can't get cover down until it nearly touches diatom and as soon as separators touch the slip (ink ring & separators



are on cover) then you can't float cover to centre ink ring to diatom, hence I have no use for separators except in odd exceptional circumstances.

Yes, please send me ALL your anchor muds so that one cleaning of each completes the lot. I will see you get a share of the cleaned material. Gardening time here now so I can't do the cleaning at once. It saves time to clean the lot at one go. Don't worry about how many Diatoms they contain. One can't tell with examination of crude materials.

Auliscus fenestratus. It is very variable It all depends if you are a "splitter" or a "lumper"; I'm a "lumper" & so all the different fenestratus forms are same species.

Fuge was a close customer. He did not give his secrets away even to me. I'm not like that, anyone is quite welcome to every bit of information I can give them. No use dying & taking it with me, if I can help anyone I'm pleased to do it – Boy Scout idea.

To wash a diatom. Breath on a slip, diatom on bristle ready to lower into moisture, then rack slip about with bristle point just touching diatom. If diatom manages to slip under bristle it often removes the dirt. Patience is needed, if moisture evaporates too soon I put a part of a drop of distilled water on slip, not too much or you will have difficulty in preventing diatom floating away.

Storage slides. In some odd eases I keep spreads with diatoms listed up for future use - but what I call storage slides are clean slips on which I place good specimens picked out from many spreads. For instance lately I've been after *Monopsia* in Singiliewsky. I had not much of the same material I sent to you left - so, first, I put all of it over 200 mesh (Swatman's wire mesh sieves) to take out all the large forms, then what went through 200 I put on 300, what went through 300 I put on 400 mesh. All *Monopsias* go through 200, a few prime forms stay on 300, most of the others stay on 400. Generally speaking, what goes through 400 is chiefly fine debris which one does not want, glad to be rid of in fact. This saves me searching a lot of material which is in the way. I have searched about 100 slips of the 300 & 400 stuff and picked out & put on a storage slip all the forms I found, both *Monopsias* & other interesting forms. I label this slip "Sing(iliewsky)"& date it and keep it in my slide cabinet. Obviously I can't keep 100 slips of Sing(iliewsky) so having picked out all wanted diatoms I throw the rest away, clean the 100 slips for re-use either for slides or other spreads.

My slip for storage slide is made very clean & dry. If static electricity is not troublesome, diatoms leave bristle easily. If not, lowering them on edge

inclined & gently revolving lowering. & withdrawing bristle generally deposits them on slip.

If (static) elec(tricity) is troublesome – cold frosty days – a touch of tongue in underside of storage slip or of the spread discharges the (static) elec(tricity) for that diatom, but it is back again for the next one.

Dirt in slides. Do you use a small tin lid, or similar thing to keep your slides covered all the time? I do. Also, you should inspect slide before burning off fixative and slide all bits of dirt away from diatom. I do. If your Styrax is not free from dirt, that may give you trouble.

[Editor's Note: Originally here follows several para's, where Mr. Odam's slides sent to Meakin for inspection etc., are criticised, and the sp. of the diatoms discussed. – This section is missing from the original]

If you use the metal discs, place them at the edge of cover as far away from diatoms as possible. Your slides show improvement each time you send.

Best Wishes,

Yours Sincerely,

SAlucakin

54 Pingle Rd, Sheffield.7. Mar.25th 1949.

Dear Mr. Odam,

Many thanks for the tubes of mud, and your letter. I've a large garden, 800 sq.yds., and for the next couple of months I have about as much as I can manage. After working on garden, I want an armchair and diatoms have to wait. However I will clean the material as soon as I can, and send you a share of the cleaned results, which is the usual custom amongst diatomists.

I'm sorry your son-in-law won't be able to gather more mud, but all these sea-going folks are mostly keen to get a shore job.

With a REAL T.T. (turntable), and a little practice, you should be able to get your rings O.K. Making good ink rings is the most difficult thing in making a diatom slide. So have patience, good rings will come with practice. Oh! - you are like all beginners in tending to be a 'splitter'! but with more 'searching' experience, your mind broadens. You see how variable diatoms are, even when you are certain they are same species. So you get less & less inclined to think slight differences are of importance.

As Aulac(odiscus) barbadensis is a Barbados diatom & Conset is a Barb(ados) material, well, there you are, the Conset forms must be A. barbadensis. Besides, except for having 5 instead of 4 pros. the 4 & 5 pro forms are alike.

Hanna's "*A. rellac*." is not valid, nor yet is Reinhold's ditto. He merely follows Hanna. And of course everybody admits *A. notatus*, Oamaru, is a *Barbadensis*. I've often mounted these *Aulac(odiscus)* from various localities side by side for comparison. I consider them all same species. But if it gives you pleasure to split them up into different species & varieties there is no reason why you should not do so. It is all a matter of opinion and yours is as good as anybody's. Please yourself is what I recommend; later on you may change your opinion, then you scrape off your old label & put on a new one. That is all the damage & it's so easily cured.

When I found the first *Monopsias* in Sing(iliewsky) I was inclined to think they were all varieties of *M. mammosa*. Barker thought they were different species. Then I found a solitary *M. concentrica* & I began to be doubtful. Of course as usual I sent it to Barker & he was delighted & set in to give them all different names. I felt very uneasy about the whole business, but B. was so keen I let him have his fling. When you found the second *concentrica*, I heaved a sigh of relief, & decided to set in & search a lot of Sing(iliewsky). After going over about 100 spreads, this is my conclusion:-

M. subtilis is a species. It always has a definite narrow ring at border which is dark in dry state.

M. concentrica - definite species

M. cincta - merely M. mammosa.

Of course there never was any doubt about *M. corrugata* after I found my second specimen. The first specimen I found was a beauty & very large, but I was cautious and kept an open mind. I have found, I think, 3 more n(ov). sp. (new species) one similar markings to *concentrica* but ocellus eccentric - still have doubts. Another, ocellus eccentric, broad hyaline band round ocellus, markings similar to *concentrica* - rather sure about this. Another, which I call *M. eccentrica*, ocellus very small & placed right on rim, markings definite rows made up of tiny dots - no doubt about this one.

As I've found 5 or 6 of all these 3 species which are constant in form and markings, I'm inclined to believe they are new sp(ecies). Still, I can understand you wondering about the *M. subtilis*. Until I found a number of specimens, mounted them, & sent them for Morley Jones to see; he also had doubts, but seeing so many duplicates has convinced him. He agrees *M. cincta* is *M. mammosa*, after seeing a comparison slide I sent him, with an Oamaru "mammosa" & "cincta".

I don't take diatoms very seriously - my folks here call them "specks of dirt" & they are not far wrong, even if they are often very pretty specks of dirt. Diatom nomenclature is in a mess, & not to be taken too seriously. I

look on diatoms purely as a nice hobby, especially during long winter days. I've always insisted on the hobby paying its way. In the early days, 30 years back, it had to, because I was on the rocks.

It is nice to correspond about diatoms, and since seeing my first diatom I've never lost interest. I've taught many folks to mount them with my methods, & quite a lot of them can make slides as good as mine. That is enough gossip for one letter, so with kind regards,

Yours very sincerely,

Alucakin

Friday morning. I wrote the letter to you last night sitting in the arm-chair after a day spent making parts of a mech(anical) finger for a beginner to fit on a Watson's Royal Mic(roscope). In reading over the letter it occurred to me that as well as reading about *Monopsias* you might like to see them. So I am taking the liberty of sending 6 of them for you to glance at. They are not all I found, but represent many hours searching. Replying to your previous query about washing dirt off specimens before mounting. I should have told you that passing the diatoms over 400 mesh screen if very small, & over 300 mesh if larger diatoms, gets rid of most of these unwanted bits of debris. You will be very surprised at the great improvement the screens effect. The caustic soda necessary to clean most diatoms loosens the debris, but not all of it falls off. What remains, gradually, with shaking of tube before making a spread, does leave the diatom & this debris becomes a nuisance. Two or three minutes spent in passing contents of tube over a screen in small quantities at a time saves hours of work washing off bits of debris.

By the way, Swatman before the War always used Formaldehyde as a preservative for his diatoms. It's vile stuff & needs several changes of distilled water & even then traces remain. This takes up moisture from the air & diatoms are often difficult to lift off spread. I always use 5 to 6% carbolic acid solution, which gives no trouble. Even then it pays to give one change in distilled water if much searching is contemplated. Slide with Oamaru *M. mammosa* at top.

No.4 top row, No.4 second row, so.3 bott. row are all cincta - mammosa

No. 4,5,6 bott. row n.sp. M. eccentrica

No. 1-3 second row, No.2 bott. row - *subtilis*. Note the dark rim & lack of the flat wide margin which *mammosa* has.

Slide with broken Cos(cinodiscus)? with central star at top

No.3 In this slide is the new sp(ecies) with hyaline ring round ocellus. No.4 is *cincta* turned into *mammosa*. Here again note the dark ring of *subtilis*. Can you think No.4 is same sp. as 5 - 6 ?

Single row in Sirax. Label written before I finally decided to wipe out *cincta* & substitute "*mammosa*". Mounted in Sirax to see markings better. No.1 *subtilis* - can you confuse this with No.4? Of course No.5 is the n.sp. (new species)? with the hyaline ring.

What NOT to do when mounting diatoms - This was to be my best slide from all my trouble searching. As often happens everything that could happen, did. The Sirax exploded & blew the first cover glass about 18" away from Mic(roscope) & I suppose took my one & only perfect specimen of *M. eccentricus* with it. I never saw a trace of it again. You can just see a trace of its girdle edge still in the fixative, to the right of the small broken specimen. To find the diatoms first focus on bottom of ink ring, then travel stage a good way to the left hand as seen under Mic(roscope). - Really so that centre of slip is in view because small diatom "stayed put". To find other specimen refocus ink ring & go to 2 o'clock - diatom is near ring. I tried to move cover so that diatom was in ring, but diatom moved with cover, so I had to be satisfied. When I made this slide I had only found these three specimens. Anyway, the 2 o'clock diatom does show up the markings.

Anthemodiscus - Second specimen found - it confirms Ba(rker) & Me(akin) genus & species.

The other is very interesting as it shows *Truania archangelskianus* in skeleton & goes to prove that *Truania* is not a valid genus. Brun suspects this, but thought it was *Cyclotella* or perhaps *Melosira*. Specimens I've recently found convince me - *Melosira*.

Just a few mixed species found in my search for the *Monopsias*. No. 3 probably the Sing(iliewsky) form of *Pyrgodiscus simplex*. No. 7 the Sing(iliewsky) form of *Pyrgodiscus armatus* in girdle view. No. 8 a peculiar *Cos(cinodiscus)*.? with two spines & hyaline centre - two broken specimens found which confirm it's a species. No hurry about returning slides. Tell me candidly if you don't care for me to send such things. I rather get the idea, I don't know why, that you were not particularly interested. These slides represent days & days of careful searching & are more or less unique.

Yours sincerely,

Alucakin

Enclosed gummed paper to secure lid of box before returning, please.

Sheffield, 7. Apl. 1st 1949

Dear Mr. Odam,

The weather here since last Sunday has been damp, cold & foggy, as bad as the worst November weather, so gardening has been off. I therefore decided to get your anchor muds cleaned.

Results:-Mauritius - no diatoms

Las Palmas- ditto

The Lubvitz Bay mud did have odd *Cos(cinodiscus)* & *Tric(eratium)* forms but only one or two on a spread & not worth trying to recover them, as the Beira has plenty same species. Of course the Beira was as before & I am sending you about half the diatoms I obtained from it.

Kind regards, Yours sincerely,

heakin

You generally get my initials H.S. instead of S.H.

54 Pingle Road, Sheffield, 7. Apl. 5th 1949

Dear Mr. Odam,

Many thanks for your letter. Don't worry about there being no diatoms in the mud. we are used to these blanks. I once cleaned 24 samples all sent to me in one packet, & I did not get one diatom from the whole 24. Still, like a gambler, I think the horse is sure to win this time, so I go on cleaning.

I thought when you decided on *Auliscus* that you would not run up against very many problems, & I still think it is about as easy a genus as any. But whatever you take up there is sure to be some mix up. Diatoms are so very variable.

What is bothering me is that I sent you a box containing six slides showing the results of weeks of searching Singiliewsky for *Monopsias* & also a long letter in the packet explaining them. As there is no mention in your letter re. these *Monopsia* slides I suppose you never received them & I can look on them as lost. If so it will be the biggest loss I have ever suffered in post in over 50 years. Well, it cannot be helped. You should have received them about Mar. 26th or 28th I think. I wondered why you had not written. Best wishes,

Yours very sincerely,

Hucakin

54 Pingle Road, Sheffield, 7. Apl. 9th 1949

Dear Mr. Odam,

I thank you for your two letters & the P.O. postcard. When I got your first letter I wrote, enclosing it, & asking for its return to me, to the Sheffield Postmaster. I have not had any reply from him.

Please don't bother any more about the packet of slides. It is none of your fault. I sent you the slides at my own risk & on my own initiative. I did not think of total loss, but I have had so many slides broken in post over the years that I always have a "? Will they get broken" feeling when I post any slides. I kind of resign myself to their loss, in a broken slide sense when I drop them in the pillar box. I don't remember ever losing the packet before, it has always arrived even if every slide inside was broken. I am told any packet which looks like containing cigarettes is liable to get stolen these days. Actually when I made up the packet I balanced it in my hand and thought to myself "no one but a fool would think this contained cigarettes."

Really the loss of your remarks on the slides is a greater disappointment than the loss of the slides themselves. After I had shown them to you (Morley Jones has already seen them) I should have put them in my cabinet and thought little more about them, & like all my previous cabinet slides would have been sold. I'm not a collector & have emptied my cabinet to a U.S.A. purchaser and at present I have only about 4 or 5 dozen slides, all made since I emptied my cabinet. Really, you are more troubled about the loss than I am.

Why! although I made specially strong boxes, each holding 4 dozen slides for my cabinet slides last Spring, & arranged to number the boxes & post them at different dates, No.2 box arrived in U.S.A. smashed to fragments - box & slides. Our present loss is a more flea-bite to that. Many of the slides were type slides & special comparison slides, absolutely unique, some priced at over 20/- (20 shillings or 1 pound). Even when the Post Office behaves itself, the slides themselves don't always do so. A strong box will arrive showing no signs of ill-treatment, but with one or perhaps two slides broken to fragments. I think it's initial strain in the glass, just waiting for a knock to send it to fragments. Sometimes many slips in a batch will crack when heated. Of late years, after I adopted the idea of leaving an empty space packed with paper at the end of the packet, & being careful to put the postage stamp on this empty space, my slide losses have been almost nil.

So you see the loss of a few slides is no surprise packet to me. The entire loss of the whole packet is a new thing.

Please excuse this long letter it is written to try to make your mind easy. It is quite true when I say I have almost forgotten the loss of the slides. I've lost too many to let 6 slides bother me. I don't expect to recover them. I'm quite sure the thief ? if any, got a surprise packet which he could not smoke. What does surprise me is that he did not wrap up the packet & deliver it. Much safer than causing an enquiry about the loss. Forget about it. I only hope I have succeeded by this letter in making your mind easy. Mine is. Kindest wishes,

Yours very sincerely,

Alucakin

54 Pingle Road, Sheffield, 7. Ap. 12th 1949

Dear Mr. Odam,

Many thanks for your letter & the enclosed notes, etc. You won't make a good diatomist if you let the loss of a few slides (generally broken) in post, stop you. I've lost too many by breakage & expect to lose many more. It won't stop me.

In your previous letter your ref(erence) to Hamlet did puzzle me. I thought I had missed something in one of your letters so I re-read them, but could not find anything to couple with Hamlet, so I came to the conclusion to "lie doggo" & not show my ignorance. Glad your present letter explains.

Glad to hear you welcome a look at slides which I think are worth seeing. I don't know how I got the idea you did not want me to send them. There are two rather similar *Auliscus* figured on Plate 2. "Diatoms of Japan" fig 2 is *trilumaris*. Fig 15 is *trigeminis*, a quite different diatom in girdle view. *A. trilumaris* has a lace-like

girdle edge, a most unusual thing for *Auliscus*, whose girdle—edges are almost always hyaline. It is impossible to mistake *trilumaris*.

I made the enclosed slide last month especially to send to you as a lesson, so far as the *trilumaris* goes, 2, 3 & 4 ocelli, Just to show you number of ocelli don't count, but that the peculiar girdle is always there.

In the case of *trilumaris* the girdle edge is convincing, even if the valve has one or 4 ocelli.

I also put on the 3 n.sp (new species)? rather insignificant *Auliscus* from Sing(iliewsky) just because you are working at *Auliscus*. Then I got the feeling, I don t know why, that you did not want slides sent, so put it back in my drawer. Now I feel free to send it with my compliments for your collection of *Auliscus*. The 4 ocelli specimen is poor, ocelli too small, but best I could find Just then.

I'm very busy until after Easter, but later on I must look out a typical *A. gigas* & some ditto *coelatus*. I don't think it's a question of "lumper" or "splitter" in this case, nor yet with *trigenemius* and *trilumaris*, definitely different diatoms in both cases, and I'm a confirmed 'lumper'.

I should like you to tell me why *Aulac(odiscus) rellac* is different from *A. notatus* & *A. barbadensis*. My advice is to be a "splitter" if you feel that way, & later on, with perhaps more experience, change over to a "lumper". That is most likely what will happen if you stick at diatoms long enough.

I think No. 3 on enclosed slide is the *Auliscus* you refer to. I am not yet convinced that No.1 & No.2 with 2 & 3 ocelli respectively are different species. No.2 is fairly common, but the 3 ocelli are rather rare & the 3 specimens I've found rather variable. Still none has the same shaped ocelli as the 2 process form. Anyway, all three are rather insignificant and not very interesting.

Regarding the Oamaru form you sketch. I wonder if you have compared it with Rattray's XII. 5. A. pectinatus.

In a previous letter you say you would lump *A. intermedius* v. *simplis* XVI. 5. with *A. pectinatus* XII. 5. with this I agree, but XII. 8 *A. intermedius* is quite a different Oamaru diatom. I would not connect XVI. 5 & XII. 8 with each other at all! at all!

I know all these diatoms quite well of course as they are not at all scarce in some samples.

Mann's *A. Philippinarium* is quite a different diatom from *A. pectinalis* in girdle view. Probably you are working from figures & have not compared the actual diatoms. I suppose this is likely, as Mann's diatom is not easily come by.

I trust you never mount any diatom without thorough inspection in girdle view when on the bristle. I never mount any diatom without girdle view inspection, if for nothing else, then to know which way to put it on the fixative.

You don't say if I am to return your notes but I will do so if wanted. Kind regards,

Yours sincerely,

Alucakin

Wed. morning. Ap.15th.

Have Just read thro' my letter before putting it in packet. Please always bear in mind I do not take diatom names too seriously. Nomenclature is in too bad a state to take it seriously. Diatoms with me are merely a pleasant hobby. Another man's opinion about names of diatoms & their relationship to one another as expressed by variety names, is Just as good, maybe better, than mine. I like to form my own opinion to satisfy myself. I can't bear to have a lot of loose ends about me. I also like to be definite in my statements about diatom names. But please remember the statements are only MY opinions. If yours are different I consider you have just the same right to YOUR opinions.

I base many of my opinions on girdle views. In a valve view drawing two quite different diatoms may look very similar, But very often the girdle view gives you ample proof they are different species. You must always take girdle view into consideration before forming your opinion.

My letters about names are rather dogmatic. It is because I would rather have a wrong opinion than no opinion.

54 Pingle Rd, Sheffield.7. Apl. 20th 1949.

Dear Mr. Odam,

Slides and letter rec(eived) last night when I returned home. I have not even had an ack(nowledgment). of my letter re: lost slide packet from the Sheffield Postmaster.

As regards mounting troubles - you are going thro' the early stages exactly like every purchaser of the Mech(anical) Finger. It is easy to pick up and place the diatoms with it, so folks think that is all there is to making a diatom slide. They all try to mount type slides with a large number of diatoms on each slide. I always tell them to be content with about 3 diatoms until they have acquired skill in finishing the slide, but it makes no difference. They must have type slides, with 20 to 100 on them!

BUBBLES Never heat a Styrax slide if there are air bubbles under the diatom. Always keep dropping on Benzol or Chloroform until every diatom is clear, then quickly apply the Styrax before Benzol or Chloroform is evaporated, then inspect under Mic. & if any bubbles, repeat benzol treatment. Always let a slide stand 5 to 10 minutes after putting on Styrax to allow Benzol and Chloroform to mix with Styrax, then apply gentle heat. If you do as above you will never have air bubble troubles, "well, hardly ever".

No, I never thought you were fishing for slides, just the opposite. Unless you definitely order some special slide, I am not likely to let you pay for any slides I may send you. It is my pleasure to send them if I strike anything special which happens to arise from our letters.

Some of the very thin diatoms are diffiuclt to decide which is the right side up, but with few exceptions one gets to know them. Still, I do occasionally put one in the fixative wrong side down. Unless it's something very rare I always remove it. *Truania*, for instance, is difficult. Yes, the rare diatoms do turn up on one spread, & then several spreads without a specimen. It is part of the fun never knowing what the next turn of the Mech(anical) stage knob will reveal. I've found some of my best finds right on the edge of the slip, almost the last turn of the knob for that particular spread.

As you get more experience with the finger you won't have many bits & pieces to clean up. Of course you are bound to have a few specks of dust to remove, but you should not have any broken diatoms. If you do break a diatom always remove it at once, not after finishing mounting. I seldom break a diatom. But in the case of a new find I go very cautiously until I get to know the diatom. Some are extremely brittle & easily break. Yes, I've known several women diatomists. Miss Arnold of the Quek(ett) is a mild one, not very keen. Miss V.A. Latham, M.D.,D.D.S., 1644 Morse Av. Rogers Park, Chicago, U.S.A. is a keen diatomist. Getting old now, but she has corresponded on & off for many years. There was a Miss Benton of the Quekett. I've lost touch with her. Yes, you are quite correct, the specimen with the ocelli right on the edge, on the *Auliscus* slide recently sent, is a doubtful *Cerataulus*, certainly, in my opinion, not a *Biddulphia*. For the present, however, I prefer *Auliscus*. These borderline cases are difficult & everybody has a different opinion.

If you get trouble with soft Styrax you should, after heating the slide, let it go quite cold, then test the Styrax with point of needle. It should be horny before cover is put on. It requires a long time heating AFTER cover is put on to make Styrax horny. I never put on cover until I know Styrax is horny. If Styrax is properly prepared it should go horny in 3 or 4 minutes after putting slide on hot plate. Never put on cover until Styrax is horny when cold, then cover won't move with cleaning. Mine never do.

Yes, *Auliscus* does easily trap air bubbles Why don't you practice breaking girdle edge with some *Auliscus* you don't value? Lay diatom on the fixative girdle edge up, lower bristle thus and it will tilt the diatom thus and if you screw down the bristle a little further after the diatom has tilted, until it touches thick part of bristly, out will fly a bit of girdle edge. It is quite simple. Try it. When sending slides it's best to use a separate sheet for lists of names, then I can write remarks on your lists & return them. Same trouble to you, much easier for me. Yes, I notice you now make decent cement rings. If you want black rings, get some Black Spirit Dye from Boots. It is quite cheap and they always seem to have it in stock when I want any. I dissolve the shellac in Meth(ylated) Spririt, add plenty of Boots black dye, let it stand for a week or so, shaking twice daily, then filter

thro' muslin. I don't like D.P. Fuge's castor oil addition. Just plain shellac and Meth(ylated Spirit). And the black dye. Yes, I think it a good idea putting "Mic(roscope) Slides" on outside of packet.

RE: heating Styrax. I suppose an electric hot stage with a resistance would be about as good as my paraffin lamp chimney with a ring for heating the slides. One needs so many different temperatures for diatom slides especially air bubbles. I can get any temperature I desire, judging it by size of lamp flame. I do, of course, get air bubbles sometimes, then continued heating at a very low temperature, often removes them. If not I 'pump' the slide, in low lamp flame for a while then high flame for half a minute, then back to low flame for about 3 minutes. Repeat as often as necessary. Very few air bubbles will resist this treatment, but odd ones do. Then if half a day on a very low lamp flame does not succeed , nothing will, except remounting.

I don't think I could do very well with your type of hot plate, but I've never tried such. One can get used to anything if one is keen enough on the hobby. It has one advantage, no smell, but a lot of smell comes from the Styrax, so a mixed smell is little worse, I suppose. My son uses an electric hot plate with resistance, worked off home supply thro' a transformer, giving 6 and 12 volts, & he gets on O.K. with that. His wife objects to paraffin lamp smell. If one is keen on any hobby he can generally devise some means of getting over troubles.

I work in the corner of our dining room, window on left hand, fireplace on right hand. I have the entire corner, work on top of an old roll top desk, roll top removed & flat table part enlarged to fit walls of the corner recess: use all drawers of old desk & have built in cupboards & drawers in recess above desk for books, drawers of tubes of diatoms, & a wireless set with large baffle board for loud speaker which reaches within 6" of ceiling. It's all my corner, & I'm quite happy there. Overflow of my diatom books goes in a bookcase at my back in other corner of room, so I've everything handy without bothering my women folk. In the winter that is where I spend most of my time, but in summer garden is my hobby, & the Mic(roscope) stays in his box except on wet days. I've 800 sq. yards garden so it takes most of my time.

Another long letter, but I feel I must make things clear to you & I don't seem able to do so in a few lines. [Editor's Note: There followed a discussion on list of slides sent by Mr. Odam – This discussion list is missing from the folder].

Slides great improvement on any previously sent. Good luck. Yours very sincerely,

Alucakin

54 Pingle Road, Sheffield 7 Apl. 30th 1949

Dear Mr. Odam,

Your letter & slides came yesterday, but as I was busy in the garden I left them until I came in after teatime. I enclose a spread of *A. "coelatus"* - generally it is a smaller diatom than "*gigas*". But many folks ignore "*gigas*" & call them all "*coelatus*". In fact "*coelatus*" is the dumping ground for somewhat similar "*coelatus*" looking forms. For a typical *coelatus* I like to see the lines in the central part smudgy, not definite costate lines; but as regards the ocelli, well, they differ widely in different localities. I can't be more definite than this. Rattray's long list of *coelatus* varieties shows what a difficult diatom *coelatus* is. *A. Hardmanianus* makes a very interesting slide if you collect about 50 different specimens going all the way from *"intestinalis"* to the dark coloured and very large specimens in Oamaru. I've done this several times & come to the conclusion they are probably all *Hardmanianus*, they shade into each other, so that when you get them all side by side it becomes difficult to spot any form & say "that's typical".

No, I do not think all diatoms get the same amount of corrosion in the cleaning process. In fact I'm quite sure they don't. One specimen may be clear of debris when you start caustic soda treatment, & another may be covered with debris, so the latter is protected, whereas the former "gets it in the neck" & gets badly corroded. I'm inclined to lump all these *Hardmanianus* forms together, so with me Rattray's 14/4 & 16/1 are both *Hardmanianus*.

Glad to hear my tips re. heating Styrax helped.

Of course I would not mind you getting labels exactly like mine if you wish. I don't take any credit for my labels. I let the label makers make them as they thought best. D.P. Fuge said they are too "loud" but I do stick to the same dies, whereas he changed every time he had labels made - F.C. Clarkson & Co., Austral Works Westbourne, Bournemouth have the dies. You could ask them to use them if you wish. They will print in any colour. Years ago I used labels like this:-



I also enclose present labels if you want them as samples for label makers.

Auliscus is not plentiful in many localities. Palos Verdes, Constantinople & South Australia seem to be about the richest I know of. Re. No.7 on No.1 slide. Some diatomists think diatom shells being of silica can't increase in size. Others think they are born little & do increase in size. I'm one of the latter, so to me No.7 is merely a baby shell not yet properly formed. My two chief reasons for thinking the shells do increase in size are:-1. Most, if not all, things in nature are born small & grow larger.

2. Large "outsize" diatoms always look the worse for wear.

I have other reasons but I know it is only opinion. I've no proof. Cultivations do have shells gradually getting smaller by division but cultivation is not natural & may be misleading. Anyway I always ignore these small indefinite forms. I can get all the fun I want from mounting specimens as perfect as I can find. I leave these small half-formed specimens alone.

Visitors over weekend prevented me from making spread & getting this letter in post. I'm trying to get compensation for the lost packet. Don't expect to get anything but have claimed £6. £1 per slide. P.O. (Post Office) did not reply to my original letter so it got my back up. Don't see what one can do if they say NO. Best wishes,

Yours very sincerely,

Alucakin

54 Pingle Road, Sheffield, 7. May 23rd 1949

Dear Mr. Odam,

On receipt of your letter saying you didn't obtain any spirit black, I had a look for some which I felt sure I had, altho' it's years since I used any. I failed to find it, & although I searched several times I did not find it so I gave it up, thinking that perhaps after all I had not got any. However, this weekend, when I was not looking for it, I came across it. So I enclose herewith, with compliments, enough to make all the black cement you will require for many years. I always use an excess of the dye, & although it's rather messy, I filter the cement through something like an old handkerchief, because the shellac has debris in it which shows up sometimes on the rings. I have to squeeze the thick cement through the rag because it's too thick to filter in the ordinary way, & of course the meth. spirit soon evaporates & makes matters worse. Blame the garden for my not posting today. I went therein & forgot all about the dye until after post time. Since I last wrote I have not seen a diatom. Good wishes for fine weather for your holiday. Don't bother to ack(nowledge) this.

heakin

I beg these little tins from a friend who is a chemist. I find them very good for all sorts of storage purposes & for posting things.

54 Pingle Road Sheffield, 7 May 29th, 1949 Dear Mr. Odam

Thanks for letter, stamps, slides etc. I like your labels, they are not so "loud" as my blue & I like your black writing & cement rings much better than the red. If we could only get your ink rings right — slide making would now be "child's play" to you. You realise now I expect that my statement that ink rings are the most difficult thing about diatom slide making is quite correct. Stick at them ,they will come all right in time. Of course, it's only what Geologists guess, but more or less Oamaru, Barb(ados) & Cal(ifornia) were deposited round about the same period.

Geologists are not accurate to a few million years you know.

Swatman's numbers after locality are of no importance. Take P.V. [Palos Verdes] for instance, the deposit stretches "over the hills & far away". Smith of the L.F. & S. Moreno booklet collected the P.V. (Palos Verdes) earths & sent me & Swatman several large boxes with many samples. P.V. 6 A. proved the best on cleaning, but there are perhaps six different samples, 6 B etc. I can't remember the numbers. Same applies to Oamaru & Newport. Newport 101 was the best sample, exposed when cutting a new road, speaking from 10 – 15 years memory. I think the 101 represented the U.S.A. number of that particular road. Anyway, I wrote Brigger as soon as I found 101 to be very good, asking him to send me a good supply. He went to the site but the hill had been removed by the road makers & the workmen could not tell him where the white earth had been dumped. So that was the end of Newport 101.

After you come back from your holiday & get settled down, ask me to send you letters, photo & papers relating to collection of diatom earths, etc. It will give you a better idea of the "hit & miss" job it is. It is some years since I worked at the Sydney stuff, but I remember there are several other *Auliscus* in the material.

I'm not inclined to say much about evolution of diatoms, because we lack any proof & I don't see how we can get any proof. What I am quite sure about is that some species, such as *Arach(noidiscus) Ehren(bergii)*. for instance, have come down through 30 millions of years quite pure, & their shells cannot be distinguished from shells of living *A. Ehren(bergii)*, so there has been no evolution here, & I have a Hungarian sample with *A. Ehren(bergii)*. duplicate of Cal(ifornia) living forms, which D.P. Fuge said he could not distinguish from each other. I made a special slide & sent it for him to try to say which was recent Cal(ifornia), fossil Cal(ifornia), Jap(an) *sendaicus* (N.E.B.), Hungarian etc He failed, but the Jap(an) form is generally stronger & heavier than the others unless you go to a lot of trouble to select extra robust living Cal(ifornia) specimens. Many other species have come through the millions of years quite pure. So what?

I quite agree that such species as the vars. of *Hardmanianus* lead one along the evolution road, but it's hard to prove. As you say, it adds to the enjoyment of the hobby to think along these lines & in such cases as *Hardmanianus* it's interesting to accumulate a lot of specimens & then mount them in rows on a single slide, to show how true your ideas of evolution are. I've done this several times. It's fun, but proves nothing. Don't forget I'm an Engineer and all my life have wanted proof and generally been able to obtain it, so I can't swallow all the evolution theories. Give me proof & I'll believe anything, but in the case of diatoms there is so much evidence which seems to say 30 million years has not changed their shells very much, that I'm a doubter. Best wishes,

Yours very sincerely,

heakin

P.S. Perhaps 30 - 50 millions of year; is not long enough for species to evolve. Better get Huxley and his friends to give an opinion. I wonder what Darwin would say. It took him only a few years to evolve species. I wonder???.

Letter from Mr. Odam

230 Brockley Road, S.E.4

Dear Mr. Meakin,

I am afraid it is a long time since I wrote to you - some time before my holiday - I had a most enjoyable time in S(outh) Devon with perfect weather.

Since my return the weather has been terribly hot & sticky, and although I'm most anxious to get on with more mounting, I just can't get down to it in this heat. Instead, I have been overhauling & re-labelling a lot of my slides. I am most anxious to improve the ink rings on my cover slips. I quite agree this is the most difficult part of the mounting but it's hopeless to attempt it until the weather cools down a bit.

You will probably have had the Q.M.J. (Quektt Microscopical Journal) and seen my notes I spoke of some time ago. May I say it was written before I came under your influence – in defence of too scathing a criticism. I told

The Letters of Samuel Henry Meakin to Charles Leslie Odam (1948-1950)

the Editor at the time I had some data for a paper on some diatoms of the Thames Estuary, and he now suggests my getting on with this. I have not committed myself yet. Having to some extent lost interest in British forms I rather grudge the effort necessary to do the drawings. I was rather amused, however, by the other note in the Journal on F.W. diatoms by Rev. R.F. Bastow (have not heard of him before), when I found he was listing forms of VARIETIES OF SPECIES, & I thought to myself perhaps Mr. Meakin will explode over this & let me off a little more gently!

54 Pingle Road Sheffield, 7. July 29th 1949

Dear Mr. Odam,

I was pleased to get your letter this morning. I quite agree with you that Mic. Is not a hot weather hobby. I let mine stay in its box.

There is no doubt that ink rings are the most difficult thing about making diatom slides. Few people make good rings. I always sit down to making a lot of various sized rings & store them accoring to size in 4 little pill boxes. Although I can make decent rings, I always find the first dozen or so come rather poor & I have to wash them off. Then my ink brush and hand seem to get used to the work & so I can make several hundred while things are going O.K.

I have only one remark to make about your Quek(ett) Paper. Why trouble to make drawings of diatoms which have been done over & over again so many times? Your paper will encourage beginners & that is all to the good.

I must admit I know nothing about British F.W. (freshwater) diatoms. I've never been able to get excited about them. There are several people, however, who are very interested in collecting and drawing them. They used to write to me telling me of their wonderful finds & sending me their drawings. I had to tell them they knew much more than I did about F.W. (freshwater) diatoms & that I was not the least bit interested.

I have laways worked at Marine forms, they are quite enough for a life time hobby & they have not been worked over to the extent that F.W. (freshwater) forms have.

Hustedt sends me copies of his diatom papers & I'm always puzzled how he can spend his time drawing & describing very tiny forms whigh need a 1/12" obj. to see them. How does he know they are not simply young diatoms of well-known species? Ongaroto - a N(ew) Zealand fossil F.W. (freshwater) deposit is almost pure diatoms, no debris, and a sample contains unlimited numbers of very small forms which need a 1/12" obj. to see them — right up to huge *Surirella & Pinnularia* which stay on 200 mesh. The very small forms are so small that they take a long time to settle.

If you do the Thames Estuary diatoms you should get Swatman to let you have a spot of Colne River material, both light & heavy. It's lovely stuff. If you do it your paper will put all the Ba(rker) & Me(akin) papers in the shade. All the diatoms are already named, but quite a lot of them are seldom come by. They are a mixture of Brackish, Marine & F.W. forms. I always have a few hours fun searching a slip of this material & I must have made & sold hundreds of slides of picked out specimens. It is the only place I should expect to find *Debya insignis* for instance.

The Rev. Bastow used to write to me sometimes, but he is a F.W. (freshwater) chap & we had nothing in common. I got Barker's son to send him some of his father's books etc. If it pleases him to waste his time over F.W. (freshwater) varieties, of species (by the way, which is the species & which the variety???) well, it's his lookout. Diatoms are like gardening, something for everybody.

What one man grows & gets excited about another man considers as little better than weeds. I expect Bastow thinks exactly the same about such papers as the Ba. & Me. ones, as I do about his lists of F.W. (freshwater) forms.

Reprints of the last Ba(rker) & Me(akin) paper not yet received. I enclose copies of all the others, but in some eases they are about the last I have.

I tried to get Barker's copies after he died, but Mrs. B(arker) could only find odd copies of some.

I also send two papers showing P.V. (Palos Verdes) & (?) Lompoc, Cal(ifornia) photos. of the deposits. Just fancy taking a typical sample from these. From letters from my N.Z. (New Zealand) friends the same evidently applies to the Oamaru deposits. They go collecting, see a bare white place on a hillside or in a field, & give it a name, put some of the earth in a bag, & that's that. It's all hit and miss & you are either lucky or unlucky. You might like to look at Eardley-Wilmot's "Diatomite, it's occurrence preparation & uses". Dept. of Mines, Canada, 1928. If the Quek(ett) Library has not got a copy, the local library will get you a copy. It has a lot of photos of American deposits. It gives you some idea of the difficulty & hopelessness of sampling any deposit, except the shallow F.W. (freshwater) deposits.

The Letters of Samuel Henry Meakin to Charles Leslie Odam (1948-1950)

Yours very sincerely,

Alucakin

54 Pingle Road, Sheffield, 7 Aug. End, 1949

Dear Mr. Odam,

Thanks for letter & returned papers. I daresay you are correct in thinking folks don't know where to obtain fossil marine material, cleaned or uncleaned, & that is partly why they work at British diatoms. They could, however, soon find out by asking.

I am sorry I have no views on *Lithodesmium & Ditylum*. However, I've looked it up, & the general opinion seems to be they are the same. They are not easy diatoms to mount & yours is the first mention of them I've heard from correspondence. I'll give you a few extracts.

Van Heurck's Treatise. 424 - 425

D. Brightwellii (D. trigonium & inecquale Bailey; Tric. undulatum, Brightwell)

D. intricatum (Tric. intricatum West).

"Note: These two *Ditylum* are probably forms of same species."

Mill's Index: He says Ditylum intricatum is Lithodesmium undulatum.

Mann."Albatross". *D. undulatum (Tric. undulatum, Tric. intricatum, D. intricatum, Tric. Brightwellii, D. trigonium, D. inecquale*) so he evidently thought all above same species, but does not mention *Lithodesmium*. He says: "There is a close similarity in all forms of *Ditylum* that gives ground for the suspicion that they may eventually be found to be varieties of one species."

Mill's "Index" states Lithodesmium is same as Discoplea & Ditylum.

Peragallo says Lithodesmium is Ditylum.

Boyer. "N.A. Diat." says *D. intricatum* quite variable in outline according to stage of growth.

I judge from above it's safe to think *L. undulatum* & *D. intricatum* are both forms of same species. If you want to know something further about *Ditylum*, Ross of the Brit. Museum once lent me "Life History of some Marine Plankton Diat(oms)" Phil.Tran=Roy.Soc.London 1937-58 sir. B.228. 1-48 by F. Gross, and I feel sure he would be pleased to lend the paper to you if you asked him i.e. if you are not able to borrow it from your local library. One of the diatoms he describes is *Ditylum* but I forget which species.

I'm sorry I know nothing about the diatoms you enquire about but the above extracts may be of some little help.

You say "don't write specially", but I like to keep abreast of correspondence. If one leaves it for next time it generally gets forgotten.

For some time during what little diatom work ? or play ? I've done, I've been on the lookout for a rather peculiar form which seems always to be present where *Auliscus coelatus* is plentiful. I've an idea it may be connected in some way with reproduction of *A. coelatus*. I think Swatman might think it's the auxospore, ask him. I've an open mind.

Fortmorel figured it as *Auliscus Trenbii* in "Malay Diatoms" – Sch(midt's) At(las) figures it 30/8 as a form of *A. sculptus* which is really *A. coelatus*.

The diatoms on slide which I send you with compliments are some found in material from Sydney sent by H. Ross Ph.C. You will see he figures two similar but abnormal forms from same material in Watson's "Mic(roscope) Record" No.42. Sep.1937, his figures No. 3 & No. 4 & suggests *A. Dayii* as a name for one. Then Ingram Hendey again figures the same diatom from Sydney, & names it *A. pulcherrunus* (Trans. R. Mic. Soc. 1939 Vol. LIX pp.11—18) what fun!

One after another, and there may be others I don't know about, all treating the same diatom to different names. How can one be serious about diatom nomenclature?

As regards the slide. It is a good example of what not to do. As so often happens when specimens are scarce & one tries to be extra careful, everything seems to go wrong. In this case I only had 4 specimens of the Sydney form; there is a similar form amongst plentiful *A. coelatus* in Constantinople material. I searched for one but could not come across any. It took hours searching in the Sydney stuff to find these 4 forms - otherwise I should have thrown away the slide . If I had been content to just put on the 4 special forms all would have been O.K. But for comparison I must put on 3 *A. coelatus*, & that was my downfall. *Auliscus*, if perfect on the girdle edge, is better if one chips out a fragment to let in the Styrax & let out the air. Some folks say diatoms have holes in their shells. This is quite untrue if the valve is perfect & undamaged. If the girdle edge is true & flat as it always is in a perfect *A. coelatus*, well, it's asking for trouble if one does not chip the girdle edge. I took the risk & lost. In trying all my dodges to extract the air from one *coelatus*, I lost the best of the four specimens on bottom row, & also failed entirely to get out the air from the *coelatus*.

The top two *Auliscus* are Brun's *A. translucidens*. Le Diat(omiste) Vol 2.15/40-41. Some time back, after I sent you a spread of this Sydney stuff, you mentioned finding Grev(ille)'s *A. Macraeanus*, but these Sydney valves don't have Grev(ille)'s. "a row of minute puncta situated within the margin. (The Sydney valves have the above but not the following) & halfway between the processes additional puncta form an irregular bell, while two little clusters on each side are found midway between margin & centre." Then there is Grev's. *A. Australiensis* from Shark Bay. Plate III fig.3. Trans. Bot. Soc.Vol.8 - Grev. says "It agrees with my *A. Macraeanus* with its strong margin, large processes & fine radiating striae. It differs from it in the presence of exceedingly minute puncta scattered over the whole surface, & in the total absence of the remarkable clusters of larger puncta which distinguish *A. Macraeanus*."

My (S.H.M.) belief is that they are all the same species. Grev(ille)'s *Macraeanus* being slightly abnormal with its large puncta clusters. Grev(ille)'s *Australiensis* not having power enough behind Grev(ille)'s objective & the rim puncta in his specimen being faint or entirely missing, they are sometimes in this Sydney stuff. Brun's figure is correct with present good objectives. So choose your own name as you fancy. All are probably quite correct. I follow Brun because his figure is like the Sydney diatom. His specimens also came from Australia. One can't get too serious about diatom names in face of such nomenclature.

Well, this is page 7. when I started to answer your letter I decided I could finish on one sheet. You are a bit sly. Just a short sentence in your letter asking about something & I'm landed into writing 7 pages. Well it is your lookout. If you don't want me to burden you with my scribbling you should not ask questions. Best wishes,

Yours very sincerely,

Alucakin

I might have been abrupt & said "I know nothing about *Ditylum*" & I could have ignored you naming the Sydney diatom *A. Macraeanus*. But somehow, that is not the Meakin way. So beware in future about asking questions. I rather suspect, however, you know quite well what you are about. Anyway, its fun writing about diatoms. Hope it's as much fun to you reading what I say.

Note: Better send this slide to Swatman & ask him his opinion. I've had considerable correspondence with him over the years re. auxospores.

As I understand his views, he thinks an Auxospore of *Actinoptychus undulatus*, for instance, has one shell *Debya insignia* & the other shell *A. undulatus*: "reading between the lines" in V(an) H(uerck's) Treat(ise). you may think V(an) H(uerck). also thought something on the same lines, although I don't think he actually says so. If I understand Swatman's views correctly, he will probably say that bottom row valves are all half shells of Auxospores of *A. coelatus*, & that the middle *A. coelatus* being large & formed somewhat different from normal *A. coelatus* valves, is the other shell of an Auxospore. On the next division, as I understand his views, there would be two perfect large shells of *A. coelatus*. What grounds S(watman) has for his ideas I don't know. I don't know of any literature where such views are put forward. Also it's easy to misunderstand correspondence. If I could talk the matter over with S(watman) perhaps I might find I am quite misunderstanding his views.

This is what I think S(watman) believes:-

1. Two small valves of *A. undulatus* conjugate — result, an Auxospore which is about twice the size of the small valves.

2. One valve of Auxospore, Debya insignis, other valve ditto, a large A. undulatus.

3. On next division, two large valves of typical A. Undulatus.

4. etc. All typical valves of *A. undulatus* getting smaller & smaller by self-division until they reach minimum size - then they conjugate & process is repeated.

54 Pingle Road, Sheffield, 7. Sep. 3rd 1949

Dear Mr. Odam,

I was pleased to get your letter & packet this morn(ing) I'm interested in anything connected with diatoms. I'm not what I should call a "diatom-dotter". I don't think my eye-sight is up to the Eliot Merlin standard. I certainly can't see things some folks say they can see on slides of test diatoms I've sent them. But I do like to use my Mic(roscope) to see the last dot on a diatom. For ultimate resolution I use a 12 volt motor headlight bulb in a home made glass rod lamp, one end of the $\frac{1}{2}$ inch dia. glass rod is polished & the other end ground as finely as I could do it. On the end of the rod I fitted a cap in which I can insert various sized stops, and the stop I find I'm able to see best with is about $\frac{1}{16}$ inch. dia(meter). This gives me a very bright spot in centre of a dark field. I focus the condenser Just above or just below the image of ground glass so as to eliminate the grain of the

ground glass. However, I seldom use this lamp as I find I can do almost as well with the edge of flame of my working paraffin lamp, if I use a stop about 1/2 inch or a little less in front of flame. This lamp also is home made & is shown in photo(graph) in my articles in "The Microscope". The Mic(roscope) shown in this photo is also home made, but the binocular part & all the glass is, of course optician made. I prefer paraffin lamp for ordinary use & for mounting, firstly because the light seems softer, & secondly because I use top of lamp chimney for heating my slides. I can get any temperature I want, judging same by height of flame. I dont use a bulls-eye between lamp and Mic(roscope) for ultimate resolution but only for searching and mounting with my 3/4rd Watson Apo(chromat), when I rack down the condenser to regulate the intensity of the light, and bulls-eye gives me even illumination all over the field.

I would not recommend anyone to discard electric light for a paraffin lamp; but for heating slides, many years of experience has taught me just what size of flame to use for any results I want when mounting.

Your arrangement does not seem to me to be correct for ultimate resolution. I could not get good results with the bulls-eye. But if it suits you, that is all that matters. I would most decidedly would not recommend you changing to paraffin lamps. If I did not use the heat for mounting I would not bother with paraffin.

I use a Chance-Watson daylight filter beneath my condenser, which is a Watson 'Universal', but for ultimate resolution I use a Watson 'Holos' O.I. (Oil Immersion) condenser, or the Cassegrain. You mention glitter. I could not use a light with glitter!

I'm afraid the above will not be very helpful. My idea of critical illumination is:-

1.....Small central spot in a dark field.

2.....Condenser focussed, or almost focussed, on the diatom.

3.....No bulls-eye between light and Mic(roscope).

4.....Inspection of back lens of obj(ective) shows it evenly filled with light.

5....Iris diaghragm closed till I can just see it at edge of back lens of obj(ective). If one uses a small bright spot in a dark field, it is possible to use full aperture of obj(ective); and not have to reduce to Nelson's $\frac{1}{2}$ rds to prevent excessive glare.

For ordinary use with $\%^{th}$ and $\%^{th}$ obj(ectives). - paraffin lamp, NO bulls-eye NO $\%^{th}$ inch stop in front of lamp, - edge of flame focussed on diatom, - Universal condenser. To see, but NOT ULTIMATE RESOLUTION, it is necessary to close down the iris so fhat the outer %, or even $\%^{rd}$ of back lens of obj(ective) is cut off. For ordinary work, this is how I work, and my equipment is so arranged that I can change over from $\%^{rd}$ to $\%^{th}$ obj(ective) with critical light in 2 sec(ond)s. Bulls-eye is attached to lamp and swings out, and my 2-lens nosepiece I have adjusted so that all my objectives are central.

Really, I've fitted a permanent peg stop on nosepiece and scraped mounts of all my objectives so that when screwed up into same hole of nosepiece they are all central. I never use them in the hole reserved for $\frac{1}{3}$ rd obj(ective). So I focus diatom in line in centre of field with $\frac{1}{3}$ rd; swing round the nosepiece with $\frac{1}{3}$ th obj(ective), and there is the diatom without any searching.

I can see that this is going to be a long letter, so take warning.

Auxospore.

Swatman half convinced me that *Debya insigna* may be half valve of the auxospore of *Act. undulatus*, but I'm not sure. As you say, I want to know where the auxospores of all the other genera have gone.

Some years ago, I collected and mounted a set of four or five auxospores of different sp: of *Actinoptychus*, but I lost interest and sold them to a correspondent in U.S.A., with my entire slide cabinet.

Re. the markings on the ocelle of *Auliscus*. I daresay they might be more distinct on some fossil forms if we did not use caustic soda to get them clean.

I have Wright's book on Principles of Microscopy. Very interesting, but I've not found everything he says to my liking. I can easily fall asleep with it in front of a nice fire on a winter's night.

I rather think your *Navicula Peragallo* is really *N. aspera., Stauropleura aspera, Stauroneis aspera, Trachyneis aspera*, etc. etc. It varies somewhat in various localities, very fine and large in Antarctic material. It is difficult to get level, because it is this shape on girdle edge, [diagram missing] so it stands on point: at ends, and thus rocks over. I have never done much at trying to find out how this particular diatom is constructed. I have material somewhere with very fine perfect specimens. I must look it up and get the $1/12^{th}$ obj(ective) at work on it. I have not noticed the dark lines you show in your sketch.

I'm sorry to hear you are about at the end of available *Auliscus*. One needs such a lot of material to obtain the various species. Oamaru should give you quite a number, but not in handfuls: they only come singly and with considerable searching. In Palos Verdes, you should find valves like Sch(midt's) At(las) 89/5, which he calls *A. pruinosus* v. *subreticulata*, and a quite different diatom 89/5, which he calls by the same name, which it is NOT; 89/5 is not too common, but 89/6 is so common, it gets in the way. Then turn to 171/3 and 5, which he calls *A. albidise* and *A. albidise* v. *baccala* etc.

[There followed a long discussion re nomenclature – missing]

I'm prepared to go with you whatever Genus and species you favour, but I was getting interested somewhat in these *Auliscus*. So much so that I was thinking of mounting up some of my storage slides specimens.

Beck says in his book on the Microscope that best resolution is obtained with condenser focussed just below or above the exact focus. I've found this to be so.

Now you have the Mech(anical) Finger, there is NO excuse for your mounting diatoms wrong side up, unless you do it intentionally. I always turn every diatom to show its girdle view before mounting, so that I can be sure of mounting it right side up.

By the way, Beck's book, last ed(ition). 1938, price 7/6 nett., is by far the best book on the Mic(roscope) I've ever seen.

I've "had a go" at your two slides with *Navicula*. I can't, with all the tricks I know, get either of them to show the dark bands you show on your sketch. I can see the black dots you mention, some effect of diffraction I suppose, but I don't know enough to explain it.

Nelson, in Quek(ett) Jour(nal) May 1890, shows many misleading results obtained by misuse of substage, condensers, etc. & I've seen similar articles by Abbe. Shurlock in Jour. R.Mic.Soc. 1931, Vol.LI pages 24-413, gives lots of figures (photos) of all sorts of peculiar effects caused by diffraction by manipulation. After reading the above one wonders what is real & what is not real in the pictures of diatoms one sees when looking down the Mic.

I like a full central aperture & all results obtained otherwise, to me, are suspect. I've a correspondent in Chicago, who sends me wonderful resolution photos of diatoms on Realgar slides I send to him. He can resolve *Nitzschia singalensis* beautifully & *Amp(hipleura) pellucida* is child's play to him. Dots as clear as crystal. He uses oblique light thro' two Nicol prisms at 90° beneath his condenser. I've never seen the dots on *Nitz. singalensis* in Realgar try as I may, & my Holos 1/12" obj(ective) is as good an objective as I've ever seen, & over the years I've tried a great many. I suspect my eyes are not good enough, because I can get good dot resolution of *Amp. pellucida* in Realgar with my Cassegrain.

Best wishes, Yours very sincerely,

Alucakin

54 Pingle Road, Sheffield, 7 Sep.9th 1949

Dear Mr. Odam,

I'm glad to hear my last ("long" as you call it) letter did not tire you too much.

I'm glad I misunderstood your remarks about *Auliscus*. I'm so used to folks getting excited about some particular Genus & then just as I'm warming up to their excitement they drop the Genus & leave me high & dry. In your case I was getting interested in *Auliscus*, & I must say it was somewhat of a disappointment to think you were getting tired of the Genus. I'm very glad this is not so.

Of course quite a lot of the species are rare or very rare, or what I think is the fact, we can't get hold of material containing them. But odd ones keep turning up. I'm no collector of diatom slides so I'm not likely to leave a collection to any institution, but I do take great pleasure in corresponding about diatoms & in searching for & finding some particular scarce diatom. I say "scarce" because I do not think any diatom is rare in nature. Diatoms are so prolific that I can't imagine any species being rare from the reproduction point of view. They are only scarce because one does not happen to get the right material.

Your letter is not clear in one respect. Is your intention to get together a collection of *Auliscus* entirely of your own mounting or are you intending getting a collection of slides no matter from what source? Please answer this question in your next letter. I daresay I could sometimes send you diatoms unmounted if you wish the collection to be all Odam mounts, but I hardly think it advisable to send you scarce specimens until you have had more experience at mounting. You will naturally wish your collection to be first class in every way. As regards other species than *Auliscus* on your spreads, the best way to deal with these is to pick them out & store them for future use on storage slides. I've thousands of fine specimens picked out & put on storage slides. Some of my storage slides are many years old & I still can't resist the temptation to add further fine specimens when I'm searching.

You may be lucky in finding *Auliscus convolutus* if Swatman has sent you some good Forrester's Hill material. I have several on storage slides & will gladly send you one unmounted if you wish.

If you prefer it mounted, say so. I searched Oamaru for over 20 years & only found one or two specimens, then Rawson sent me a batch of Forrester's Hill - a 2oz. tobacco box full. He had previously sent me lots of samples of Forrester's Hill, but it all turned out ordinary. I cleaned the first lump my fingers touched in the new box & it was such Oamaru as neither Rawson or I had ever cleaned. Pure luck. I later cleaned every bit of earth in the box, but every piece was just ordinary. Diatoms are a form of gambling & always exciting. Same applies to Californian earths. I've a lot of Palos Verdes samples, every one different, some good, some poor. I've had all this earth since before the war — 1937 I think. Well, last year, I thought I would clean another bit from one of the samples which was marked by me from previous experience, "good". This piece was "it", so far as *Auliscus speciosus* went. Up to then, in 30 years I had only found 2 or 3 specimens in many months of searching. Now *Auliscus speciosus* was quite common, 3 or 4 good specimens on each spread. This has always been my experience with fossil earths. The same applied to *Aulac(odiscus) Grunowii*. This diatom used to be so rare that few folks had seen it. Then we got some Castel stuff, which was nearly pure *Aulac(odiscus) Grunowii*. Lately, a correspondent in California sent me a large packet of seaweed saying it contained plenty of *Arach(noidiscus) ornatus*. I cleaned some of it, and much to my surprise, it contained a number of fossil Cal(ifornia) species; the same identical species as I had got by cleaning various samples of Cal. fossil earth. I'm not relying on other folks, I've done all the cleaning myself, so I'm sure of my facts.

At the same time, I can hardly believe my own eyesight!

Your Beira mud was another example. *Tric(eratium) contortum* and *junctum* were two very rare sp(ecies). I had never even seen a fragment of *contortum*, but Beira mud put an end to all that.

Oh! dear, I do go wandering on. Back to your letter. *Navicula aspera* - you wonder what you are doing wrongly to be able to see the bars. Just so. I also wonder what I'm doing wrongly when I cant even see any trace of the same bars as your sketch shows. I've spent several hours experimenting with everything I can think of, but up to date NO BARS HAVE I SEEN. The only thing that consoles me is that these bars are unique; until you can get someone else to see them, I shall wonder!

The solo worker is always running a risk. Maybe, all these years I've never used my Mic(roscope) properly. Let us compare notes. I use a flat board on which my lamp ½ inch wick paraffin, is fixed by stops. My Mic(roscope) also fits up against stops on the same board. I use edge of flame. It is level with mirror, and stands exactly 6 inches away from centre of mirror. From centre of mirror to Universal condenser is 2 in(che)s. which makes the flame 8 inches from condenser. No bulls-eye in use. No ground glass: everything transparent and only a Watson-Chance daylight filter. I use a Watson high-power binocular, a 8X eyepiece, and No.7 Leitz obj(ective), so far as I've been able to test it, I think its a very good obj(ective), better than most I've tried even a Watson's ¼th Holos, new and direct from Watson's. No.1 cover glass, Styrax mount. Your sketch shows your·lamp inclined downwards towards Mic(roscope) my lamp is not inclined, and flame is same height from board as is centre of plane mirror. I think that is everything. Now give me similar partics. about your set-up. I've been on the brink of buying two Swift X10 Telaugic eyepieces several times. It is the flat field for searching I'm chiefly keen about. my ¾rd Watson Apo(chromat). does not have a flat field, so if centre is in focus, outer part of field is a bit fuzzy.

I've tried various ²/₃rd obj(ective)s. from time to time, but like my Apo(chromat). for searching and mounting. I use X8 Watson's ordinary eyepieces. I have a set of their Holos eyepieces. X7 X10 XI4 and X20 but they don't give any better results so far as my eyesight shows.

Enclosed copy of the last Ba(rker) & Me(akin) paper.

Yours very sincerely,

Alucakin

54 Pingle Road, Sheffield, 7. Sep. 11th 1949

Dear Mr. Odam,

I am sending with compliments a slide of N. aspera.

The bars on the dots are quite easy to see on these specimens altho' I don't think they are Cal(ifornia) fossil diatoms. I have lost the label off tube, so am not sure of locality, but they are almost certainly recent diatoms. Why I did not spot the bars on your slides I can't say. I've not altered my illumination, obj., or condenser. I've also tried to upset the illumination but the bars are always there. Whether they really exist or are diffraction effects I should not like to say.

I hardly think there is much (the) matter with your illumination, although for critical light I'm not able to get such good results if I use a bulls-eye, and I prefer not to use ground glass between lamp and condenser. Still, I use ground glass on my rod lamp. I think it would be better if I polished both ends of the rod, and eliminated any ground glass, but as I use such a small aperture on end of rod, I don't think it matters very much. I decided to write to you to save you further trouble about your methods. As you say, when once seen the bars are very noticable.

When we get down to these peculiar effects it makes me wonder what is the real image. Focussing up and down these *N. aspera* dots give several different pictures, and I cant say which is the correct focus. Kind Regards,

The Letters of Samuel Henry Meakin to Charles Leslie Odam (1948-1950)

Yours very sincerely,

heatin

P.S. There is no objection to ground glass, or your celluloid, except that it produces "glare".

54 Pingle Road, Sheffield, 7. Sep. 15th 1949

Dear Mr. Odam,

Thanks for your letter. I am glad to know your ideas about Auliscus collection.

I had the feeling I might give offence by sending slides. The enclosed slides were specially made to send to you. You may laugh at me, fact is, several times I've started to pack them up to send, then hesitated, funked it, & put them back in the cabinet. I won't hesitate in future.

I've given up making slides for sale, but don't want to give up the hobby if I can have correspondents like you, who are also interested.

A short boil in Nitric Acid or, if you prefer, Sulphuric Acid; will clear the diatoms of fungus. Well wash afterwards, at least 6 changes of water, & preserve in 5% Carbolic Acid solution. I've never known fungi to form in 5% Carb(olic) Acid.

If your bristle point is clean (I breathe on a clean slip, lower bristle into moisture, revolve it, at same time withdrawing it backwards, & bristle leaves any dirt or stickiness on the glass slip) you should not have much difficulty in depositing clean, dry diatoms on storage slip. They often tend to adhere to bristle. I always lower them on storage slip so that one edge of diatom strikes slip first, then lower diatom on to slip. If it does not leave bristle I slightly tap knob at end of bristle wire, diatom just touching slip & it often drops on slip. If not, I revolve bristle & get rid of diatom that way. Of course diatoms never leave bristle to storage slip so easily as they do into adhesive or when slip is breathed on.

I don't like breathing on storage slips. It tends to fasten the diatoms after several breathings, is liable to blow off the diatoms, etc.

But one can't afford to throw away good specimens, and to mount each good specimen will soon fill your cabinet, to say nothing of time & glass required for mounting them. More experience with bristle will solve all your little difficulties I think.

I feel sure the bars on the *N. aspera* are due to diffraction effects.

I don't know enough to explain them. One can get some very peculiar effects with markings on diatoms. The experts; Abbe, Nelson, Ainslie, Elliot Merlin, Conrad Beck. etc. etc. all seem agreed that we cant be sure that what we see in the Mic(roscope) is really the actual thing. They all seem agreed that if the picture changes with upper & lower focus, we should be doubtful about things. I've never been able to be quite certain what is the correct focus for a diatom.

I've tried all the dodges I know on the *N. aspera* dots. I don't seem to get as many bars as your sketch shows, and I can't always get the little dot at the end of the markings. But I always get the bright circular centre with a central dot as shown as shown on the lower sketch in letter received this morning.

I should think your Zeiss A with a X10 Telaugic eyepiece is about the best you can ever get for searching. As you work only in centre of field when mounting, a flat field is not quite so important, but it will be nice to work with.

[There follows references to slides sent to Mr. Odam for naming, etc. - missing]

...... don't take too much notice of my opinions. No two diatomists ever agreed about names, and probably never will. In many cases Fuge and I thought quite differently, and then I would try things out on Barker. He was always a more definite correspondent. D.P. Fuge always "left the back door open" as a way of escape. Do , what I would, I could seldom get a definite opinion.

Evidently my slide of *N. aspera* had not reached you when you posted your letter. I hope this does not cross in post another letter lfrom you.

Kind regards, Yours very sincerely,

heakin

[There follows a P.S., containing 2 pages of references to slides sent for examination. - missing]

P.P.S. I'm sure you will find the board (sketched) a great time saver when setting up your lamp and Mic(roscope) In five secs you will fix everything just right without any adjustment. Anyone who has used one of these boards would never go back to having to adjust things every time mic(roscope) is used.

Fix strips of wood so that Mic(roscope) is near end of board and square, then adjust your lamp to give best results, make a pencil ring round base and put in the three screws. Replace lamp, adjust for best effect and paint a mark on lamp base against one screw, so you always put lamp in same spot. The strip of wood must be a good fit between feet of Mic(roscope) so it won't move sideways, and so that ends of feet jut up against the strip. Thus there is only one position on board for the Mic(roscope).





Three screws will ensure your lamp always being in exactly same position also. A mark on base of lamp ensures it being always in same position. I drilled base of my lamp, and fitted a peg, but you may not be able to do this. A mark on base will be near enough.

54 Pingle Rd, Sheffield.7. Sept.14th 1949.

Dear Mr. Odam,

Pleased to get your letter.

DIFFRACTION. - "Experimental studies in Diffraction." Parts 1 - 4, By F.W. Shurlock. J.R.M.Soc. 1931, vol LI pp,24 - 31, 127 - 135, 272 — 281, 408 - 413, might be of interest to you. Also E.M. Nelson on Substage Condensers, J.Q.M.C. May 1890.

As I said in my letter yesterday, we dont really know. Except that we may improve our working conditions, I doubt if we can get to the bottom of things.

INK RINGS. I use liquid waterproof Indian Ink for my rings on cover. As an Engineer, we always used Higgin's waterproof Indian Ink, so many years ago I bought a bottle — before the war - and am still using it. I suppose British maker's ink will work

just as well.

I bring my brush to a fine point for EVERY ring. I have a slip of glass stuck in my cork, sharp edges rubbed smooth on bit of sandstone with water, so as not to damage brush. Glass slip nearly touches bottom of ink bottle. I do my rings in large batches,



several hundred at one time, and store different sized rings in little pill boxes. I generally make a few bad rings, which I scrap, every time I do rings until my hand gets used to the work. I don't dip brush into the ink, but take up a small quantity off the wet glass slip by revolving the brush on wet surface, then I draw the brush to a fine point on edge of slip.

If you are trying to make odd rings every time you make a slide, I don't think you will get very good rings. I could not make good rings that way.

Also, Indian Ink settles out to bottom of bottle and needs mixing up with a larger brush before one starts to make rings. Your rings appear to be made with the thin top layer off ink bottle. That is why my glass slip reaches to bottom of bottle. I thus get ink on slip from bottom of bottle. Although I've made thousands of rings — every time I start to do rings, I make a few bad rings until my hand gets used to the work.

Rings are difficult to make good,- practice on a glass slip, it saves all the bother with thin covers. If you stick to it, good rings will come in time. Ring-making is the most difficult thing about slide making.

Glad to hear that you have cut out the bulls-eye and matt celuloid and am really delighted to hear you feel the need of a base-board.

Not only will you get constant conditions, it will save you hours of adjustment.

My pen won't work, so I'm changing over to a broad point.

[The remainder of the letter consists of notes, which refer to slides referred for criticism - missing]

Don't think you are likely to come across any of these *Auliscus** in your searchings. I've never found a single one of them.

This L.F.& S. paper has received a great deal of criticism. There are quite a lot of things in it which in my opinion are incorrect.

Best Wishes, etc,

cakin

*Auliscus valatus.

54 Pingle Rd, Sheffield. 7. Sept 17th 1949.

Dear Mr. Odam,

I was pleased to get your letter this morning and very pleased you managed to find time to have-a-go at the *Auliscus* slide, because if too much time goes by, I forget all about the slide & what is on it. As I get older my memory seems to get very poor.

In this case however, I made a pencil copy of my sheet of names and my remarks. Of course, I did not expect any other diatomists identification to agree with mine. These Cal(ifornia) '*Hardmanianus*' types are much too difficult, and the specimens of same sp. (or what one thinks is same sp(ecies)) vary so much. Also the particular focus used to view the diatom makes a great difference. Perhaps you won't mind the following remarks about your list.

[There follows a discussion about slides submitted by Mr.Odam. - missing]

Don't let me hurry you into replying to my letters. I realise you have a job to do, whereas I'm at a loose end with nothing particular to do. Therefore, answering your letters as soon as received gives me something to do which I like doing.

It is nice to know my letters give you a little help sometimes. Please don't embarrass me by sending anything except your slides, letters and queries. I don't smoke these days, because I don't like Stafford Cripps and his thieving ways. As regards Books, we have a good Library, and my daughter, who is a School Mistress calls regularly at the Library, and they always get any book I ask for.

Sometimes even diatom books. Then I get diatom books from Kew. You can borrow almost any diatom book from Kew by paying return postage. But I expect you know all about this.

I think you pay pretty dearly already for my scraps of information when you send stamps for postage. I'm glad you liked having a go at the *Auliscus* slide.

As regards lowering cover on Styrax. Please bear in mind I have never seen anyone, except pupils, (who have come to my house to learn) mount a diatom slide. So all the things I tell you are MY way of doing them. I've no idea how other folks work.

I use home-made forceps, perhaps they are weaker than bought ones, but I made them to grip the covers when they are squeezed tightly together thus:-

Cover

so I can squeeze tightly and have no fear of breaking cover, nor yet of cover slipping.

I hold cover & forceps more or less horizontal over Styrax, then without moving forceps, I let the top limb spring open, and cover falls INCLINED on to drop of Styrax. I then withdraw forceps from under cover and it falls horizontal, floating on top of Styrax. I always try to use more Styrax than needed. I then take slide off top of lamp, tilt it this way & that, so that ink ring on under side of cover floats central to diatoms, then I cool Styrax quickly by laying slide on horse-shoe foot of mic(roscope), which was designed especially for this purpose.

Then I inspect slide under Mic(roscope) with ²/₃" obj(ective), swing bull's eye to side, rack up condenser to focus flame edge on diatom, swing round nose piece, focus on top of diatom — highest



part nearest coverglass - then rack stage & focus ink ring at N.S.E.W. generally having to focus up, i.e. raise objective, which is what I want.

Sometimes — rarely - N.E.S.W. are all at one focus which means coverglass lies level on Styrax some little distance above diatom. If so, I wipe off surplus Styrax all round cover with cotton wool soaked in Benzol. I then heat slide on top of lamp. Styrax oozes out from under cover all round, & cover is lowered evenly. Only experience will tell how much Styrax must be allowed to ooze out to lower cover amount required. After focussing ink ring I always check up highest point on diatom, this gives me an idea how much Styrax to allow to ooze out. If there is great surplus of Styrax, above process may need repeating, but I don't use too much surplus Styrax if I can help it.



Generally, say, N.& E. are high, S.& W. low, or vice versa. Then I wipe off surplus Styrax at N.E. but leave it alone at S.W., heat on lamp, Styrax oozes out at N.E., & cover lowers itself. Of course cover is still floating on Styrax & not touching diatom. I tilt the slide as before to centre ring to diatoms. Cool & inspect. Repeat if necessary, but

experience soon teaches one how much to lower cover. I like to lower my covers level and almost touching highest point of diatom. - 5 pages of writing to explain what takes me about 5 minutes. If I could show you – you would laugh at the simplicity of it, but even Morley Jones did not understand how I managed without distance pieces between cover and slip until I explained to him.

My objection to distance pieces is that they are not flexible enough. Diatoms are various thicknesses, so Styrax layer must also be all thicknesses. So far as I know, there is only one other way which is to mount diatoms on cover. This means many diatoms must be mounted showing inside, which is often very different from outside view. Then one needs to use distance pieces thick enough to keep lowest part of diatoms off slip. Generally a much thicker layer of Styrax than necessary, because one can't focus bottom of diatom nor top surface of slip with certainty. I mount on slip, diatoms right side up, & having thinest layer of Styrax between diatom & cover it's possible to have. And all the time I have full control of everything, & can lower my cover to suit my diatoms in every case.



This all comes of your asking about lowering cover safely on Styrax. I've made so many thousands of slides it is all second nature to me. Except for folks I've taught, I don't know if others use my methods. If I don't stop this will get thrown in your Waste paper basket without reading. So. Best wishes,

Yours very sincerely,

Alucakin

54 Pingle Rd. Sheffield. 7. Sept 27th 1949.

Dear Mr. Odam,

Pleased to get your letter & further slides.

Lowering cover glass is quite easy. Describing it in a letter may sound complicated, but learners who come here all seem to think it quite easy after seeing me do one, and they don't have seem to have any difficulty in doing it after they get home. They send me slides for inspection and help; and a level cover is the first thing I look for. Their covers are level so I'm sure they use my method.

Why not mount a few *Cos(cinodiscus)* & try it out. Judging how much Styrax to allow to ooze out is the only thing which needs a little experience.

I would not try to mount *Kittonia Elaborata* ON EDGE without the use of punching distance pieces. *K. Elaborata* on the flat, yes; but NOT on edge. You were luckier than you deserved to be this time. It may not happen next time.

Your letters are delightful. I'm afraid mine to you are not so good.

AUST. AULES. etc.....In Watson's Record by Ross. I used to correspond with him until his eyesight caused him to give up using the Mic(roscope). Those *A. coelatus* sent to you came from Ross. I used to get some very good material chiefly from a Postman friend of Mr. Ross. They went collecting together, and R(oss) left it to the Postman to send me samples of their catches. I've not heard from them for years. It was a hobby with them, but neither knew about diatoms really.

DIATOM NAMES.

Don't worry too much about sp(ecific) names. Diatoms are so variable even in gatherings containing quantities of same sp(ecies). Also, figures are not too reliable. First, because you don't know if the diatom was 'dry' or in an unknown medium.

Secondly, because you don't know at what focus the drawing or Photo(graph) was made. I've messed about with diatoms for a good long time, but it's the truth when I say I'm never sure I've got correct focus with a th obj(ective). Example. The dots round edge of your *A. polyphemus*. Dots on P(leurosigma) angulatum, and similar diatoms will explain what I mean. Your dots on N. aspera is another good example.

You want a very broad open mind when deciding sp(ecific) names of diatoms. It is often safer to query a name, or write 'Hardmanianus var' or even 'Hardmanianus var ?'

Take the Ba(rker) & Me(akin) Stictodiscus conspersus. On Sunday I had the luck to split open a valve of Stic(todiscus) Californicus (?) into two layers. The top layer is S. Cal(ifornicus) and the bottom layer is S. conspersus (?). No guessing about this — I'm SURE!. Please always bear in mind that anything I say about names is only my OPINION . Even that may change, like it has about A. coelatus being in Cal(ifornia) stuff. when I told you, I felt quite certain they were all A. gigas, ard never A. coelatus.

My mind is not yet broad nor open enough for diatom names.

As you get to know more about diatoms, you will feel quite satisfied with 'Sp: var.' and often, more satisfied still with Sp: var.?, and sometimes Sp: var.???. will satisfy you. Anyway, I do hope you won't give variety names. That, to me, is the HEIGHT OF FOOLISHNESS.

Yes, S(chmidt's) A(tlas) where no sp(ecific) names are given is annoving. Years back, I used to get guite annoyed with Schmidt, but now, even when he does give names, I don't always agree with him, and I would without hesitation wipe out every one of his variety names. It is often so difficult to find another specimen to fit the figure, and if it is easy, as it is for instance with your S(chmidt's) A(tlas) 108/1, 2/3 on your slide 97, then it s a definite sp(ecies), and deserves a sp(ecific) name.

In my opinion S(chmidt's) A(tlas) Auliscus hardmanianus var ?. is not correct, but please bear in mind this whole para(graph) is only S.H.M's OPINION; other folks may not agree. All I can say for it, is that it gives me satisfaction which var. names do not.

EUPODISCUS. Ba(rker) & Me(akin) papers in Quek(ett) Jour(nal). I used to tell Ba(rker) his liking for descriptive notes would land him into trouble. Of course it did on the very next paper. If Eupodiscus argus is Eupodiscus, Eupodiscus vallatus CAN'T be Eupodiscus, and of course Eup. lineatus is not Eupodiscus. Nor yet are either of them Rattrayella.

Probably, to put them in *Pseudo auliscus* would be nearer the mark. But both Grev(ille) and Ratt(ray) mix up these Eupodiscus, Pseudoauliscus kinds of diatoms. I often wonder how many folks have laughed at us. It wont bother poor old Ba. now, and I'm not going to let it bother me. Still, I know we were not consistent. Perhaps you were having a sly dig at us. If so, you have done it very kindly. Anyway, I'm candid about it. Writing diatom papers is not the fun some people think it is.

I've done another paper - Meakin & Brigger, and in it, *Eup. Barbadense* is another prime example. with Grev(ille) and Ratt(ray). before me, I thought it best to forget about Barker's Eupodiscus argus note. I never felt proud of it.

Folks say Eup. argus is Aulacodiscus, and some similar diatoms - Aulac(odiscus) reticulatus; A. Thumii for instance, have never been named, so far as I know, Eupodiscus. but E. argus is not a true Aulacodiscus. Nature takes no notice of Genus & species, and some diatoms don't fit anywhere.

[There follows a lengthy reference to the contents of submitted slides, and a continuation of Taxonomic notes. - missing]

..... these Cal(ifornia) Hardmanianus types are terribly difficult. Satisfy yourself about their names. Some of them look very different dry, and in Styrax.

Kind Regards,

Alucakin

54 Pingle Road, Sheffield, 7. Sep.28th 1949

Dear Mr. Odam,

After posting your slides yesterday, I decided to look over some of my Oamaru storage slides to see if I could get further information re. the Auliscus Polyphemus? 1/3? I think, on your Oamaru slide.

I only glanced at one storage slide before writing the letter, but after posting it I decided to look over about a dozen slides with many hundreds of diatoms. I found perhaps 20 specimens of the diatom. 2 or 3 were almost hyaline, no doubt owing to caustic soda corrosion in the cleaning. Most of the others were good, dark coloured specimens in the "dry" state. Without exception the borders did not have the ring of large dots like yours. S(chmidt's) A(tlas) 149/6 is rather light coloured, otherwise it is a good picture of the diatom, as you will see from Nos. 1 & 2 on enclosed slide.

As I failed to find one specimen with the slightest trace of the rim dots, I think your diatom must be an abnormal somewhat corroded *Auliscus lacunosus* - of course it could just as well be abnormal *A. Polyphemus.*— So I turned to this species & inspected about 30 specimens I could only find one specimen which had no ring of dots at rim – see S(chmidt's) A(tlas) 125/4, which is a very accurate picture of this species. A lot of the specimens had lost a lot of their dots, but one can expect this - corrosion & friction in cleaning. I put on the slide this dotless specimen.

I've never accepted Grunow's *A. pruinosus* v. *robusta*. 149/1. *Pruinosus* & *punctatus* (one species) are very common in Cal(ifornia) material and very variable, but they are always flat diatoms, they never have the raised centre portion like these Grunow's Oamaru diatoms. Like all diatoms which have outstanding larger dots in addition to the ordinary markings, specimens vary a great deal, some having hardly any out-standing dots, like specimen No.3 on slide, while others have very clear dots like Grunow's picture S.A. 149/1.

If these diatoms don't deserve a species name for themselves I think they should be called varieties of *Aulus*. *Stockhardtii* — see S.A. 67/6. A very poor specimen is figured on 149/11.

I put on slide for comparison a decent A. Stock. & it's up to you to form your own opinion. From above you will gather that identification of abnormal specimens like your 1/3 is no easy walkover. A broad open mind, & every man entitled to form his own opinion is the only way to enjoy the hobby. Slide with compliments. I usually ignore such specimens as your 1/3 because I can't name them.

I am also taking the liberty of sending for you to see, my slide of *Stictodiscus Californiens-conspersus*. For many years I've had specimens of *conspersus* under observation, but never seen anything to connect them with *Californiens*, except that they are always found in material containing "*Californiens*". But they are, in my experience, always very scarce in any material I've ever seen, whereas *Stic. Cal.* are plentiful & get in the way. Now my luck has turned but too late to prevent "Ba(rker) & Me(akin)" making a bloomer. Please return slide as I may try to get a photo, & I may send a short note of correction to Quek(ett). Kind regards,

Yours sincerely,

Alucakin

No hurry about return of slide nor your reply.

54 Pingle Road, Sheffield, 7. Oct.4th 1949

Dear Mr. Odam,

It was a pleasure to get your letter this morning.

Slide came quite safely. I suppose your mind is easier if you register the packet, but it's a wicked shame you have to pay 4d. to ensure the Post Office doing their Duty.

Re. different layers of diatoms, I think they are generally different from each other. No doubt other folks besides "Ba(rker) & Me(akin)" have made similar mistakes & given names to different layers of same species. I'm used to two layers on many diatoms, but it's a great surprise to me to find such diatoms as *Stictodiscus* having two layers.

Sorry to hear of your mounting troubles. Things do seem to go wrong in batches. I don't think you can hurry when mounting diatoms. Cracking coverglasses by heating is unknown to me. Sometimes covers have tiny cracks at the rim caused by the cutting process. These may develop with heating but they generally eliminate themselves when being cleaned, by breaking in two parts.

Dust is always a trouble & I daresay this dry weather & London traffic is the cause of your present trouble. Sheffield is supposed to be a dirty city, but I live practically in the country on the very edge on the South side & prevailing winds blow from my district towards Sheffield.

As regards fixative troubles. I don't know what fixative you use. Every fixative I ever tried, & I tried a great many, always went bad in from 5 to 6 months, & if then used I lost many diatoms. I have tried about every sticky thing I could find but until I found my dextrine-glycerine plus carbolic acid I never got a good fixative. This I'm at present using must be 10 to 12 years old & it seems as good as ever. I don't often lose a diatom. Of course, everybody does lose one occasionally, and I'm no exception.

Don't worry about answering slides, there is no hurry. In any case, you can't expect to find as many *Auliscus*. *A. Polyphemus*. I only casually notice the tiny dots on hyaline parts of diatom, because my long experience leads me to think that originally they were always there on all hyaline parts of every diatom. The use of caustic soda in cleaning often eliminates these finer points. It is very drastic, and in some cleanings 10 sec(ond)s more or less makes a great difference. Oamaru often needs 30 min(utes)s boiling in 2% caustic, so goodness knows how many dots were there originally.

I like the way you make up your mind to call any diatom YOU think is *Pseudoauliscus - "Pseudoauliscus"* -- in spite of Rattray, Greville, etc. That is the right spirit, and is just what I've wanted to do. But when one is making slides for sale, it is often good policy to follow the crowd, in spite of one's private opinion. In any case, I think your opinion about diatoms is just as good as any other persons! And as I used to tell D.P. Fuge, it's so easy to change your mind, and also your label if necessary.

No, I don't think *Auliscus* is unpopular. Except in a few localities such as Cal(ifornia), Oamaru. etc., *Auliscus* specimens are rather scarce, and that probably is one reason why folks have not put them on their slides. Another reason may be their tendency, if securely gummed down, to retain air. Also, some folks mount on cover; Thum, Muller, Firth of Belfast, Long, and with *Auliscus* this means mounting inside of diatom next cover glass, which is risky if air is trapped, as diatom is very liable to come unstuck.

By-the-way, Long mounted Darlaston's diatom slides. Darlaston could not mount diatom slides. I can't say why Fuge did not mount *Auliscus*. I don't think he had any favourite Genera. I knew him for many years, and never knew of any preference. HB [Horace Barber] originally could not obtain Marine and exotic material, so he concentrated on British Diatoms. It was only after I made copies of Sch(midt's) Atlas, Pantocsek, and most of the other out-of-print diatom Plates, and supplied Fuge with copies, that he took up Marine and exotic sp(ecies).

Don't worry too much about identification of *intestinalis* and *decoratus*. I doubt if you have yet seen a really good specimen of *intestinalis*. In 50 years, I've seen only odd ones. These *Hardmanianus* types run into each other so much that I'm inclined to wonder if they are not all variations of the same sp(ecies). The chief thing in *decoratus* is the "V" shaped row of dots near the ocellii. In trying to name any of these Cal(ifornia) *Hardmanianus* types, I take great notice of how they look in the dry state. They alter so much after you get them in Styrax. A good specimen of *intestinalis* has no "V" row of dots.

[A taxonomic discussion follows. - missing]

I take great notice of what these Cal(ifornia) *Auliscus* look like when dry. They look so different in Styrax. I also base my opinion under a $\frac{1}{2}$ rd obj(ective). A $\frac{1}{2}$ th obj(ective) often makes things look very different. I've never thought to use D.G. (Dark Ground) for identification purposes.

The central areas of these Cal(ifornia) Auliscus vary so much even on what one feels sure are the same sp(ecies) that I dont feel that they are very much to rely on. A good general view with a $\frac{1}{2}$ obj(ective) in dry state I think is the more reliable.

Re your fixative troubles, if you are using white-of-egg/glycerine, THROW IT AWAY. I never could get it to keep more than 5 months, and what you say in your letter sounds to me just like "gone wrong" white of egg - glycerine fixative. Why, Oh' Why dont you give me a chance by telling me what what you are using. Steam does rise off egg - glycerine. It does NOT off dextrine-glycerine, or at least I've never noticed it, so if it does, it must need very good eyesight.

My cabinet, where I keep my storage slides was specially made by S.H.M. to exclude dust, after years of dust trouble. I gather more dust when USING storage slides than I do in my cabinet. Putting the diatoms in excavated slides with a plain 3" X 1" slip on top would exclude dust.

I started putting a few Auliscus in an excavated slip to send to you because I judged from slides you sent that your material was not too good, or you were not searching long enough to find the good large specimens. I started taking these Auliscus off my storage slips, but other things turned up, and I'm afraid I forgot all about the excavated slip. For safety in post, I used a tip learned from Swatman, i.e. to smear the excavation with ordinary lamp paraffin before putting on the diatoms. To get the diatoms quite free , you merely heat the excavated slip at a high temperature which drives off every trace of paraffin. I'm sending this slip with compliments, although I've not put on the diatoms I intended. Heat the slip, pick off any diatoms you want, thoroughly clean the excavation, and then try the excavated slip for a dust proof storage slip. Then, if satisfactory, you can get more excavated slips. I use ordinary slips for storage, not excavated slips. By-the-way, before I make slides, I always search a number of spreads, pick off all the best specimens and put them on storage slides. Then, when I've got a lot of good specimens all near each other, its easy to select only prime specimens for the intended slide. This of course, applies to such things as Auliscus, Aulacadiscus, Triceratium etc. etc. It would not apply to the ordinary slides I used to make in dozens for Watson's, of Pinnularia, Pleurosigma, Arachnoidiscus etc. etc., all of which I used to take direct from spreads of more or less pure material of the wanted sp:. I do wash my specimens before mounting if they are dirty, but not if they don't need washing.

When one sets out, as I did many years ago, to make slides for sale, one has got to make CLEAN slides; or go out of business. Remember, I've made MANY, MANY, thousands of slides for sale. They HAD to be GOOD and CLEAN. You can't expect to compete with me at present. Don't worry, if you are keen long enough, things will come O.K.

I note with interest what you say about your Wenham Binocular.

The Letters of Samuel Henry Meakin to Charles Leslie Odam (1948-1950)

I've owned several over the years, but have always got tired of them, and disposed of them. I can remember three, but I may have had more. I used to buy at sales with a view to making a profit on re-sale.

N.E. Brown seemed to think a lot of Wenham Binoculars, and also of high magnifications but after reading his description in his "*Arachnoidiscus*" I'm inclined to think he would have been well-advised to take a few lessons from Nelson, Eliot-Merlin, Beck, Ainslie, etc.

I use a high-power Watson Binocular, and if you took it away from me, I would give up using the mic(roscope) I could not use one eye only - I'm so used to using both.

You dont say anything, however, about ULTIMATE RESOLUTION! Do you find you are able to resolve *Amphipleura pellucida* into DOTS with a 1/12 th obj(ective) on a Wenham binocular?

I quite agree that for searching and mounting diatoms, the Wenham would be quite efficient, but will it give you as much resolution with a χ^{th} as mine does ?. I don't of course, get any steorscopic vision.

I hope and think I've answered all your queries, but I'm afraid I don't manage to condense my descriptions, so my letters seem to get very long.

Kind regards, Yours very sincerely,

Alucakin

54 Pingle Road, Sheffield, 7. Oct. 11th 1949

Dear Mr. Odam,

Many thanks for the Programme, & your letter, I was very interested in looking through the programme. I suppose the *Kittonia Hannai* by A.H. Bigger should have read A.L. Brigger, my Los Angeles friend. I can't find any "Bigger" in the list 1949 of Quek(ett) members. we have done a paper (6 diatoms) for the next Quek(ett) Jour(nal) but so far as S.H.M. is concerned I've told Mr. Dennis this must be my last Quek(ett) paper. I'm trying to get a photo of the *Stic. Cal. - conspersus* slide I showed you & if I succeed (I can't make a photomicrograph myself) I hope to send Mr. Dennis a short note of correction.

I've known Wise for many years and would not expect anything very surprising in his exhibit. I have a slide by Caffyn "Section of Mors." material which I consider very interesting indeed.

McClure once wrote to me years ago, I forget what his letter was about, So far as my memory goes I thought it dogmatic & in my opinion his statements were not correct. So in my outspoken Yorkshire way I told him just what I thought. Evidently he did not like what I said, for he never wrote again. Several years later, Morley Jones in one of his letters mentioned McClure & said I had evidently "got his back up".

I was rather sorry McClure did not follow up my letter, because I like a lively argument. One often learns a lot from the other fellow.

McClure has an article on vertical illumination in "Watson's Mic(roscope) Record" No. 59. Sep. 1936. After reading it I got excited & made a vertical illuminator for myself, but I could not get good results, no doubt my inexperience. My son was interested & took away the illuminator for trial. He got better results than I did, but not very exciting. He still has the illuminator.

Lately there has been an article in "The Microscope", Barron's publication, but as I pass the paper on to my son I can't quote date of paper on vertical illumination. It read as though it was quite easy & gave very good results, but I did not feel excited enough to try it.

I should very much like to see McClure's best effort on a diatom. Morley Jones seems to think a lot of McClure. His opinion that the markings on dots of *N. aspera* are not diffraction effects interests me very much. This working solo, as I have to do, is a great handicap. I would not miss a meeting if I could get to the Quekett. I feel inclined to write to McClure.



Fixative. I'm enclosing a small tube of the fixative I'm using. I was not aware it needed stirring. I have a small lady's scent bottle, which is provided with a metal stopper working through a small hole in the cork. The metal part which goes through cork is about $\frac{1}{2}$ inch dia. with a rounded end. As the fixative is very thick I have to invert the bottle every time I make a slide as that is the only way I can wet the end of the $\frac{1}{2}$ " rod. This process therefore stirs up the fixative, altho' I never thought that way about it. Anyway, sample sent is from stock bottle made many years ago, & is just same as I use. I merely send the

sample to show you what I use & so that you can compare it with yours. I note you do not use the Wenham Binoc(ular) for ultimate resolution. By the way, V.I. (Vertical illumination) can't be any use for searching & mounting I suppose? I wonder? I think it would pay me to write nicely to McClure & not using Yorkshire methods. I do very little at ultimate resolution. It's too trying for my poor old eyes.

Don't be too disappointed re. Singiliewsky *Monopsias*. In my experience they are very scarce, & I searched spread after spread & found nothing. Again, only about 1% of *Lepidodiscus elegans* specimens are perfect. I agree it's tantalising, but it's only a hobby & when one does find a good specimen it's very exciting. So is pond hunting & other hobbies. I suppose that is why I never could get excited about British diatoms. There are always so many duplicates one gets tired of looking at them.

My trouble now-a-days is to get some new material. All the stuff I have has been looked at so many times that I rarely find anything new. And my storage slides contain hundreds of fine perfect specimens for which I've little use. It is little use searching more of the material only to find additional specimens of those already in hand.

Kind regards, Yours sincerely,

Hucakin

The Dextrine I use is called "British Gum" I think, it's a cream coloured powder. Pupils have failed to make fixative with a pure white kind of Dextrine supplied by some London chemists, They have sent me samples of the white powder & I quite failed to dissolve it.

I suppose this might settle out & leave glycerine at top ???

54 Pingle Road, Sheffield, 7 Oct. 13th 1949

Dear Mr. Odam,

On reading your letter I had a good laugh. Talk about the "blind (S.H.M.) leading the blind (C.L.O.)". First. I've never seen a V.I. (Vertical illuminator) All I know about their design is what I can gather from Watson's Catalogue & of course the same pictures in Watson's "Microscope Record". Second. I tried to copy the Watson Conrady V.I. (Vertical Illuminator).

Third. It failed to give me any satisfaction.

However, after reading McClure's letter several times, I think perhaps you might get him to give you a few dimensions & particulars and it might be worth while to make one like his. Then I will try it out, report to you failure or success, & whether failure or success send it on to you to try out, show to McClure, & get him to tell you what is wrong, or if it's O.K. ask him to show you how to work it.

Tell him you have friend who will make you a V.I. (Vertical Illuminator) like his (don't mention my name) if he will kindly help with a few dimensions taken from his V.I. (Vertical Illuminator). I enclose sketch showing dimensions required, which, if you like you can ask McC. to fill in for you. Then return sketch to me & I'll make one to his dimensions.

After writing my last letter to you I read McC(lure)'s article in Watson's "Record", came to the conclusion it needed specially mounted slides with diatom well below coverglass, & therefore little use for ordinary purposes & decided not to write to McC(lure).

Also it seems from Beck's book that V.I's (Vertical Illuminators) are not easy to use. Also, as I understand McC(lure) they are only of use with 1/12" O.I. (Oil Immersion) objectives for ultimate resolution. The best ultimate resolution I've ever seen is by the Dan M. Stump Chicago method, using a stop beneath an

O.I. (Oil Immersion) condenser made with two Nicol prisms at 90° to each other. See sketch.



I have photomicrographs done by Stump of *A(mphipleura) pellucida* & *Nitz(schia) singalensis* which are better resolutions than anything I've seen, except Ultra violet. Against this, Barker, to whom I sent Stump's book describing his methods, did not seem to think much of S(tump)'s methods. Whether good or bad I can't say, but he can get results.

If possible, before we do anything, don't you think it would be a good idea to get McC(lure). to show you the best resolution he can do with his equipment — resolution of A(mphipleura) pellucida or Nitz(schia)

singalensis. If necessary I shall be pleased to mount you slides to comply with McC(lure)'s. instructions, i.e. if he would prefer your slide instead of his own. But it must be one or the other of above diatoms, because we know just what to expect with these well-known species. They can be in Styrax, Sirax or Realgar, whichever

McC(lure) prefers. I will look up Stump's photos. If I still have them & can find them, I will lend them to you together with some Kodak Ultra-violet photos of Amp(hipleura) pellucida, so that you can compare them with McClure's best effort. Then you can form your own opinion about the usefulness of V.I. (Vertical Illumination). I know you told me you saw bacteria at the Quek(ett) shown by McC(lure)'s V.I. (Vertical Illuminator) better than ever before. But can you measure the correctness of the McC(lure) resolution. With a known diatom you could form a good opinion & a pretty safe one.

One thing puzzles me. If V.I. (Vertical Illumination) is so wonderful, why have folks not used it? Beck could have got orders for many V.Is (Vertical Illuminators) if he could have demonstrated their usefulness. Instead, he says they are difficult to use. I'm willing to learn & don't mind a bit of work, but I would like you to convince yourself that it's worth while before we proceed. Several things in McC(lure)'s letter make me wonder. How does he focus filament of lamp on the object plane?

Tube length has to be very carefully effected, the lens being hyper-sensitive.??? What does he mean by this? Is he speaking of a 1/12'' objective or what?

Why does he need or want to use higher powered oculars?

No auxiliary lens of any kind should be used. This is contrary to everybody's instructions. If better without, why do Watson's, Beck, etc., fit them, or advise their use. I could argue quite a bit more with McC(lure). This is why I think it will be a good thing if you can spare the time and can get McC(lure) to give you a demonstration. In any case, you will learn a lot, either about McC(lure); or about his methods. You will learn just how he does it, and what results he can get. There is nothing new in V.I. (Vertical Illumination). Why did not Eliot Merlin, Ainslie, Nelson, etc. use it for ultimate resolution?

Kind regards,

Yours sincerely,

heatin

P.S. What light does McC(lure) use. This is very important, I think, to know.

For future reference, I have made a copy of the McC(lure) letter in case you decide it is worth while to proceed. I will, of course treat it confidentially; but my memory is too poor to remember all he says, and if we decide to proceed, I may want to know something.

I expect you will consider this letter too cautious, but I spent many hours making my V.I. (Vertical Illuminator), and get very poor results.



Is there a hole on both sides? If so, please give sizes of both holes. What light gives best results & how far away from the optical axis of Mic(roscope) is lamp fixed? Is spindle carrying cover glass supported at one side only & is cover cemented into a saw cut in end of spindle? If not, please say how cover glass is secured to spindle.

Is inside of V.I. (Vertical Illuminator) dead black ?

54 Pingle Road, Sheffield, 7. Oct. 19th 1949

Dear Mr. Odam

Many thanks for your letter & the loan of "The Mic(roscope)" I have copied the main points of Sartory's article for future reference when I feel like playing about with V.I. (Vertical Illumination) during the coming winter.

Also yesterday morning I rec(eived) McC(lure)'s V.I. (Vertical Illuminator), his two letters & yours, for all of which many thanks. McC(lure) is very kind to lend the V.I. (Vertical Illuminator). I enclose his two letters herewith, and with luck I hope to finish the V.I. (Vertical Illuminator) tonight & to post both back to you tomorrow (Thurs(day))

Sartory's article seems to me easier to understand than McC(lure)'s in Watson's "Record". I like S(artory)'s idea of using ordinary lighting to focus the 1/12" O.I. (Oil Immersion) obj(ective) on the diatom, then leave everything in focus & turn over to the V.I. (Vertical Illuminator) & move lamp about until you get light focussed on the diatom. I did not try O.I. (Oil Immersion) obj(ective) with my V.I. (Vertical Illuminator) last winter. I have asked my son to return my V.I. (Vertical Illuminator) so that I can have another "go".

Re. *N. Aspera*. Thanks for letting me see McC(lure)'s letter. I wish he would use a typewriter. Anyway, it seems, as you say, "highly speculative" & as McC(lure) says, "quite likely erroneous." I don't think I want to go further into this matter and will leave it for you and McC(lure) to thrash out for yourselves. I find these ultimate resolutions very tiring. I think my eyesight is not good enough so I do very little at it. Perhaps V.I. (Vertical Illumination) may prove easier on my eyes.

Again many thanks,

Yours sincerely,

Hucakin

Will send the V.Is (Vertical Illuminators) per Reg(istered) Post.

54 Pingle Road, Sheffield, 7. Oct. 20th 1949

Dear Mr. Odam,

Herewith I return McC(lure)'s V.I. (Vertical Illuminator) also the one I've made for you. I had to alter the design at the end which screws into your Mic(roscope) because my brass is too hard. If I tried to bezel it in like McC(lure)'s, my brass would split & break up. So I've fitted a locking nut which will serve just as well. I've made the hole for light $^{7}/_{16}$ in(ch) dia(meter) which McC(lure) seems to think is too small in his V.I. (Vertical Illuminator). Also I've made the bearing to screw into body, as McC(lure)'s push in fit seems to me rather crude —. Small spanner enclosed should you require to fit new cover glass at any time.

I've fitted $\frac{5}{8}$ " dia(meter) No.1 cover glass. Cement may be a little soft (ordinary black slide ringing cement used) & cover may move in Post. If so cement may still be soft enough for you to re-adjust cover glass with a needle, while it's still in position. If not soft enough, warm the whole V.I. (Vertical Illuminator) which will soften shellac cement.

In case of fitting a new cover, unscrew the spindle bearing with little spanner, warm the spindle & draw a piece of stiff paper thro' the saw slot for cover. This will clear the slot of old shellac. Fit new cover, stand the spindle vertical on its knob until cement is stiff. Then replace spindle & its bearing, screw same up tightly and then adjust cover to bring it central & horizontal & leave to harden. Glance at it in an hour or so to make sure cover has not moved. '

I hope you will be able to see the dots on *Nitz(schia) singalensis* (*Firthii*) & the slots on *P(leurosigma)* angulatum as Sartory says. I've never seen either & don't think, with my poor eyesight, I ever will. Wishing you every succes with the V.I. (Vertical Illuminator) & trusting both reach you safely. I did not make a case as I have no suitable brass tube, etc.

Watson's pre-War catalogue prices V.I. (Vertical Illuminator) at 25/-. Considering time taken to make I won't be robbing you if we say 30/-.

Yours sincerely, Hucakin

When setting cover horizontal the thin line used for centres cut round the body of V.I. (Vertical Illuminator) will form a good guide.

If you use heat to soften cement, only make the V.I. (Vertical Illuminator) warm, NOT HOT, or you will spoil the dead black inside V.I. This is important.

54 Pingle Road, Sheffield, 7. Oct. 24th 1949 Dear Mr. Odam,

Many thanks for your letter & cheque for V.I. (Vertical Illuminator). Glad you found it O.K. & have so quickly got results which seem to please you. I must have another try at this V.I. (Vertical Illumination). You should not have increased the value of cheque. However, as some compensation I'm sending you a couple of Realgar mounts. One of mixed test diatoms which contains most of the usual species used for tests, but not *Nitz(schia) singalensis (Firthii)* & the other of Chinese fish stomach material which does. As you may not know this diatom I have put two ink dots against one as per sketch:-



but you will find plenty of specimens on the slide when you know what to look for. Some of the other *Nitzschias* on this slide will try your V.I. (Vertical Illuminator) to its limit, I think. These two slides will give you all the fun you want so far as test diatoms go.

I hurried with making the V.I. (Vertical Illuminator) because I wanted to return McC(lure)'s as soon as possible. If you have Watson's "Record" No.3 there is an article by Clarence Smith on V.I. (Vertical Illumination) in which he says the V.I. (Vertical Illuminator) should have some means of preventing it from turning in the Mic(roscope), so altho' I did not know of this at the time, my locking nut is not such a bad thing after all. In Quek(ett) Jour(nal) for 1945 Ockendon gives an Electron Mic(roscope) photo of what I suppose are the slits on or in *P*(*leurosigma*) angulatum. Plate 6 fig.3.x 14000 mag(nification).

Your trouble with loose diatoms is likely to be that you do not drive off all traces of glycerine. You can test if diatoms are fast by cautiously pushing them with Mech(anical) finger bristle point, but you must go very carefully, because if diatom is fast you can easily spoil the point of your bristle. You can also blow off the diatoms by expansion of the gases of the chloroform - You should give 5 minutes after applying Styrax so as to allow it to mix with the chloroform you have used to drive out the air, before you apply heat, & when you do apply heat you should start with low temperature & gradually increase it. That is where the paraffin lamp is so useful. You can start with a low flame & gradually raise it to maximum.

Diatoms, if undamaged, are perfectly air tight, there are no holes in the shells, so if you seal them airtight by their girdle edge in the fixative, & apply an initial high temperature with air or chloroform inside the valve, if it can't escape quickly enough you can blow off the diatom. Often it leaves a ring in the fixative with broken fragments of the girdle edge sticking therein. So gradual rise of temperature gives these gases time to percolate thro' any escape hole there is.

There are two forms of *A. Hardmanianus* in Oamaru, typical & var. *bifurcata*. See Ratt(ray). page 878. Kind regards,

Yours sincerely,

heakin

Sometimes a diatom is so well sealed in the fixative & the amount of air is so small, that it cannot generate enough pressure to blow off the diatom. In such a case, a slide of *A. coelatus* I sent you is an example, you never can get the air out nor yet blow off the diatom. Scrap the slide is then the only remedy.

54 Pingle Road, Sheffield, 7. Nov. 1st 1949

Dear Mr. Odam,

Many thanks for your letter, etc. I quite realise you can't have much spare time for the hobby, so please don't trouble about writing to me only when the spirit moves you.

V.I. (Vertical Illumination) I spent more or less all last week on this, experimenting, altering the V.I. (Vertical Illuminator), & resolving, so far as my poor old eyes would allow. Do what I will, I can't do as well with the V.I. (Vertical Illuminator) as I can with the Cassegrain Condenser, although I can resolve *A(mphipleura) pell(ucida)* into dots quite easily with V.I. (Vertical Illumination).

Last Sunday my son came over and we spent a couple of hours with the V.I. (Vertical Illumination), and with my experience during last week we had no difficulty in getting good resolution of dots on *A(mphipleura) pell(ucida)*. It was obvious my son's eyes were better than mine. We did not try *Nitz(schia) singalensis* as there was not time. We, like you, did not much care about the pictures we could get of the coarser diatoms with V.I. (Vertical Illuminator)& $1/_{12}$ " obj(ective).

I also wrote to Morley Jones & Swatman, asking them, after having seen McClure's demonstrations at the Quek(ett) from time to time, to give me their candid opinion on V.I. (Vertical Illumination) for diatoms. M. Jones, in a 6 page letter sums it up thus:"I can't say I have developed any great enthusiasm for the method." He says he spent an evening at McC(lure)'s house in addition to what he saw at Quek(ett) meetings. Swatman says:"It is not worth the trouble of the set up. I could not see structure for the life of me, which McC(lure) said he could see."

After reading Burrell's article in the last issue of "The Microscope" I also wrote to him about V.I. (Vertical Illumination) I don't agree with some things he says about glare, and told him so. His reply about V.I. (Vertical Illumination) seemed to me vague, and convinced me he could not help me.

My Holos 1/12th N.A. (Numerical Aperture) 1.37 I have had for many years - I've tested many 1/12th objectives and its the best obj(ective) I've ever seen. After using it yesterday morning & in cleaning off the oil after use, I displaced the front lens, so unless Watsons will put it right for me my experiments with V.I. (Vertical Illumination) are ended. Perhaps after so many years use the cement securing the front lens deteriorates. In reply to your letter, *Nitz(schia) singalensis* is more difficult than *A(mphipleura) pell(ucida)* so are some of the other *Nitzschias* on the Chinese fish slide I sent to you.

Like you, I would not exchange V.I. (Vertical Illumination) for my other equipment, but it's fun to play about with it in idle moments, but it never can give ME the satisfaction that picking out prime specimens & mounting them permanently gives me.

Slides. These are a great deal better than any I've seen from you before. If you can manage to obtain good 3 x 1 slips about 1 mm thick & can keep up or improve this quality of mounting, you will have nothing to fear from criticsm from anybody. Don't let any of my criticsms dishearten you. I'm a cruel taskmaster. Nothing but near perfection will satisfy me. Don't hesitate to tell me your difficulties, no matter how little they seem to you. I may, & think I can, be able to help you. I always am pleased when anyone makes good diatom slides. Naming specimens is not so easy, & at best is always a matter of opinion - for example *Hard. coincidens* in this lot. Kind regards,

Yours sincerely,

Alucakin

V.I. (Vertical Illumination) is of no interest except for ultimate resolution with a 1/12" obj(ective). It's use with the lower powered objectives $\frac{1}{2}$ ", $\frac{1}{2}$ ", etc. is foolish because the pictures produced are not worth looking at as compared with direct light. At least this is my firm opinion.

54 Pingle Road, Sheffield, 7. Nov. 2nd 1949

Dear Mr. Odam,

After posting your packet for noon post yesterday, I thought I would look into *A. Hardmanianus*. [The following paragraphs deal with taxonomic matters. - missing]

It often occurs if one begins to look carefully into diatom names. So many folks, often amateurs, who have not access to diatom books, have thought they have found new species & have given them names. And often, as in the case of *A*. *Hard(manianus)*, the original name has stuck to the wrong diatom. In my opinion this corrosion in cleaning is not sufficiently taken into account.

In any future lists you may send with your slides, it would be a great help if you would kindly give your source of information. Example — your *Auliscus Huttonii*. Before I could say NO I had to go through many books. If you had written "*A. Huttonii* Sch(midt's) At(las) 250/3 or some other reference" - As soon as I saw your diatom I knew it was G(rove) & Sturt's *A. lineatus*, but I had to look thro' all my books to find *A. Huttonii* to check up with certainty. I'm still in the dark as to where you got this name.

A good example occurs in the last issue of "The Microscope". Coombs of N. Zealand has 5 figures. 1.2.3. being incorrectly named. 1.2. should be *Brightwellia coronata* Grev(ille)'s diatom, which Grunow should have known better than call *B. pulchra*. Grunow was very bad at this name making without any, or very little, reference to previous diatom figures. And if Coombs had access to Sch(midt's) At(las) pl.138 he would at once see his fig. 5 in "The Mic(roscope)" is *B. hyperborea*, & not, as he suggests, a new species requiring a name. I am at present supplying him with a lot of my photo's of diatom plates, but he has not yet got as far as buying any Sch(midt's) At(las). Years ago, I decided to give up worrying about diatom nomenclature. It is in such a mess. Also, it is so

easy to change a label if one does make a mistake. If you want a contented mind at this hobby, keep it a very BROAD mind. Slide with compliments. Label left blank, so you can fill in any name you fancy.

Alucakin

54 Pingle Rd, Sheffield.7, Nov.8th 1949.

Dear Mr. Odam,

Many thanks for your letter. After sending my last letter I was still wondering where you had found *Auliscus Huttonii*, so I turned up G(rove) & Sturt, and found *Aulac(odiscus) Huttonii* figure next to *A. lineatus*, so I assumed you had in some way mixed the names.

A. lineatus is so rare and distinct that once having found a specimen, one does not easily forget it. In using Rattray, you should always bear in mind he was a book maker and above all a variety maker. He worked with slides and books in the Brit(ish) Museum, But he did not work at the cleaning, searching & mounting. *A. pectinatus* seems to "get it in the neck" during the caustic soda part of the cleaning, so much so that it's very rare to find a specimen so little corroded as Rattray's XVI fig.5. This is the true uncorroded *A. pectinatus* & Ratt(ray) XII fig. 8 is the usual corroded form of *A. pectinatus*. Please compare these two figures, large ocelli & the dots round same. XVI fig. 5 is not a bit like XII fig.8. One has to use Rattray's books, but in my opinion, critically, Rattray has done more to puzzle diatomists than any help he has given them. Rattray XII fig .8 *A. intermedius* is fairly common in some samples of Oamaru stuff and is never corroded to the same extent as *A. pectinatus*.

I think you will save yourself a lot of trouble if you ignore Rattray's varieties in all his books, but of course this is a thing every man must decide for himself.

Always bear in mind that caustic soda plays the duce with diatoms & you have to allow for this when naming specimens.

A. lineatus is quite a different diatom from *A. fulcratus*. It's very rare, always in my experience very small & very hyaline.

A. fulcratus Sch.At.149/2 is a fair uncorroded specimen, 171/7 is the same diatom badly corroded. Forget about *A. sigillum* altogether. If these folks had done more cleaning, searching & mounting, they would not have made so many "bloomers". I dare bet sixpence to nothing that Bessel never saw *A. lineatus*, & you, by the way, are mighty lucky to find a specimen. Of course, as your letter says, you already think as I've written above, and in my opinion you are absolutely correct.

I, not being able to read German, was a bit afraid you were able to read it. I find it a great handicap when using Sch(midt's) At(las). Barker could translate it quite easily & was a great help to me. None of my other diatomist friends was any good at German. I hope your German lady will be able to help you.

I'm not very well just now, bad cold, & a bit of bronchitis so don't feel like using the Mic(roscope). When I feel like it I will mount you a specimen of *A. convolutus* & send it along. It's not rare if one gets the right bit of earth. Getting the right bit of earth is the trouble.

I've been mounting one or two slides of *Auliscus* to pass the time. They are such brutes for sealing up in the fixative & enclosing air, so of course I use a very thin layer of fixative to prevent this. Result - your disease - one diatom in a slide of 25 Oamaru forms, some of them undescribed species, moved slightly out of position. So you see, an "old hand" like me sometimes has trouble. That is why I always try to persuade my young pupils to be satisfied with 3 or 4 forms per slide. But they never take my advice, they tumble over themselves to make 20 or more forms type slides. You should see the result!!!

Yours sincerely,

Alucakin

54 Pingle Road, Sheffield, 7 Nov.22nd 1949

Dear Mr. Odam,

I was pleased to get your packet this morning, McC(lure)'s letter was not therein.

I'm pleased to say I'm much better and downstairs again but am not yet fit enough to go out of house. After 10 days in bed & at 74 I find it's not so quick a job getting back to normal as when I was younger.

Yes, like you, I bought several German books & 2 Ger(man)-English dictionaries, but it's a long job making out the Sch(midt's) At(las) notes. Now, I have to be very keen to know what he says before I trouble to get out the books. I miss Barker more than I can say for many things besides translations of French & German. Pleased to hear you have material which contains Auliscus convolutus. I have some specimens on storage slides & will send you a slide when I feel like sitting at the Mic(roscope). Afraid it will be some time however. As it is so much easier to obtain better results with a Cassegrain Condenser than with V.I. (Vertical Illumination) why bother at all with V.I. (Vertical Illumination)? Opticians 100 yrs. ago were making V.I's (Vertical Illuminators) like McC(lure)'s. If there was anything worth while in V.I (Vertical Illumination) it would have been developed before McC(lure) was born. In my opinion he is putting up a huge bluff & nobody has the guts to call his bluff. In 1890 Nelson said quite plainly just what V.I. (Vertical Illumination) would & would not do, viz, O.I. (Oil Immersion) objective, and object in contact with underside of cover. That still holds good today in spite of all the silly childish conditions McC(lure) lays down in his Watson's "Record" article Sep.1936. I've gone to the trouble of writing to Swatman and Morley Jones asking them for their candid opinion on McC(lure)'s V.I. (Vertical Illumination) demonstrations. Morley Jones also spent an evening at McC(lure)'s house. They both say results very poor & they are not interested. I certainly am not. Cleaning material, searching & making decent diatom slides gives me all the fun I want from diatoms.

It is also fun, say, about once or twice a year to oil up the 1/12" obj(ective) & look at the dots for an hour or so, but there is no real satisfaction to me in this, when I remember that, as Abbe & Nelson says, "we see dots but whether or not they represent the real structure no man can say." I'm no diatom dotter" - never have been & never will be.

You will, I think, get more satisfaction from searching, and mounting decent slides than you ever will from diatom dotting, & you will save yourself a lot of disappointment if you will be satisfied with, say, up to 5 or 6 diatoms on a slide. Risk of failure varies about as the square of number of diatoms on a slide.

As regards photo copies of Sch(midt's) At(las) & other diatom plates, I've given up making these & have given all my negatives to my son. He is too busy earning his living to be able to print any photos, but if a good number were asked for he might ask the D & P people to make copies. I understand they would not be interested in less than, say, 100 photos.

Yes, it is curious what causes one man to go all out for, say, *Aulacodiscus* & ignore everything else. Barker, for instance, would not look at *Navicula*; whereas D.P. Fuge at one time would not look at anything but *Navicula*. I've a friend at Carlisle who has been collecting *Aulacodiscus* — to my knowledge - for over 20 years. I've sold him many *Aulac(odiscus)* slides. He must have the best *Aulac(odiscus)* Collection in the world. Everything but *Aulacodiscus* is of no interest to him. By the way, he uses one of my Mech(anical) Fingers & makes diatom slides every bit as good as I can.

Yes, I have Elger's Cat(alogue). He used to work for Thum of Leipzig. I never did any business with him. I'm pleased to hear you are longing to "tell me where I get off" so far as *Arachnoidiscus* species are concerned. Don't do it. Every diatomists has his own opinions and they always differ from every other diatomist's. I don't mind freely giving my opinions for what they are worth. I would, however, never be so foolish as to try to alter your opinions. Nobody really knows much about diatoms & the little beggars vary so much, even in the same gathering of material that one needs, generally speaking, to inspect & compare many specimens before forming an opinion. For instance, D.P. Fuge once staggered me by writing to say N.E. Brown's book on *Arach(noidiscus)* was tripe and that he (D.P.F.), was of the opinion there were only two species of *Arach(noidiscus)* viz. *ornatus* & *Ehrenbergii*. I did not try to alter his opinion. Simply told him I was surprised & did not agree. Perhaps two years later he wrote to say he thought there was some good in N.E. Brown after all. In the meantime he had looked at, & compared, more specimens of *Arach(noidiscus)*.

Yes, I think McC(lure)'s writing about the limit. If he had anything useful to say, one would not mind the trouble of finding out what it was. I doubt if he has anything useful to say, at any rate from my point of view.

As regards your Mech(anical) finger being slightly loose. First make quite sure everything is screwed up quite firmly. If this is so, then I left the little screw perhaps slightly on the slack side. All you need to do is to get a small screwdriver & tighten this screw. You will find the screw works rather stiffly so as to "stay put". You will also find . that a very, very, slight movement of this screw will make a great difference, so much so that A slides too tightly on pin B. After tightening the screw, ignore knob D, which will of course be at top of its travel (space between A & C at its maximum) and with finger & thumb squeeze together A & C. If



screw is too tight A will stick & not return freely. Screw must be adjusted to take up any play of bristle (remember motion is magnified 80 – 90 times by the Mic(roscope)) but not so tight that A & C won't separate

quite freely. The slightest touch on the screw is all that is needed. Don't screw up tightly so as to damage pin B. Nothing can go wrong with the finger, but it's always liable to develop a slight movement of bristle point due to newness wearing off. One moment will put this right, & it should then "stay put" for years. It must be 5 or 6 years since I last touched mine, & I can't bear the slightest movement of bristle point. Kind wishes,

Yours sincerely,

Hucakin

Re your slides. A.

I grant you have got hold of the worst lot of 3" x I" slips I've ever seen. Much too thick for diatom work & don't mention the grinding!! What follows is written to help, it may seem a bit cruel, but I think for your own good I should say it.

The Oamaru Slide. There are 6 diatoms on the slide not one of which is worth mounting. You seem to be on the lookout all the time to find new species. Please remember that Oamaru material has been searched for about 65 years by thousands of really expert diatomists & it's a million to one chance that anyone can find a new species in Oamaru. The proper way to tackle Oamaru is to search at least 20 spreads, only pick out perfect, good sized specimens & store them side by side on storage slip. After you have got the good specimens side by side you will see how they vary & will thus be able to choose the most typical & perfect specimens. Then make a slide of ONE species using

3

000 000

or 4

of your best specimens, name the slide, and rest content that you have "done" that species.

Β.

There are two schools of diatomists. Some believe that diatom shells can't grow, and that they get less & less by self division. Others believe that, like everything else in nature, diatoms are born small & grow to a maximum size. It is a known fact that they reproduce also by self-division, but even then they think the shells grow larger after self-division. I believe this latter theory. So when I see small, badly marked & irregular specimens like those on this Oamaru slide I think it likely they are partly formed babies & not worth attention. Much better for you to well search 20 spreads, get together typical perfect specimens of the different species see how they vary & only mount "posh" specimens. Then be content that you have done the best possible. If you go on as at present, later on you will realise what I have said above is correct & all these slides you are now making you will dump in the dustbin, & will then do as above & start in to make real diatom slides. Slide 117. It is not typical *gigas*, but bearing in mind how diatoms vary I should not hesitate to say *gigas*. At the same time I would never have bothered to mount this specimen. Some folks think *A. gigas*, *B. coelatus* & *sculptus* and tons of varieties of A.& B. are all one species. I've never seen *sculptus* & don't believe anyone else has. But Watson's used to order *A. sculptus* by the dozen slides. What could I do?

I simply picked out the smoothest *coelatus* I could find & mounted them. Watson's did not want a lecture on *coelatus* v. *sculptus*. They wanted slides to turn into money. I wanted to get shut of the order also. Someone who did not know *coelatus* from *sculptus* - nobody does- got a nice slide labelled "*sculptus*", looked at it, put it in a cabinet and forgot about it.

If you feel like lumping *"coelatus*", *"gigas*", &, if you can find one, *"sculptus*" by all means do so. You will be in good company. Or if you prefer to separate *coelatus* & *gigas*, well, you are still in good company. But if you start splitting *coelatus*, *gigas*, & their varieties, well, I'm not coming with you. There is plenty of variation. Fact is, I doubt if you can find two specimens alike. You have years of work in front of you splitting these two species & their varieties.

You must decide for yourself whether to be a "lumper" or a "splitter" I'm a "lumper" (I hope in reason) but if you favour being a "splitter", walk, my knowledge of diatoms is not great enough to enable me to travel with you. Where you'll land goodness knows. Perhaps in the end you will say "What's the use of it" & decide to change over to the "lumpers".

Anyway, I won't do you much harm in"pulling your leg" a bit. Makes you think, don't it? Guess you've "cast a fly" alright, hope on its return it don't bite you.

Slide No.114. Make up your mind whether to call this diatom *Pruinosus* or *punctatus*. All the best diatomists say they are so variable & run into each other so much that it's impossible to separate them. Two alike take a lot of finding. I think perhaps *punctatus* fits it better than *pruinosus*, but one can't go chopping about, call it either one or the other & be satisfied.

Alucakin

54 Pingle Rd, Sheffield. 7. Nov.23rd 1949.

Dear Mr. Odam,

Thanks for sending McC(lure)'s letter. I must be a dud at reading rotten handwriting, for I've had four honest tries to find out what he says, but failed.

I'm not sure, but part of the letter seems to say he uses two lamps at the same time, with one mic(roscope), which is of course ridiculous! I must have got it wrong somehow. Anyway, he can keep his V.I. (Vertical Illumination). I can do much better with my Cassegrain and am not interested in V.I. (Vertical Illumination). McC(lure) is 75 years behind the times. why does someone not help the poor man ?. Tell him to get a Cassegrain, become up-to-date and end all his troubles.

Since getting my daughter to post my yesterday's letter & packet to you, I've been thinking about your idea of putting me right about *Arachnoidiscus* ??!! For your information, & at the same time trying to save you some trouble, I think I ought to tell you that some years ago Barker acquired all N.E. Brown's *Arach(noidiscus)* slides, photographed many of them, & we got very excited for many months on *Arach(noidiscus)*. I had several tubes of pure *Arach(noidiscus)* from several places down the W(est) coast of U.S.A. all, of course, recent material, some pure *ornatus* & several samples pure *Ehrenbergii*. I also had several tubes of different Japanese material, both fossil & recent, either pure *Arach(noidiscus)* or nearly so, and a tube of pure *Arach(noidiscus)* fossil Hungarian material.

It was about this time D.P. Fuge happened to mention his poor opinion of N.E.B's book, so as I had unlimited time & material & two interested pals to play with, I searched over thousands of *Arach(noidiscus)* and picked out suitable specimens, mounted them side by side, inside and outside views. Altogether I daresay I made over 50 slides. Some specially made to test both Barker's & Fuge's ability to recognise the locality & species. Neither succeeded in any case in getting a single slide correct. I defy anyone, in a slide of 50 selected specimens from recent *Arach(noidiscus) Ehren(bergii)* fossil Japanese & fossil Hungarian material, to identify the locality from which the specimens came. I could certainly not do it and every time B(arker) & F(uge) failed.

But I could also make a slide of selected diatoms from the same materials and anyone could, with a little knowledge of the materials & the species, correctly pick out locality & supposed species. i.e.:—

Recent Arach. Ehren.,.U.S.A.

Fossil Arach. Sendaicus Japan.

Fossil Arach. Ehren. Hungary.

It is all a matter of having plenty of authentic specimens to select from, going to some trouble to select the specimens, and either making an "easy" slide, or a slide intended to mislead. So, unless you have unlimited time & material & the wish to "crack a hard nut", as I said in my last letter, "Don't do it." It is all a matter of number of specimens examined & opinion formed therefrom. As regards diatoms, I always consider the other fellow's opinion is just as good as mine. I would tell him I did not agree & give my reasons. At the same time I would respect his opinions & would not try to alter them.

Please always bear in mind that I'm outspoken & say just what I think, but never think I'm trying to influence your opinion about any diatom matter.

Many years ago I began to realise how very little was known about diatoms & that nomenclature was in a hopeless mess. So I decided it was useless to treat them seriously, & that the only way was to treat them as a pleasant hobby. That is how I still treat diatoms.

I must apologise for such a long letter about little, but all I can do is to sit by the fire & amuse myself. You happen to be my victim.

Kindest wishes,

Yours very sincerely,

Alucakin

54 Pingle Road, Sheffield, 7. Nov.27th 1949 It was a pleasant surprise to receive your letter so soon.

I'm glad to hear the Mech(anical) finger is O.K., & still more glad to hear you have put your bristle in order. I like folks who can keep their tools in working order.

I'm pleased to hear I misjudged you about the finding of new species in Oamaru stuff. I quite fail to see how picking out & mounting such "poor & insignificant" (your words, not mine) forms as you put on the Oamaru slide can possibly help anyone. However, that is entirely your business. As regards the arrangement of the diatoms, I prefer because it keeps the diatoms close together for easy comparison. My idea is for this reason only & not to make a "pretty, pretty slide".

A. gigas slide. This specimen under a ¹/₂" obj(ective) is not at all typical in my opinion. Therefore, why mount it? If you had labelled it "variation of *A. gigas*" I think it would have been O.K.

Arachnoidiscus. When I read your letter I thought you were having a bit of fun. I thought I was replying in the same spirit. Evidently I made a mess of it. At the same time I tried to tell you how important I thought it for anyone to see plenty of specimens. Two examples come to my mind. N.E.B's book, page 59, under *A. russicus*, he says, "no valve seen with linear cells at centre." Now in Kamischev stuff A. russicus are very numerous & there are hundreds of specimens with perfect linear cells at centre. Hence, N.E.B. had not seen enough specimens. His *A. Longii* is simply a badly "corroded-in-cleaning" *A. ornatus*. Here again, if N.E.B. had seen enough specimens he would have seen perfect *A. ornatus* specimens, and corroded ditto in stages right down to where only ribs are left. Dont think I'm running down the book.

I like it and think he was a brave man to write it, but that does not prevent me seeing many errors in it. Of course, you have entirely missed the point of my "Barker - Fuge" tale in my second letter. It was not because they had not got suitable equipment to examine the diatoms, but because specially selected specimens of *A*. *Ehren*. and *A. sendaicies* are exactly alike , therefore they could not possibly tell the difference.

As regards V.I. (Vertical Illumination) Nelson in 1890 said exactly what V.I. (Vertical Illumination) would and would NOT do. McC(lure). in his Record article gives all sorts of silly childish conditions which I have proved by experiment are useless and needless. McC(lure). has not discovered anything about V.I. (Vertical Illumination) — he is right behind the times!

As regards McC(lure) knowing more about optics than Swatman & Morley-Jones. I don't see what this has to do with the matter, and without being rude, I wonder if you are competent to judge!

McC(lure) gives demonstrations. I ask S(watman) & M(orley)—J(ones). if they have seen them, & if so, as competent diatomists will they kindly give me their candid opinion. They both reply "rotten". As this confirms my own trials and opinion, I say "rotten" also. It has nothing to do with McC(lure)'s knowledge of optics. If he had much knowledge of optics, he would not be fooling about with V.I. (Vertical Illumination) for ultimate resolution. He would be demonstrating modern D.G.I. (Dark Ground Illumination).

I'm in exactly the same boat as you as regards German and the S(chmidt's) A(tlas) notes. As regard ceasing to write to you, if you told me "to go to the devil" I would not be offended and it would not stop me writing to you ABOUT DIATOMS if you wanted to correspond. I can agree to differ!

I don't know what I've said to make you think "I consider nothing fresh can be discovered" - about ultimate resolution I suppose you mean?

If it is my remarks about V.I. (Vertical Illumination) which has led you to think this, you are entirely misjudging me. I certainly think McC(lure) and his V.I. (Vertical Illumination) will never get anywhere, but this will not mean that folks that really know something about optics may not develop methods to improve ultimate resolution. I dont think McC. does, or he would not be wasting his time on an out-of-date method.

As regards Barker & Fuge not having suitable equipment. I've visited both in their own homes, & I can assure you that both has the best equipment it was possible to procure. But they did not waste their time fooling about with V.I. (Vertical Illumination)!

They both knew too much about optics and about diatoms.

Please don't think there is any venom in this letter. I'm merely saying what I think with a view to clearing the air. I shall be pleased to forget McC(lure) and his silly V.I. (Vertical Illumination) demonstrations, and to get back to diatoms pure and simple.

Ultimate resolution won't help you in the study of diatoms - a $\%^{th}$ and a $\%^{rd}$ obj(ective) are all you need for this!

Nor yet will it help you to pick out and mount "poor and infrequent specimens". Get together as many of the best specimens as you can, on your storage slide, compare them and only mount what you think are typical specimens. At least, this is the way I do it.

Please don't take up your valuable time in replying to this, and please bear in mind I've not the slightest wish to influence you in t any way whatever. I merely give you tips which I think & hope may help you over initial difficulties. The old saying "Satan finds some mischief still for idle hands to do" still seems true. Mine, of course, being the idle hands. But I'm feeling better day by day & have been out of house, so I trust I won't get into any more mischief.

Yours very sincerely,

Hucakin

P.S. It might explain my attitude to V.I. (Vertical Illumination) if I tell you that since 1899 until I retired I've held responsible positions in large steel works with fully equipped laboratories, where of course the V.I. (Vertical Illuminator) is part of their equipment. I know quite well just what & what it won't do. V.I. (Vertical Illumination) was old before McC(lure) was born & it's not progressed one iota since 1890, & McC(lure). has not, and cannot, discover anything useful about it. In my opinion he is merely a bombastical bluffer. Mechanically V.I. (Vertical Illumination) has been improved & had lenses added (these McC(lure). says are useless, indeed!!!) but in principle & capacity it's still the old 75 years or more Beck V.I. (Vertical Illuminator).

54 Pingle Road, Sheffield, 7 Dec. 1st 1949

Dear Mr. Odam,

Altho' I am now able to go for short walks, I prefer to sit by the fire & write to you in reply to your letter. So here goes. As you say, there seem to have been some misunderstandings.

I've known, met, & corresponded with Swatman for about 50 years. With Morley Jones longer. I corresponded with him before I knew what a diatom was. I've a great opinion of both & we are still great friends. Another late correspondent of many years standing, J.H. Ball, who visited me here, told me I could not suffer fools gladly.

McClure, whom I had never heard of, wrote to me some years back. I quite forget what his letter was about, but I thought it utter rot, & did not hesitate to tell him so in my reply. That's S.H.M. I say fearlessly what I think & care for no man. That explains my objection to allowing you to say anything against my old & tried friends - Swatman, M(orley) Jones, Barker & Fuge.

I've used a Mic(roscope) since 1903, so think I should know what's what. My letters to you have been written solely with a view to help you. I've tried to make you understand that very little is known about diatoms, the nomenclature is hopeless, & the whole thing is only a matter of opinion. It's not a Science, but at best only a HOBBY, which, to enjoy it, needs to be approached with a very broad mind.

Since V.I. (Vertical Illuminator) was mentioned by you, I've tried to make you understand that I was not interested either in V.I. (Vertical Illuminator) or diatom dotting. All I want for my hobby — diatoms - is a ²/₃" & ¹/₆" objective. Although I have all up to date equipment for diatom dotting, I practically never use any of it. Cleaning material, if one could only get material to clean, searching, picking out good perfect specimens, putting them side by side on storage slides for comparison, & then making first class mounts of only the best specimens, is my hobby. I'm keen on putting the correct names on my slide labels, but I don't worry over much about this, because a label is easily changed, & in any case the name is only a matter of opinion. Another diatomist might & probably would not agree. I would not mind in the least. I should consider what he had to say, look the matter up in my books, form my own opinion. If it was same as my critic I should alter my label. If not, the original label would "stay put".

If I think you are wasting your time making such slides as the last batch you sent to me, I'm not afraid to tell you so. At the same time, if you wish to make such slides it's no further business of mine. Each man must enjoy his hobby in his own way. I don't mind you forming your opinion with two or three specimens of *Arach(noidiscus)* and a V.I. (Vertical Illuminator), & I don't mind telling you I think that's not my way of forming an opinion, but I do not wish to interfere with the way you prefer to enjoy the hobby.

I admit the Cassegrain is not easy to use at first. Watson's can't afford to make Cassegrains if folks don't buy them. If one learns to use them they are quite easy, and the results obtained are miles better than V.I. (Vertical Illumination) will ever give for diatoms.

But, as I told you, what you see with ultimate resolution MAY or MAY NOT be actual structure. My opinion about such small and poor specimens as those on the Oamaru slide, is not worth asking for. It won't help you with *Auliscus*,— my opinion I mean.

You say "everyone knows the typical specimens"; — do they ?, that's news to me! Can you tell me what is a typical *Auliscus hardmanianus*? I can't.

Now please let us forget the whole of the misunderstandings.

By all means write to me about Diatoms as much as you wish. I shall always be pleased to tell you what I think, honestly, be it nice or nasty. But please excuse me from further correspondence about V.I. (Vertical Illumination) and about ultimate resolution, diatom dotting and suchlike matters. I'm not the least bit interested.

As regards the sponge spicule sticking through the ocelli of an *M. Auliscus*. This is fairly common in all material which contains a good proportion of spicules. *Cerataulus* often suffers the same way. It does not apply to *A*.

oamaruenses specially. In cleaning Oamaru a good deal of shaking is sometimes necessary to disintegrate the fine debris sticking to the diatoms, and as the silica on the ocelli is thin, the caustic soda may have dissolved it and thus left a hole for the spicule to stick through. *A. convolutus* often suffers in the same way, and it's often a long job to get the spicule out without breaking the specimen. In the case of *A. convol.* it's worth the trouble, but not in the case of the common *A. oamaruenses*. I just ignore them.

I doubt if the spicule actually forces its way thro' the silica, much more likely that the caustic has eliminated the silica & the hole is there inviting any stray spicule.

Answering your questions:

(1) It is not only *A. oamaruenses* that gets the spicules. Any large ocelli form will get them if spicules are there. (2) I think the silica layer on the ocelli is often thin & easily dissolved.

(3) Try to get out a spicule. The spicule is much easier to break than the valve, In the case of a *convolutus*, if spicule did not come out easily I should break it into two or three pieces & get it out easily. Not much fear of valve breaking before spicule, but it might, of course.

(4) Should not think it occurs in fossil bed. Diatoms & spicules would settle to bottom so gently. I think spicule only enters existing hole, not that it penetrates silica.

More experience will prove to you that other species also invite spicules through their ocelli. Best wishes,

Yours sincerely,

Alucakin

54 Pingle Road, Sheffield, 7. Dec.7th 1949

Dear Mr. Odam,

Thank you for your letter & especially the articles on the Electron Mic(roscope). Of course, I've only looked at the pictures yet, but they are really photomicrographs, not merely shadow black & white blocks like all the previous Elec(tron) Mic(roscope) pictures I've seen of diatoms. This is indeed a great advance on anything I've previously seen. I'm very interested indeed & shall read the articles very carefully,

I think as you get to know more about diatoms & realise how difficult it is to find two specimens alike, that you will discover that even Sch(midt's) At(las) figures are not always typical specimens of some species. Take your present slide of *A. ovales*, for instance. which would you consider the typical specimen? I've seen hundreds of specimens & if you asked me I could not be quite sure. I should; however, say I thought the No.1 specimen was the typical one. while on this subject I'm enclosing with compliments a comparison slide of *A. ovales* types. The S(outh) Africa specimens are always pale coloured & as they are recent material it's not caustic soda. Nos. 3,4,5, are fossil. Peru stuff needs soda, so 3 & 5 have "had some". No.4 was probably protected with debris & got saved. Most likely No.4 is a normal specimen, but I'm not sure. Anyway, *A. Grevillei* is not often found unless you happen to get some Guano.

I also enclose a slide of *A. convolutus* as promised. Glad to hear you have managed to find one also. Also, as you say, it may be New Year before you find time to write again, may I wish you the compliments of the Season.

You are lucky to have Oamaru material containing *A. lineatus*, as in my experience it's an extremely rare diatom. Fossil earth is so very variable. For many years I treasured a broken (about ½ of a very small *A. convolutus*) specimen of *A. convolutus* & even sent it round to Fuge & others who had never seen one. Then Rawson, my N.Z. friend, sent me a 2 oz. tobacco tin full of Forrester's Hill earth. The first piece I cleaned was full of beautiful perfect large specimens of *A. convolutus*. I went through the whole of that tin full of earth, cleaning it piece by piece, so as not to mix the results. Not one of the other pieces had a single *A. convolutus* in it so far as weeks of searching revealed.

Of course this uncertainty is the most exciting part of the hobby. When searching one never knows what the next turn of the Mech(anical) stage wheel will bring up. Fishing is not a "patch" on diatoms.

Aulacodiscus elegans is another elusive species, but if one gets the right material it's not so rare. St. Laurent, if you have any, will give you a few puzzles in Auliscus species I think, but it requires rather a lot of searching as the Auliscus are few & far apart.

As regards your slides, I'm much better pleased with this batch. Your ink has settled to bottom of bottle. Stir it up well with a sable brush before making your rings. It's no use just shaking the bottle as the ink is heavy & settles down to form a hard cake at bottom of bottle, then shaking won't mix it up. It needs a brush. I always use a brush & well mix my ink before I start ringing covers. Don't use your No.00 for mixing. I use a No.4 or No.5 for this. It would ruin a No.00 brush. Kind regards, The Letters of Samuel Henry Meakin to Charles Leslie Odam (1948-1950)

Yours sincerely,

Alucakin

54 Pingle Road, Sheffield, 7 Jan. 25th 1950

Dear Mr. Odam,

Pleased to get your packet & letter this morning. The slides are a most interesting lot, and you have done well with the names.

[There follows several paras. which relate to the consideration of numbered slides submitted for criticism and advice to S.H.M. by Mr. Odam – not included]

Yes, a most interesting lot of slides.

Now, for your letter. I have not expected any word from you for the past few weeks, as your previous letter warned me you would not be writing.

I'm not surprised to hear you are finding out you can't look on diatoms as a serious scientific study. I think the only diatomist I ever knew who seemed able to treat them seriously was D.P. Fuge. No matter how I pointed out errors etc. he still "stuck to his guns".

Many years ago, I found the hobby in such a mess so far as names went, that for a time I actually gave up the hobby entirely. But searching a spread slide of diatoms is so exiting (almost like fishing) that I turned back to the hobby & decided not to worry about names, but enjoy the excitement of finding pretty diatoms. I look on my cabinet of slides as one would look on a stamp album. But I'm not a collector, and from time to time I have sold the entire slides in my cabinet. My car was bought on the proceeds of one cabinet of slides, sold to a U.S.A. customer - over £200. At present, my cabinet contains 7 doz. slides only.

Of course, as compared with stamps collecting, diatoms cost practically nothing. I could not afford the expense of stamp collecting.

As you go further into the hobby, you will reject any but fine specimens for mounting; except of course rare finds, which you will mount even if broken. You will also, as you say, mount other genera. *Auliscus* are not numerous enough and not easily found to last you very long at the hobby. *Aulacodiscus* are more numerous and last much longer as a hobby. But I like all genera, so I never get to the end of diatoms. *Triceratium* also, is a good genus to work at. Both *Aulac(odiscus)* and *Tric(eratium)* have plenty of good figures. Keep clear of *Cos(cinodiscus)* and *Navicula*. I mounted a slide of Cal(ifornia) *Auliscus* a week or two back, 41 specimens, and 18 were *hardmanianum* types which vary greatly.

I don't take much notice of stray dots on hyaline spaces so far as identification is concerned. As I think I have told you, I think diatom shells grow from small ones to larger ones, and I've an idea that these dots are perhaps part of the process of growing. I think your 5-process *speciosus* — slide 135 No.2, is a good example of a diatom born little and in the process of growing larger, as it only shows traces of what a full sized *speciosus* will look like.

Also, perhaps your 135 No.1 might even eventually develop the reticulation and dots on your 130 NO. 1 to 3 specimens if it had lived longer. Who can say?

Glad to hear Watson's have put your Mic(roscope) in order. I can, of course keep mine in perfect condition. In spite of all the uncertainty, diatoms are a fine hobby. At present, as and when the spirit moves me, I'm going over my storage slides and mounting outstanding specimens and comparison slides. I've thousands of fine specimens already picked out on storage slides, and I may aswell mount them as spend the time in further searching.

I'm pleased to say my health is back to normal, and I hope you are keeping well. Shall be pleased to hear from you as & when the spirit moves you.

Best Wishes,

Yours very sincerely,

Alucakin

54 Pingle Rd, Sheffield. 7. Mar. 27th 1950.

Dear Mr. Odam,

Pleased to get your letter this morning. I wondered what had happened to you. Glad to know it's no worse than shortage of time.

Regarding your queries :-

"Naviculoid Diatoms" by P.T. Cleve, will answer all your queries about *Pleuro. Gyrosigma* and the numerous divisions of the *Navicula*. In case you can't borrow from Quekett, etc. you can get it on loan from Kew. Full title is :-

"Synopsis of the naviculoid Diatoms" by P.T. Cleve. Parts 1 and 2.

He names diatoms like *P(leurosigma)* angulatum — dots on rows at an angle with raphe and "*Pleurosigma*" and those like *P. balticum* - dots at right angles to raphe and square formation "*Gyrosigma*".

As regards such things as *Caloneis, Actinoneis*, etc. etc. - there is a score or more of them - you would need Cleve's book to understand them.

Some folks like Van Heurck, and Mann did not follow Cleve — professional jealousy probably. Others like Boyer DID follow Cleve.

D.P. Fuge wore his first copy of Cleve to rags and had to buy a new copy. He knew more about *Naviculoid* diatoms than any man I ever knew. He could never understand pictures, or drawn figures of diatoms, but was 'nuts' on written (printed) descriptions. I think he must have known Cleve about as well as he did his Bible. Personally, I think I should follow Fuge and Cleve, and ignore V(an) H(uerck) and Mann on this matter. It's all a matter of opinion.

Take a bit of advice. LEAVE *COS(CINODISCUS)* SEVERELY ALONE. A lifetime is too short to bother with *Cos(cinodiscus)*. As I understand it, *Cos(cinodiscus)* radiatus is a sort of KEY diatom, or corner post. No harm in making all the others vars. of radiatus, but nobody will believe you. Much better, in my opinion, and more sensible to adhere to the given species names in all cases when you can really decide the species. Making *Asteromphalus* a var. of *radiatus* is foolish in my opinion.

(Cleve is nearly all printed description., and only a few figures.)

I'm sorry, *Amphiphora* & *Amphora* have never interested me & I know nothing about them. So I can't say anything about them.

I think *A. coelatus* is a very variable diatom, but I've never been able to pick out a specimen & say this is not "*coelatus*" it's "*sculptus*". Watsons used to "stock" both, so if "*sculptus*" was ordered I picked out smooth specimens of *coelatus* & mounted them, but I felt a very guilty man.

Really, I've done very little work on British diatoms & know almost nothing about them. I can't think of any other species of *Auliscus* nor *Tric(eratium)* than those you name in British material, but I really can't say anything useful. Except for learning the names of the British species which Watsons occasionally — very occasionally - ordered, I've never been interested in British diatoms, either Marine or F(resh) water. Of course Watsons used to take dozens & dozens of the test diatoms – *P(leurosigma) ang(ulatum), S(urirella) gemma, A(mphipleura) pellucida* & such forms, but I think in about 20 years only called for one or perhaps two half dozens of *A. "sculptus"* & *"coelatus"*.

I don't think any private customer ever asked for any British diatom slides except for test diatoms. Pleased to say I'm well & I hope you are. Gardening time is here and I've put the Mic(roscope) & diatoms away for a few months. Thank goodness there is no fear of any Watson orders, now they have given up selling slides. Private customers will be told "nothing doing".

With kind regards, Yours very sincerely,

Alucakin

54 Pingle Road, Sheffield, 7. Apl. 15th 1950

Dear Mr. Odam,

Thanks for your letter & stamp. Yes, Kew library of diatom books comes in very useful sometimes, although I have most of the important diatom books. Copying is the only way with these out-of-print books and it takes a lot of time.

Of course, you can borrow Sch(midt's) At(las) from Kew. Did they send you their "Out-of-print" list of Diatom Books to make a copy? They will if you ask for it.

I was rather afraid you had got tired of *Auliscus*, because, as you say, it's difficult to find many of them. As regards spreads, I've never seen any Galapagos Is(lands) material. My tube of Phillipines purchased from Tempere 30 or so years ago is empty, but it did not contain any large *Navicula*. It was nothing like the material Mann had from the Phillipines. Californian material is the best I know for large *Naviculas*, and they need a lot of searching for. I really don't know of any material which contains a variety of species. I certainly have not got any, so I'm sorry I can't help you.

So far as my experience goes, these largish *Navicula* are solitary specimens, and need considerable searching for. I used to dread Watson's asking for a dozen slides of *Navicula Lyra*. It meant long searching for me to find the specimens.

If the weather would come a bit warmer, I would be too busy in my garden to bother about diatoms, but in bad weather such as we have had lately, I have turned to my storage slides, and have been making some type slides. I've thousands of prime specimens picked out on storage slides, and it is foolish to do further searching when I can't expect to find anything different from, nor better specimens than I already have. Best Wishes,

Yours Sincerely,

Alucakin

54 Pingle Rd. Sheffield. 7. May 23rd 1950.

Dear Mr. Odam,

It is nice to hear from you again, and to see you are still interested in *Auliscus* and slide making. Except for a slide now and again as the spirit moves me, mounted from the thousands of specimens already on my storage slides, I have done practically nothing since I last wrote to you.

Today, the weather is very cold here, and it's no pleasure to be in the garden; so I got out the microscope and looked at your slides.

To anyone specially interested in *Auliscus*, Greville's monograph is worth reading, apart from the descriptions of *Auliscus* specimens, there are 6 pages of reading matter which I find interesting.

I don't suppose anyone would ever sit down to READ any of Rattray's Monographs. When I feel like a nap by the fireside, I pick up one of Rattray, and I'm soon fast asleep. I always think his monographs make me more uncertain about an identification than I was before I read Rattray.

As regards your slides :-

[There follows a discussion of four slides submitted by Mr. Odam.- not included]

Oh dear, I meant my letter to stop at page 2. Well, it can't be helped, I must finish about this slide. I think Sch(midt's) At(las) 30/7 and 30/8 although from different localities, are examples of your prize puzzle given two different names. Then Fortmorel, 'Malay Diatoms' Plate 8, Fig.2, gives a figure of this form and names it *Aulis. Treubii*. Again quite recently, Hendey, Jour. R.M.Soc. 1939.Vol LIX. page 12 and plate 1, fig.2 figures your form - his also came from Sydney, Australia — calling it *Aulis. pulcherrinus*. But I'm afraid Hendey is not very good at naming 'new' ?? exotic species. I don't agree with 4 of his figures on Plates I & II, 3 & 4 on Pl.2 being some variable species, as you can't find two specimens of this diatom alike. Pl.I,fig.5 is not a Cos(cinodiscus) at all, as I proved to Hendey, since when he does not write to me. Plate 2, fig.1 & 2 are probably another example of a very variable species, and therefore same species as Pl.2,fig.4 in Grev(ille)'s. *Camp(ylodiscus) fenestratus*, Mic. Jour 1857,vol.V pl.3, fig.4. I sent Hendey a slide showing about 6 or 7 valve and girdle views of his *Cos(cinodiscus)*!!! from Moreno Shale. It is like this in girdle view.

NO *Cos(cinodiscus)* is like this. He never acknowledged receipt of slide. I named it "*Cos(cinodiscus) costatus* ??", and I suppose he did not like it. Since then, I've learned that Hendey is very serious, and can't take a joke. Going back to your "prize puzzle", I have some Constantinople material rather rich in *A. coelatus*, and it also contains odd specimens of your form — about one specimen per spread. The Sydney stuff contains plenty of your forms, but its very rich in *A. coelatus*.

Well, I hope you will have a fine holiday. The weather has been very unsuitable here for gardening for many weeks.

Best wishes, Yours sincerely,

Alucakin

APPENDIX Samuel Henry Meakin (1876-23rd March 1955)

Meakin, S. H. - 54 Pingle Road, Sheffield 7 (1937 on). Also 11 Hartington Avenue (1931), Sheffield also 66 Sandford Grove, Sheffield (1923)

Hucakin Vincents av. Cor

Samuel Henry Meakin signature - 1911 Census

Elected to Quekett Microscopical Club 13th April 1943.

In 1945 and 1948 was at 54 Pingle Road, Sheffield 7. Stated interest 1945 - Diatoms. Stated interests 1948 - Brass and glass; diatoms.

Samuel Henry Meakin appears as a customer in the accounts of J. T. Norman where two sales are recorded. One in May 1926 and another in June of the same year.

Advertisement in The Microscope October and November 1937 - 'Wanted, DIATOMS cleaned or uncleaned in exchange for other material, slides or photographs of diatoms. - Meakin, 54 Pingle Road, Sheffield.' Advertisement in The Microscope May 1938 - 'DIATOMS cleaned or uncleaned in exchange for other material, slides or photographs of diatoms. - Meakin, 54 Pingle Road, Sheffield.'

Advertisement in The Microscope July 1938 - 'DIATOMS cleaned or uncleaned in exchange for other material, slides or photographs of diatoms. - S. H. Meakin, 54 Pingle Road, Sheffield.'

Advertisement in The Microscope October 1938 - 'DIATOMS cleaned or uncleaned in exchange for other material, slides or photographs of diatoms. - S. H. Meakin, 54 Pingle Road, Sheffield.'

Advertisement in The Microscope March 1939, May 1939 - 'Diatom Material, recent or fossil, cleaned or uncleaned, anted in exchange for other material or diatom slides. Correspondence invited. - S. H. Meakin, 54 Pingle Road, Sheffield, 7.'

Articles in the Quekett Journal

- 1938 Note on a new diatom from Joes River, Barbadoes Vol. 24, page 100
- 1942 Notes on Diatoms Vol. 24, pages 230-233

1950 - A note concerning the non-validity of Stictodiscus conserpus, n.sp, Ba. &. Me. Vol. 26, page 162

- The articles below were written in conjunction with J. W. Barker.
- 1943 New Genera and Species of Diatoms from Russia Vol. 24, pages 251-255
- 1944 New and Rare Diatoms Vol. 25, pages 18-22
- 1945 New and Rare Diatoms Vol. 25, pages 76-79
- 1946 New Diatoms from the Moreno Shale Vol. 25, pages 143-144

1947 - Diatoms from Russian Deposits Vol. 25, pages 175-178

1948 - New and Rare Diatoms Vol. 25, pages 233-235

1949 - New and Rare Diatoms Vol. 25, pages 301-303

The article below was in conjunction with A. L. Brigger

1949 - New and Rare Diatoms Vol. 26, pages 41-42

The article below was in conjunction with C. C. Swatman.

1936 - A note on Craspedoporus elegans and Porodiscus interruptus Vol. 23, pages 197-199 (Note:- Cecil Charles Swatman. Elected to Quekett Microscopical Club 8th February 1921. In 1939 and 1945 Members list was at 23 Canning Road, Walthamstow, E. 17. Stated interest - Diatoms. Quekett Microscopical Club committee member 1937-38, 1938-39, 1939-1940-1941-1942, 1942-1943. Present at the Quekett Microscopical Club Conversazionne on Tuesday 12th October 1937 at the Rooms of The Royal Society of London, Burlington House, Piccadilly, W.1. showing - Diatoms: and Hippuric acid [polarized light]. Present at Quekett Microscopical Club Gossip meeting 24th August 1937 exhibiting - Selected diatoms; three Actinoptychus from cutting for new National Route 1010, Newport, Cal. In 1937 Deepees Ltd were advertising 'Swatmans diaton sieves' [see Quekett Microscopical Club Journal inside front cover March 1938]. C. C. Swatman Present at the Quekett Microscopical Club Conversazione on Tuesday 11th October at Burlington House, demonstrating - The Cleaning of Diatoms.)

Articles in The Microscope

January 1939 - Mounting Moth and Butterfly Wing Scales June 1939 (reprinted Vol. 13. No. 3. July/August 1961) - The Study of Diatoms (I) July 1939 - The Study of Diatoms (II Cleaning; Strewn slides) August 1939 - The Study of Diatoms (III Media; Strewn slides) September 1939 - The Study of Diatoms (IV Selected slides) November 1939 - The Study of Diatoms (V Mechanical Fingers)

Articles in Watsons Microscope Record

Mounting Diatoms in Hyrax - September 1933 (No. 30) Mounting Diatoms - May 1934 (No. 32)

Publishers of The Microscope - "Mounting Diatoms with notes on Cleaning Material' by S. H. Meakin and C. C. Swatman'. Price 5s. 2d. post free.

How to Study Diatoms-2, A Mechanical Finger by Meakin, S.H. - The Microscope Sep.-Oct. 1961 - Also included in "A Diatom Notebook" by James F. Fidiam 1976 (unpublished)

How to Study Diatoms-3, Mounting Selected Slides by Meakin, S.H. - The Microscope Jul.-Aug. 1962 - Also included in "A Diatom Notebook" by James F. Fidiam 1976 (unpublished)

Mr. S. H. Meakin read the Diatom section of the manuscript for Wilfrid J. Garnetts 'Freshwater Microscopy (1953) and mounted a slide of freshwater diatoms specifically for the volume. The photographs of this appear as Plates XII and XIII in the book.

SAMUEL H. MEAKIN (1876-1955)

S. H. MEAKIN, who died on 23 March is well known by name to all members who are interested in the diatomaceae, for the series of articles in the Journal describing new and rare diatoms, written in collaboration with J. W. Barker and A. L. Brigger.

Meakin was an engineer, and his hobbies were gardening, photography and microscopy. Shortly after the end of the first world war, owing to a severe physical disability, he decided to retire from his profession and take up an occupation which could be followed at home. At this time the

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correspondence columns of the "English Mechanic" contained many letters dealing with microscopical matters and Meakin replied to a letter of mine offering help in mounting diatoms.

He soon became an accomplished mounter and Long and Fuge helped him in nomenclature in the early stages of this work. His engineering skill enabled him to build his own microscope (to which he later added a commercial binocular eyepiece) and to make many pieces of accessory apparatus, including the mechanical fingers which he used with such success in the manipulation and mounting of diatoms, of which his preparations are unsurpassed. His extraordinary skill in manipulating diatoms and splitting frustules and even valves into their component parts enabled him to make full use of his unusually keen powers of observation. Meakin described his apparatus in a series of articles in "The Microscope", later republished in book form with instructions on collecting and mounting diatoms.

His excellent photographic reproductions of figures of diatoms are well known.

As a Christmas Greeting Meakin usually sent his friends and correspondents a beautifully mounted diatom enclosed in a cardboard box which he had made with infinite care.

I never met Meakin personally, but it was my privilege to enjoy his friendship through letters from the time when he first took a practical interest in diatoms. He was an ideal correspondent. One never had to wait for more than a day or two for a reply to a letter, and there was never the slightest difficulty in reading it.

His observations of facts, based on his handling and mounting of thousands of diatoms, were unquestionably accurate, but his conclusions were often controversial, and, as he upheld his opinions with the utmost enthusiasm, his letters were always most stimulating. A. M. J.

SERIES 4, VOLUME IV, 1954-1957 Page 243 (Samuel H. Meakin)

Probate: Meakin, Samuel Henry, of 54 Pingle Road, Sheffield, died 23rd March 1955. Administration (with Will) London 31st May 1955 to National Provincial Bank Limited. Effects £11,092 8s. 4d.

Charles Leslie Odam, M.A. (Camb.), M.R.C.S. (Eng.), L.R.C.P. (Lond.) (Dr.), F.R.M.S.

Elected to Quekett Microscopical Club 1st December 1936.

In 1939 Quekett Microscopical Club members list was at Castleacre, 21 Adelaide Avenue, S.E.4.

In 1945 and 1948 members list was at 230 Brockley Road, S.E.4. (1948 - Tel:-Tideway 1811). Stated interests - Diatoms, Protozoa, Cladocera (The latter absent from 1948 interests).

Papers -

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1949 - A beginners guide to diatom recognition (Journal of the Quekett Microscopical Club Vol. 2. Pages 330-334)

1951 - Diatoms of the Thames Estuary. (Journal of the Quekett Microscopical Club Vol. 3. Pages 225-236) 1953 - Periodic observations of the plankton diatoms of a Kentish river. (Journal of the Quekett Microscopical Club. Vol. 3. Pages 437-447)

Quekett Microscopical Club Hon. Treasurer 1938-1939, 1939-1940-1941-1942, 1942-1943

Present at the Quekett Microscopical Club Conversazionne on Tuesday 12th October 1937 at the Rooms of The Royal Society of London, Burlington House, Piccadilly, W.1. showing - Pond Life: Eurycercus lamellatus.

Present at the Quekett Microscopical Club Conversazione on Tuesday 11th October at Burlington House, showing - Living Pondlife.

Present at the Quekett Microscopical Club Gossip 23rd November 1937 exhibiting - Freshwater flagellates: Menoidium and various englenoids, stained tincture of iodine to show flagella.

Present at the Quekett Microscopical Club Gossip 21st December 1937 exhibiting - Choanoflagellate Salpingoeca (?) amphoridium. Apo. 3-min. and Holos. O.I. condenser.

A note in December 1944 QMC Journal relates '...owing to war duties, has been unable to attend meetings and act as Treasurer,'

The Letters of Samuel Henry Meakin to Charles Leslie Odam (1948-1950)

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John Brown Odam b. circa 1787 Southmolton, Devon
   In the 1841 Census @ Headdon, Filleigh, Devon, aged 50+, a Tailor
   In the 1851 Census @ Headdon, Filleigh, Devon, aged 63, a Tailor employing 2 men
   In the 1861 Census @ Filleigh Hill, Filleigh, Devon, aged 73, a widower, a retired Tailor
   In the 1871 Census @ Stagshead, Southmolton, aged 83, a widower, an Annuitant
   d. 10th April 1878 @ Stag's Head Village, Southmolton
   BMD Death, aged 90, June Quarter 1878 South Molton Vol.5b. pg.351.
   Probate: Odam, John Brown (Personal Estate under £200) Granted 28th May 1878.
             The Will of John Brown Odam late of Stag's Head Village in the Parish of Southmolton
             in the County of Devon, Tailor, who died 10th April 1878 at Stag's Head Village,
             was proved at Exeter by John Odam, of Stag's Head Village, Tailor, the Son, the sole
             Executor.
m. Frances ? b. circa 1785 Chittlehump, Devon
      In the 1841 Census @ Headdon, Filleigh, Devon, aged 55+
In the 1851 Census @ Headdon, Filleigh, Devon, aged 65
      d. prior to 1861
 ---John Odam b. circa 1821 Filleigh, Devon
       In the 1841 Census @ Headdon, Filleigh, Devon, aged 20+, a Tailor
In the 1851 Census @ Headdon, Filleigh, Devon, aged 29, a Tailor
       In the 1861 Census @ Filleigh Hill, Filleigh, Devon, aged 40, a Tailor
         employing 1 man and 1 boy
       In the 1871 Census @ Stagshead, Southmolton, aged 50, a Master Tailor
       In the 1881 Census @ Stagshead, South Molton, aged 60, a Tailor employing 1 man
       In the 1891 Census @ Stagshead, South Molton, aged 70, a Tailor, a Widower
       d. 11th November 1892
       BMD Death, aged 71, December Quarter South Molton Vol.5b. pg.303.
Probate: Odam, John, of Filleigh, Devon, retired Tailor, died 11th November 1892
                 Administration Exeter 26th November 1892 to John Charles Odam, schoolmaster.
                 Effects £690 11s. 4d.
    m. Ann Ingerson b. circa 1827 Pilton, Devon
           BMD Marriage December Quarter 1857 South Molton Vol.5b. pg.745.
           In the 1861 Census @ Filleigh Hill, Filleigh, Devon, aged 33
           In the 1871 Census @ Stagshead, Southmolton, aged 43
           In the 1881 Census @ Stagshead, South Molton, aged 53
           d. prior to 1891
     ---John Charles Odam b. circa 1858 Filleigh, Devon
           BMD Birth December Quarter 1858 South Molton Vol.5b. pg.432.
            In the 1861 Census @ Filleigh Hill, Filleigh, Devon, aged 2
            In the 1871 Census @ Stagshead, Southmolton, aged 12, a Scholar
           In the 1881 Census @ 10 Cole Brooke Row, Islington, London, aged 22, a Schoolmaster
        m. Annie Sarah Chapple or Mary Wells
               BMD Marriage September Quarter 1884 Holborn Vol.1b. pg.1180.
    |---Anne Odam b. circa 1859 Filleigh, Devon
            BMD Birth March Quarter 1860 South Molton Vol.5b. pg.473.
            In the 1861 Census @ Filleigh Hill, Filleigh, Devon, aged 1
            In the 1871 Census @ Stagshead, Southmolton, aged 11, a Scholar
            In the 1881 Census @ Harewood House, Harewgood, Yorkshire, aged 21, a Lady's Maid
     ---Charles Odam b. circa 1862 Filleigh, Devon
           BMD Birth March Quarter 1863 South Molton Vol.5b. pg.490.
            In the 1871 Census @ Stagshead, Southmolton, aged 8, a Scholar
In the 1881 Census @ Stagshead, South Molton, aged 18, a Dressmaker
           In the 1891 Census @ Clarence Street, Dartmouth, aged 28, a Tailor and Outfitter
In the 1901 Census @ Ridge Hill, Dartmouth, aged 38, a Tailor and Costumia
           In the 1911 Census in Totnes, Devonshire, aged 48
           d. 21st October 1935
           Probate: Odam, Charles, of 9 Forest Glade, Leytonstone, Essex, died 21st October
1935. Probate London 10th March 1936 to Ellen Maria Odam, Widow, Charles
                     Leslie Odam, Medical Practitioner, and Francis Boverton Reed, Paper Agent.
                     Effects £5888 9s. 3d.
        m. Ellen Maria Bradford b. circa 1860 Lapford, Devon
               BMD Birth December Quarter 1860 Crediton Vol.5b. pg.375.
               BMD Marriage March Quarter 1889 South Molton Vol.5b. pg.718.
               In the 1891 Census @ Clarence Street, Dartmouth, aged 30
               In the 1901 Census @ Ridge Hill, Dartmouth, aged 40
               In the 1911 Census in Totnes, Devonshire, aged 50
               BMD Death, aged 82, June Quarter 1943 Greenwich Vol.1d. pg.585.
          ---Charles Leslie Odam b. circa 1892 Dartsmouth
             | BMD Birth June Quarter 1893 Totnes Vol.5b. pg.222.
                In the 1901 Census @ Ridge Hill, Dartmouth, aged 8
                In the 1911 Census in Totnes, Devonshire, aged 18
             m. Ivy Gladys Soper
                   BMD Birth March Quarter 1891 Stroud Vol.6a. pg.355.
                    BMD Marriage March Quarter 1917 Okehampton Vol.5b. pg.672.
                   BMD Death, aged 56, March Quarter 1947 Greenwich Vol.5c. pg.828.
                -Margaret D. Odam
                 | BMD Birth December Quarter 1917 Southampton Vol.2c. pg.28.
                 m. Reginald Lindley-Jones
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The Letters of Samuel Henry Meakin to Charles Leslie Odam (1948-1950)

BMD Marriage March Quarter 1941 Lewisham Vol.1d. pg.1856. ---Audrev M. Odam | BMD Birth September Quarter 1920 Greenwich Vol.1d. pg.2004. m. Robert H. M. Treen BMD Marriage March Quarter 1947 Lewisham Vol.5d. pg.63. |---John Cecil Hamilton Odam | BMD Birth September Quarter 1923 Greenwich Vol.1d. pg.1610. m. Eileen M. Small BMD Marriage September Quarter 1948 Lewisham Vol.5d. pg.102. m. Audrey Hilda Charlton BMD Marriage March Quarter 1947 Croydon Vol.5g. pg.197 or 199. |---Cecil Wilfred Odam b. circa 1897 Dartsmouth BMD Birth September Quarter 1897 Totnes Vol.5b. pg.155. In the 1901 Census @ Ridge Hill, Dartmouth, aged 3 In the 1911 Census in Totnes, Devonshire, aged 13 |---Frances Odam b. crica 1864 Filleigh, Devon BMD Birth December Quarter 1864 South Molton Vol.5b. pg.449. In the 1871 Census @ Stagshead, Southmolton, aged 6, a Scholar In the 1881 Census @ Stagshead, South Molton, aged 16, a Dressmaker's Assistant |---Thomas Henry Odam b. circa 1866 Southmolton, Devon | BMD Birth June Quarter 1866 South Molton Vol.5b. pg.461. In the 1871 Census @ Stagshead, Southmolton, aged 4 In the 1881 Census @ Stagshead, South Molton, aged 14, a Garden Labourer In the 1891 Census @ Gardener's Bothy, Culford, Suffolk, aged 24, a Gardener (Domestic) |---Alfred James Odam b. circa 1867 Southmolton, Devon
| BMD Birth December Quarter 1867 South Molton Vol.5b. pg.455. In the 1871 Census @ Stagshead, Southmolton, aged 3 In the 1881 Census @ Stagshead, South Molton, aged 13, a Scholar possibly m. Ellen Mary Bellringer or Ellen Priddle BMD Marriage March Quarter 1899 Taunton Vol.5c. pg.429. |---Mary Martha Odam b. circa 1870 Southmolton, Devon BMD Birth September Quarter 1870 South Molton Vol.5b. pg.451. In the 1871 Census @ Stagshead, Southmolton, aged 7 months In the 1881 Census @ Stagshead, South Molton, aged 10, a Scholar In the 1891 Census @ Stagshead, South Molton, aged 20, a General Servant (Domestic) possibly m. Edward Arthur Dicker, George Frederick Snook or A. N. Other BMD Marriage December Quarter 1893 Edmonton Vol.3a. pg.360. ---Thomas Odam b. circa 1825 Filleigh, Devon In the 1841 Census @ Headdon, Filleigh, Devon, aged 15+, a Tailor In the 1851 Census @ Headdon, Filleigh, Devon, aged 25, a Tailor |---Martha Odam b. circa 1831 In the 1841 Census @ Headdon, Filleigh, Devon, aged 10

BMD Death, aged 66, Charles Leslie Odam, June 1959 Deptford Vol.5c. pg.390. Charles Leslie Odam d. 15th June 1959

Probate: Odam, Charles Leslie, of 230 Brockley Road, Brockley, London, died 15th June 1959. Probate London 2nd September 1959 to Audrey Hilda Odam, widow and John Cecil Hamilton Odam, Chartered Architect. Effects £28,379 12s. 7d.

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Obituary

JOHN WILLIAM BARKER, B.Sc., A.R.C.S., 1877-1948

Mr Barker died in hospital on 26 August 1948 after a fall resulting in a fractured leg. He joined the Club in 1939 serving on the Committee from 1942 to 1945. The writer has known him for the past twenty-five years as a keen diatomist, a skilful photomicrographer, and a lucid exponent of microscopical optics. As a diatomist he has been responsible for the publication of several new genera and numerous species in conjunction with his fellowmember, Mr Meakin of Sheffield. Their papers in our Journal for the past six years are illustrated by photomicrographs of diatoms that have probably never been surpassed. Whether photography is always the best means of representing a diatom is an open question, but Barker set out to prove its worth, and by his method of employing a substage condenser with a small excentric stop, he obtained what he termed a plastic effect improving the rendering of structure and contour, while the silex is rendered as of opaline whiteness against a background a shade darker. Two years after its inception in 1911 Barker joined the Photomicrographic Society winning the Barnard Medal in 1931, and in their Journal for 1936 he contributed a paper on the photography of diatoms that deserves wider publicity. This short paper is a masterpiece of concise information on the theoretical and practical optics involved. Since his retirement from the Patent Office in 1938 he devoted much time to the derivation of diatom nomenclature compiling an index of eighty-six closely typed quarto sheets which, it is to be hoped, may eventually be published. Barker was ungrudging in his help to those of us less well informed and his passing leaves a gap in our ranks which will not be readily filled. F. C. W.

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John William Barker d. 26th August 1948

Probate: Barker, John William, of 8 Balcaskie Road, Eltham, London, died 26th August 1948 at ST. Nicholas Hospital, Woolwich, London. Administration (with Will) London 28th May 1949 to Elizabeth Agnes Barker, Widow. Effects £5457 10s. 5d.

Arthur E. McClure

ARTHUR MCCLURE joined the Club in 1936. A naval architect by profession and a bachelor, his death in 1973 robbed us of a member with outspoken views. Of recent years personal problems prevented his attendance at meetings and in consequence newer members were denied the opportunity to become acquainted with an accomplished microscopist having a particular interest in illumination and the theory of image formation. He is remembered especially for his skill in wresting the utmost resolution from any given set-up, for his remarkable ability to manipulate vertical illumination applied to transparent objects; but in Club circles his name will always be linked to his work and writings in connection with diffused lighting in substitution for the more usual condenser system. It was a pity that his prose style made such difficulties for the reader and also that there appeared to be a perverse streak among certain of his contemporaries, who never

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could, apparently, seem to appreciate the point about his use of an *opal* glass diffuser. His major *opus* had to wait some ten years before it was published and then it was put out with an apologetic (editorial ?) note as an 'informal' paper. Right from the first inaccurate report of the paper following its reading, he had to fight a running battle with those who attributed the use of ground glass to him. We remember Arthur as a great Club personality.

A.B.

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Obituary Notices

FREDERICK CLUNIE WISE, F.R.M.S., 1884-1962

BORN on October 4th, 1884, Frederick C. Wise was the son of a Woolwich doctor. His ambition to enter the medical profession was not fulfilled for in 1900 he joined the staff of the Midland Bank and remained there until his retirement in 1946. He was quietly proud of being able to trace his ancestry to the Duc de Sully, a Minister of Henry IV of France (c. 1600). Voluntarily serving in the R.A.O.C. during World War I, he was mentioned in dispatches and reached commissioned rank. Wise, as he was affectionately known, joined the Quekett Microscopical Club in 1939, was of quiet retiring nature and happiest when discussing the taxonomy of the Diatomaceae with other experts or when instructing a beginner in the use of the microscope. He was President from 1958 to 1961, served on many committees and was sometime Honorary Treasurer of the Brighton and Hove Natural History Society. During the last two years of his life his health failed and he was grateful for the care given to him by relatives at Portslade. His carefully catalogued and indexed collection of over five thousand diatom slides was presented to and accepted by the British Museum (Natural History) just before he died. His death on August 12th, 1962, is mourned by friends of many years standing, spoken for us all by one who wrote 'a beloved President '.

I am indebted to Mr. and Mrs. Nassau-Kennedy of Portslade and several Quekett Club friends for much of the information contained in this appreciation.

F.H.

Frederick C. Wise's contributions to the Journal of the Quekett Microscopical Club.

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Frederick Clunie Wise d. 12th August 1962

Probate: Wise, Frederick Clunie, of 31 Highlands Road, Portslade-by-Sea, Sussex, died 12th August 1962 at The General Hospital, Brighton. Probate Lewes 19th October 1962 to Arthur John Rinault Fraser Taylor, Solicitor and Ronald Seymour Nassau-Kennedy, Insurance Official. Effects £3675 11s. 4d.

