# "BADLY POLLUTED": Report on Condition of River Esk A DIFFICULT PROBLEM

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The Scottish advisory Committee on rivers pollution prevention, under the chairmanship of Sir W. E. Hind, conducted an enquiry into the condition of the river Esk, Midlothian. Their report, which has been submitted to the Department of Health for Scotland, says that from the facts recorded it will be seen that the River Esk is very badly polluted and that to effect complete purification will be a difficult problem. The most serious cause of pollution are undoubtedly the effluents from the paper mills on the North Esk. These effluents cause the river to be greatly discoloured, to be covered from time to time with froth, and at times to smell very badly-so much so that at Lasswade and Dalkeith the condition of the river is such as to constitute a nuisance. Further, the polluted condition of the water causes great inconvenience to various manufacturers who use it for manufacturing or condensing purposes. Each paper mill uses a large quantity of water which is extracted from the river and returned to it in a polluted state. the quantity of water so abstracted is such a large proportion of the total flow of the river in dry weather that between the point at which the water is abstracted and the point at which the effluents are discharged back to the river, the flow is materially reduced, which means, of course, that the volume of water in the River available for the dilution of the effluent is considerably reduced.

CRITERION OF AVERAGE PURITY

The only mill that receives clean river water is the one farthest upstream-Valleyfield Mill, -and accordingly this is the only mill which has clean water available for the dilution of the effluent discharged therefrom. The Royal Commission, when suggesting standards for various classes of effluent, assume that the river water would be of average purity, neither exceptionally polluted nor exceptionally pure. The Criterion of average purity which they suggested was that the river water should have an average figure of 0.2 parts 100,000 dissolved oxygen taken up in five days. but the Royal Commission stated that, in their view, variations in the quality of the water into which an effluent was to be discharged should not be taken into account for the purpose of arriving at a standard of purity for the effluent. Those discharging an effluent were not responsible for the quality of the river water above their outfall works, and they should not be required to purify their effluent to an exceptional degree because the water with which it was to be diluted was exceptionally impure. in such a case the remedy should be applied to pollutions father up the stream. Conversely (to be consistent) the polluted condition of a stream, no matter how serious, should not be accepted as a valid reason for discharging an effluent of greater impurity than the standard recommended by the Royal Commission. in other words, standards are applicable in all cases irrespective of the condition of the river water into which the effluents are to be discharged.

WATER ANALYSED

 A sample of the water of the river North Esk taken above Penicuik, when analysed, took up 0.1 parts per 100,000 dissolved oxygen in five days; it was thus above average purity. immediately below Valleyfield Mill a sample taken on the same day took up 0.32 parts per 100,000 dissolved oxygen in five days. Not only was the river water thus already approaching the condition when a nuisance may arise (0.4 part per 100,000), but the value of the river water for effective dilution purposes was greatly reduced. Each successive mill in the course of the river added a quota to the pollution, so that probably even after the second mill, the river water was so badly polluted that it ceased to have any value for the effective dilution of the effluent subsequently discharged into it. Indeed, at Lasswade, works that were installed for the purpose of purifying trade waste waters had to be used for the purification of the river water for manufacturing purposes.

ADDITION OF COAL DUST

In the lowest stretch of the river Esk (zone 3) the polluted condition of the river is worse owing to the addition of coal dust. This polluting material is of the nature of solid matter in fine particles, is entirely insoluble, and accordingly is most persistent. There is no natural process of recovery from such pollution; when once coal dust is discharged into a river it remains there. either in suspension in the water or deposited on the bed or banks of the river, until it is carried out to sea. The only remedy for this kind of pollution is the total exclusion of the coal dust from the river; and after having seen the arrangements at Newbattle Colliery, and having considered the practicability of adopting the principles there applied to meet the circumstances of smaller collieries, we are satisfied that it is reasonably practicable to prevent any material pollution from collieries by giving effect to those recommendations regarding sedimentation and filtration.

 As regards sewage pollution, it will be readily understood that less attention has been attracted to this because of the more obvious and more serious pollution from the paper mills and collieries. Still, we are of opinion that, notwithstanding the measures that have been taken and the money expended by local authorities, there is appreciable pollution from this cause. The duty on local authorities in this connection by the rivers pollution prevention act is to use the best practicable and available means to render harmless the sewage from their respective areas before discarding it into a stream, and further measures are clearly called for to deal with this aspect of the question.

PLEA FOR CO-OPERATION

 The administrative position in this area has been materially simplified by the passing of the Local Government Scotland Act, 1929, in respect that the County Council of Midlothian is now the only local authority for the administration of the Rivers Pollution Prevention Act in the area traversed by the polluted stretches of the rivers Esk, North Esk, and South Esk. The responsibility accordingly rests with them to see that the provisions of these Acts are fully complied with and, if necessary, to take proceedings to this end. It is, however, better that the end in view should be attained by the goodwill and harmonious co-operation of all parties concerned rather than as the result of legal proceedings. Reference is made to the negotiations that have been begun between the local authority and the papermakers and colliery owners respectively. These negotiations have been somewhat protracted, and the committee recommend that the County Council should be urged to expedite them, and that in the prosecution of the negotiations the various relevant conclusions in this report should be kept in view.

 At the same time the County Council should see that the provisions of the rivers pollution prevention act are strictly observed as regards the purification of sewage from areas under their own control. This applies also to the town councils of the Boroughs in the River basin for the responsibility under the borough police and public health acts for the effective drainage of their respective but still rests with them. The power that a local authority has to discharge sewage into a river is by Section 103 of the Public Health Scotland Act, 1897, subject to the provisions of the River Pollution Prevention Acts.

INSPECTORS SUGGESTED

The committee finally suggest that the County Council should appoint a whole-time river inspector or inspectors, whose duty it would be to inspect systemically all potential sources of pollution within the county, and to report to the County Council the results of such inspections. In their opinion, such inspector or inspectors should have free access at all times to the mills, and other works or factories so far as may be necessary for the inspection of the purification works, and should be afforded every facility to take samples of trade waste waters and effluents for analysis. Such samples should be taken and analysed regularly.

If the suggestions embodied in this report are given effect to, the committee are satisfied that the condition of the river Esk would be very materially improved, and the beautiful and attractive glens and stretches of the river would be freed from offensive conditions that meantime render them unpleasant, and that many of these places would become desirable residential areas, while the mills would have available from the river a supply of industrially clean water for manufacturing purposes.

# A Beautiful Stream Rendered Foul: MUSSELBURGH'S PLIGHT

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The pollution of the river was discussed yesterday at a conference between representatives of Midlothian County Council and the local authorities concerned in the problem, and Mr Joseph Westwood, MP, under Secretary of State for Scotland.…

 Mr Westwood in an opening statement, referred at the outset to the report of the Scottish advisory Committee on River pollution particularly the part affecting the Esk. he said there was a clear duty on local authorities to use the best practical and available means for the purification of their sewage. The committee had recommended that the question of the supervision of the river could best be accomplished by the appointment of a whole time river inspector. He (Mr Westwood) hoped all the town council's would take adequate steps to discharge their responsibilities for the purification of their sewage. In the case of manufacturing and mining Solutions it was the council's duty to take action to have these pollutions stopped. This might be done by amicable arrangement, but when such negotiations failed the town council's should not hesitate to take proceedings under the act.

SMELLS AND FROTHS

The physical setting of the North Esk, said Mr Westwood, was one of unsurpassed beauty. it could be one of the most attractive spots in the Lothians. the South Esk was scarcely less beautiful. what might be one of the most beautiful streams in Scotland was rendered foul, and at times very offensive by the excessive pollution poured into it. The town council of Musselburgh had constructed a sewer which took all the burgh’s sewage 400 yards out to sea, and yet the amenity of the town was seriously affected by the grossly polluted condition of the river when it reached the town. In summer objectionable smells rose from the water. The surface was frequently covered with a thick froth. This not only affected the amenity of the town, but was a source of annoyance and a cause of expense to important industrial concerns in the burgh. For this state of affairs neither the burgh of Musselburgh nor the industrial concerns within the burgh were responsible. it was hard on them that they should suffer through the fault of polluters further up the stream, or through the failure of other authorities to discharge their duties under the river pollution acts.

 at Dalkeith, where the North and South Esk joined, the pollution of the North Esk was both obvious and serious. at Lasswade the opinion was expressed that the condition of the river constituted a nuisance. There had been procrastination in the negotiations between the county council and industrial concerns regarding the cleanliness of the river. He would urge that these negotiations should be pressed on.

After referring to various remedial measures for the purification of rivers, Mr Westwood said a bill was promoted in 1878 for the construction of a sewer from Penicuik to Musselburgh for the conveyance of all the sewage to the sea. It might be that the best solution of the problem would be along similar lines. He understood the County Council had not investigated the matter in detail, but had decided it was financially impracticable. but, in view of the Liberal grants from the government funds at present, this proposal might be investigated in Greater detail and an estimate of the probable cost obtained. He only asked that it should be considered on its merits.

SEWER SCHEME DIFFICULTY

Sir John Don Wauchope said that, as regards the paper Mills, the county council and the paper makers were not very far apart at present, and he thought they would be able to come to terms. as regards the collieries, he thought all, with the exception of one, were doing their best to help them. He did not think coal dust could ever be entirely eliminated. It was a pity that some chemist could not come along and prove that sewage could be made innocuous. As for the sewer, his information was that the great difficulty about the practicability of a sewer down the Valley of the Esk was that the River would go dry. The paper Mills took in the water, and when they put it out again it must go back to the river or the river would be dry. as for the expense of the scheme, the Industries of Midlothian were not in a very happy state. agriculture, paper making, and coal mining - and now they had to face a crisis in the oil trade, which was a  very serious thing for Midlothian.

Mr Westwood- I do not think the cost would be very excessive on the Industries for they are de-rated.

Sir John Don Wauchope -i was referring to the county rates. rates are high enough already.

Mr A. Cowan, Penicuik said they were bringing  their sewage works at Penicuik up-to-date. so far as Penicuik was concerned, he thought the expense of a sewer to the sea was unnecessary. in the case of his own business, they were doubtful as to what scheme of purification they should adopt. experts gave varying views.

Mr Westwood said if a purification scheme was approved by the county council and the Department of Health, that relieved the Firms of responsibility. the department would give all possible help.

Provost  Allan, Dalkeith, said they in Dalkeith had undertaken the purification of the sewage discharged into the South Esk at a cost of £9,500. They had also a scheme under consideration at the present time which they anticipated would cost over £8,000. Having committed themselves to that expense, they did not want to be drawn into any other large sewage scheme. water from the Esk was taken away by the city of Edinburgh.  if it came down in its natural volume, the Esk would not be in nearly so bad a state.

Councillor Archibald, Musselburgh, said it seemed to him that up to now they had simply fiddled with the whole problem, and had been chasing a will-of-the-wisp. What was required now was some comprehensive scheme to deal with the whole question of pollution on a proper basis. they should trying to get a move on.

HALF-HEARTED STEPS

Bailie G.J. Highley, Musselburgh, said the time was past for bringing complaints. the time had come to get a remedy. The County Council had been very slow to do anything to purify the river. the steps they had taken had been half-hearted. they had never pressed the matter with the manufacturers on the river as they should have done. The most satisfactory way to cleanse the river was to have a sewer running down the whole way. He would like the County Council to go into the matter very thoroughly. If that could not be done, the County Council must take drastic action with regard to the pollution of the River by manufacturers on the banks.

 Provost Tod, Lasswade, said he thought the sewage scheme was impossible. the paper Mills extracted something like 15,000,000 gallons of water in the week from the Esk, and, if that was put into a sewer instead of going back into the river, the river would be dry. a great deal could be done by cooperation.

 Dr C Somerville, M.O.H., Bonnyrigg and Lasswade, said if they could not make the North Esk fit for trout to live in, they might make it fit for people to look at, which at present it was not.

 Mr Westwood, concluding the discussion said he thought the conference would bear fruit. There was a general desire to do something to purify the river. He was satisfied that in connection with the development of Midlothian the big sewer scheme was the solution unless there were engineering difficulties in the way. a vote of thanks was accorded to Mr Westwood on the motion of Sir John Don Wauchope .