Dear Professor Behre,

I am waiting for details of the jig and tables of riddle.

If you could give regard to silica extraction, I would be greatly appreciating.

Acting on instructions from my principals and in accordance with your letter to our Newcastle office, I herewith enclose rough tracings as follows,

(1) St. Peter's Mine Plan.
(2) Boltsburn Mine range of Flats.
(3) Larger scale plan of a portion of the Boltsburn Flats.

I hope you will find these of interest, and should you require any further details of use in your researches I think they will be readily available.

I thank you for and appreciate your letter of the 21st inst., your visit was all too short, as there were several things I would have liked to discussed. Three of the most important were:

(1) The prospects of finding ore deposits below the present range of worked ground.
(2) The treatment of fluorspar, particularly the extraction of silica.
(3) The vein intersection at our Elps Mine.

(1) Experience of mining in depth has certainly not been encouraging, most of the veins rapidly deteriorate below the Great Limestone, generally splitting into stringers and where they do not split there is often a gradual narrowing and impoverishment of sulphide contents and a change of gangue contents minerals, until we get veins or stringers of calcite or quartz, neither being favourable gangue mine rals in this area. The doming of the area may be the cause of this downward narrowing, in which case it may vary with the changing curvature of the dome.

The intrusive Whin Sill is the lowest limit of worked ground in Weardale, and only three mines have penetrated it, and these have met with only a limited success. Below this Whin Sill there are several limestone beds, the thickest the Melmerby Scar Limestone with a thickness up to 150 feet. The question of testing these lower limestones has often been considered, it is a speculative and extensive trial I shall be glad if you can give us any arguments in favour or against this trial, probably your experience and knowledge of other lead-zinc producing districts may provide similar conditions from which it would be possible to draw a comparison.

(2) Your Country has had a good deal of experience of the treatment of fluorspar, particularly the extraction of silica. It is questionable whether the flotation of fluorspar for silica separation is an economical proposition, but I understand that you have attained a good deal of success with gravity concentration. I have one or two contributions of the U.S. Bureau of Mines on this subject but they rather lack essential detail such as the methods of jiggling and...
tabling, with details of the jigs and tables, system of riffles etc. I understand that the Illinois-Kentucky field have deposits similar to those of Weardale, and any information you can give us with regard to silica extraction would be greatly appreciated.

(3) The enclosed sketch shows the Esps Vein in the 4 Fathom Limestone. The vein on the west side of the cross vein was very productive and was reported to have a strong slickenside lead. On reopening the level recently there is a strong slickenside lead going north in the cross vein but only very weak slickensiding in evidence going south in the cross vein and on the east side of the cross vein in the main Esps Vein. I do not understand the movement that has produced this slickensiding in both the direction of the main vein and the cross vein, but being a post mineralization movement it would naturally follow the line of least resistance and the main fissure being tight to the west of the cross vein, it has followed on the line of the cross vein and will do so until it comes to another fissure of less resistance when it will take that course. As it goes to the north it is probable that there is another vein to the north, and I am proposing to drive northward on this cross vein with this end in view. What is your opinion of this prospect?

I hope that these Plans will reach you before leaving this Country, the other points raised in this letter can well wait until you have the opportunity to give a considered reply.

Yours Sincerely