PRESENTED TO THE INDIAN INSTITUTE OF ADVANCED STUDY, SIMLA

BY

THE JORDAN VALLEY

By M. G. IONIDES

I OUGHT to say that I am really an amateur on this question. I follow it closely, and in the past I have had some practical connection with it; but I do not speak in any officially authoritative sense.

There are some pretty well established facts to start with. First, there are several hundred thousand refugees in the kingdom of Jordan for whom no place has yet been found. Secondly, they are mainly agricultural people and their future, if they have a future, lies in settlement on the land somewhere within the boundaries of the kingdom of Jordan. Thirdly, the only possibility of large-scale agricultural settlement lies in a major irrigation scheme, using the waters of the river Jordan and its main tributary, the river Yarmuk.

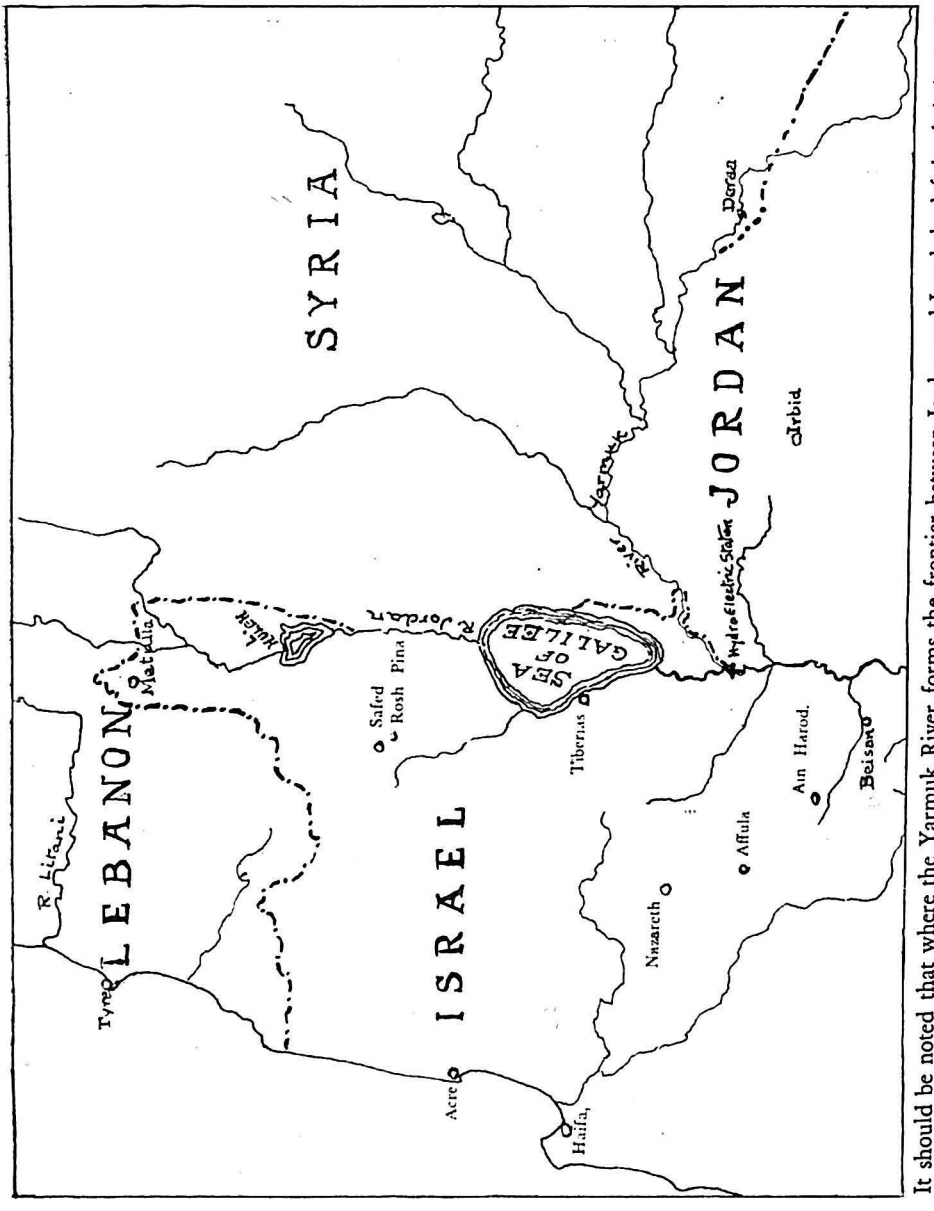
No doubt the authorities are looking for every other possibility of squeezing the refugees in where they can on little bits of land here and there, and in other non-agricultural work. There are also lands in other Arab countries which could theoretically be used. But I am speaking of a scheme which could make a major contribution within the kingdom of Jordan itself—to settle something of the order of 100,000 persons or more.

The plan is to divert the river Yarmuk just south of the Sea of Galilee, adding to it the river Jordan, to irrigate the terraces of land in the valley between the Sea of Galilee and the Dead Sea. This project is being studied by a British firm of consulting engineers, whose report,* I believe, is to be published quite soon.

If you start on the eastern bank—what was formerly Transjordan—the first and obvious thing to do is to lead a canal out from the river Yarmuk and run it southwards, irrigating the whole of the eastern side of the valley. The second step is to dig a feeder canal from the Sea of Galilee, so that water runs into and augments the supply. That requires sluices across the natural outlet from the Sea of Galilee so as to hold up the water and bring it under control. The next stage would be to irrigate the western side by a canal also taking off from the Sea of Galilee, running southwards through the plain of Beisan. Then you would have a pair of canals, one on each side of the valley, on the edge of the escarpment, running all the way down to the Dead Sea. Each of them would irrigate towards the river, and so the whole of the valley would be brought under command. It would be an area of something like half a million dunams (about 125,000 acres) within Arab territory. Another hundred thousand dunams or so could be irrigated in Israel, between the Sea of Galilee and the Beisan plain.

There is one more thing that can be done—that is, to make use of the

* The Report by Sir Murdoch MacDonald and Partners has since been published: "Report on the Proposed Extension of Irrigation in the Jordan Valley," submitted to the Minister of Finance and Economy of the Hashemite kingdom of Jordan.



It should be noted that where the Yarmuk River forms the frontier between Jordan and Israel the left bank is in Jordan.

flood waters of the river Yarmuk, which nowadays, of course, run away to waste. This would be done by cutting a diversion from the Yarmuk into the Sea of Galilee, so that in the winter when the heavy rains fall the flood water would be turned into the Sea of Galilee and be stored up, available for use in the summer.

That is the outline of the project. There is no technical difficulty about it. It would be rather expensive, compared with similar schemes of

a similar size in other countries such as Egypt or Iraq; but it could, I believe, be an economic project.

But it could not be operated, or even constructed, except with co-operation between Israel and Jordan. The two countries would have to work together. The Israelis have control of the outlet from the Sea of Galilee, and the canal on the west bank has to pass through Israeli territory before it reaches Arab land: while the Arabs control the debouchment of the Yarmuk. So it would be necessary to agree on some equitable division of the water between the two countries. How is this to be fixed?

This subject was studied by Professor H. A. Smith in the Quarterly Bulletin of the Chatham House Journal on International Affairs for October, 1949. He quotes several helpful precedents from the United States. I am not going into all of them in detail—they are all on record there—but the general conclusion at which he arrives is that there is no strictly legal basis on which these things can be settled. Professor Smith uses a phrase from a judgment that was given by a Federal Court of Arbitration in the U.S.A.—the "equitable apportionment of benefits."

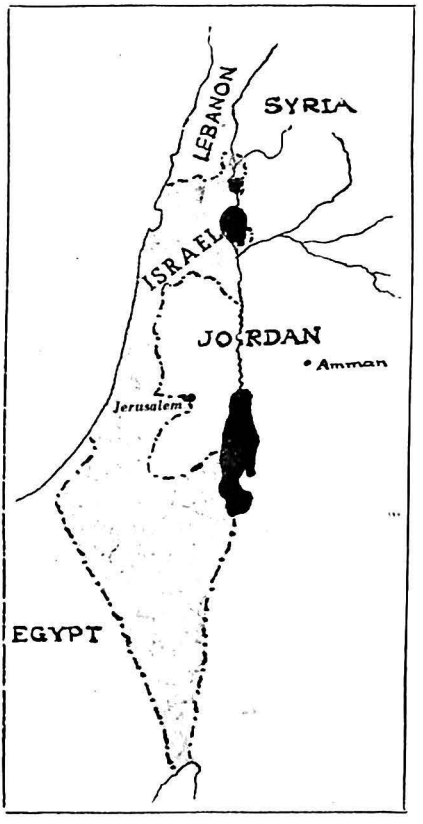
In explaining this, Professor Smith quotes a very interesting case which he regards as a helpful precedent:

> "The subject matter of the dispute was the Arkansas river, which flows for 280 miles through Colorado before entering Kansas, the complaint of the latter State being that a large irrigation project undertaken by Colorado would exhaust the river to such an extent that scarcely more than a trickle would cross the border between the two States. . . . Kansas, the plaintiff State, asked the court to decide according to the private rule of riparian rights, which forbids an upper riparian owner to interfere to any serious extent with the flow of water which would naturally reach the owner of the lower land. . . . Colorado took her stand upon the principle of absolute sovereignty, and maintained that as sovereign she was entitled to do exactly as she pleased with the whole of the water upon her own territory.
>
> "The court rejected both these points of view, and in effect the court was compelled to find its own principle of decision without help from either of the parties, and the basic principle of the judgment was expressed in the words 'equitable apportionment of benefits.'"

In other words, they said that the State that holds the headwaters could not reasonably claim that they are entitled to do exactly as they please with it; and that it is equally unjustifiable for the people in the lower reaches of the river to claim that the others must do nothing at all which would interfere with the existing state of the river and its flow. Let us see how the scheme I have outlined meets this idea of the "equitable apportionment of benefits." Admittedly, the scheme is aimed primarily for the settlement of the Arab refugees, and it provides for the irrigation of far more Arab than Jewish land. But, then, the Arabs occupy by far the greater proportion of the Jordan basin and by far the greater part of the banks of the river, so it does not seem unreasonable that the water benefits should be similarly apportioned. Apart altogether from this, an independent arbitrator would surely have to take into account the fact that

these refugees' own homes and lands have already been appropriated by the Jews and compensation is still owing; there could hardly be a more fitting kind of compensation than water from what would otherwise have been Israel's share, so as to make it possible to give some of the refugees a permanent home.

This scheme is only one way of using the waters, and, as many of you know, another project of a totally different kind has been worked on for some time by the Israelis. It used to be known as the Lowdermilk Plan, a preliminary sketch which was later elaborated by Messrs. Hays and Savage.



This canal would start right up towards the headwaters of the Jordan, in Israel, and would run out westwards, taking the water out of the Jordan basin altogether, into the coastal plain and on into the Negeb.

I have seen no fully official statement about how Israel proposes to develop this scheme; but an article was published in an American journal, *Engineering News Record*—a journal of first-class status, with an international circulation—dated March 22, 1951. It was by the editor, Mr. Walter G. Bowman, and is dated "Jerusalem, 14th February, 1951." It claims—at any rate in broad outline—to represent what the official plan is. The scheme would start with preliminary stages (such as the development of wells, and of the little streams that flow inside Israel itself) which are of

no concern to us in this context; it is the later stages that affect the main issue. It is envisaged that this canal, with a reservoir to take flood water, will divert the whole of the useful flow of the river Jordan. This plan and the other scheme I have described cannot therefore both be executed in full.

The ultimate stage of this Israeli plan provides for a canal running from the bay of Acre, through a tunnel and into the Sea of Galilee, which is well below sea level. The purpose is to let in the sea water for a hydro-electric plant. The consequence, of course, would be that the Sea of Galilee would become a salt lake, and the river Jordan for the rest of its flow would be entirely useless for irrigation.

Mr. Bowman is explicit on this point. He says that this power scheme "is predicated on taking for irrigation all of the fresh water that now flows down the Jordan river and replacing it with salt water from the Mediterranean." Assuming that Mr. Bowman's outline of the project is accurate, and there seems little reason to doubt it, how would it square with Professor Smith's phrase "the equitable distribution of rights"?

Look at the consequences. It would mean not only that no fresh water from the Jordan would be available for irrigating in the main valley; it would mean that existing irrigation by the Arabs in the Jordan valley from the river Jordan would be expunged, because the water would be turned salt. It would mean that such rights as the Arabs have in the waters of the Jordan would be denied. The Arabs could of course still use the Yarmuk, but only to a limited extent, because full use requires that the Sea of Galilee is made available as a reservoir for the flood waters. If the Mediterranean water is let in, this would be impossible, permanently. Very broadly, the effect would be that the proportionate benefits would be reversed in favour of Israel. It would be as if Israel were saying: "Despite the fact that the Arabs occupy by far the greater part of the Jordan basin and banks of the river Jordan, they are to get only so much of the Yarmuk as they can make use of without the Sea of Galilee as a reservoir, and not a drop of the Jordan itself."

To come to a quantitative agreement about how the water should be divided among the people who live in the Jordan valley will be difficult indeed. But there need be no hesitation in insisting that the people who live in the valley—that is, within the geographical basin of the river Jordan—have prior rights over those who live outside it. The waters of a river belong by natural and moral right to the valley it waters and to the people who live in it. How could it be otherwise? There is only one place in the Jordan basin where the waters can be fully used, and that is the valley between the Sea of Galilee and the Dead Sea. The fact that it is technically feasible to irrigate lands outside the basin—*e.g.*, in the coastal plain or the Negeb—should not give those lands, or the State that holds them, any claim on the rivers of Jordan. You might just as well lay claim to the waters of the Euphrates or the Tigris—or for that matter the Ganges or the Brahmaputra—on the grounds that it is technically feasible to pump them over-land to irrigate the Negeb. Rights must be settled within the Jordan basin first; if there is any water left over which cannot be used for one reason or another, or is clearly not going to be used, claims from outside the basin may reasonably be listened to.

There is another weighty factor I must mention, which is nothing to do with the legal or semi-legal aspects of the matter—human need. Both the Arabs and the Jews can claim that they need all the water that they can get and more. But what is the nature of their respective needs? Israel needs the water because Jews from all over the world are being attracted to settle there. The Arabs need the water to help to settle hundreds of thousands of refugees who were forced to leave their homes. Whose claim is the greater? That of a new Jewish immigrant or that of an Arab whose own home and land have already been appropriated, without compensation of any kind, by an earlier Jewish immigrant? If Israel does seriously intend to exploit her physical power, "taking for irrigation all of the fresh water that now flows down the Jordan river and replacing it with salt water from the Mediterranean," there will be many besides Arabs who will ask: Is it not enough to possess the lands these Arabs once had as their own? Must you also take away the water that is their hope of livelihood for the future?

Statements set out in the foregoing paper formed the basis of a discussion at the Society's rooms, in the course of which Mr. A. H. Byrt said: This is the third of what I may call three competing addresses which I have heard about irrigation. It must be three years ago, I think, that I heard a very influential American advocating the introduction of the Mediterranean water on much the same plan as has been described this afternoon. The article from an American magazine quoted today was a quite recent one and came after some visit to Jerusalem, so I conclude that in Jerusalem the thought of it is, probably, still alive.

The second authoritative paper which I heard did not mention a scheme, like that described this afternoon, affecting both sides of the Jordan valley, but was enthusiastic about taking the upper waters of the Jordan for the irrigation of the Negeb.

In countries where irrigation takes place there is a whole library of what we may call "case law" concerning the appropriation of the water of rivers which are potentially useful for irrigation. There must be a genuine agreement and not merely agreement represented by a legal formula.

In the second paper which I heard, a great deal was said about the possibility of a real peace agreement between Jordan and Israel. The position between the two is now at a deadlock. One gathers that on the Arab side they say, "Settle our refugee problem first, and then we will talk peace"; and that on the Israeli side they say, "Let us have a peace agreement, and then we will talk about the refugee problem."

Other questions were: Suppose the Hay-Savage sea-water canal was run into the Sea of Tiberias, would it be possible to canalize the Yarmuk so that the water still was carried into the old Jordan valley and the territories were still irrigated? That is to say, could the Yarmuk be prevented from running in its old river bed, which would have become salt and useless?

Lake Huleh, it has been reported, is being filled up as a reservoir and

a dam has already been made south of that lake, with the possibility of drawing the water off from Huleh to the south, or, anyhow, into Galilee, for the use of the Israelis. Would it not be possible from an engineering point of view to draw off all the water from Huleh? Thus, is the water not already on the point of being switched out of Huleh into Israel?

Would it be possible to put the hydro-electric scheme (using the Mediterranean water) lower down the valley so that the water would be dropped, not into the Sea of Galilee, but below the junction of the Jordan and the Yarmuk? That would obviate a lot of the difficulty if it were possible and would make the full Jordan valley irrigation scheme possible.

Mr. IONIDES replied: There are three points here. First, whatever happens to the Jordan and the Sea of Galilee one can always take off some of the waters of the Yarmuk and irrigate the eastern bank of the Jordan. But if salt sea water from the Mediterranean comes into the Sea of Galilee no feeder from it can ever be used to augment the supply, and the Sea of Galilee can never be used as a reservoir to store up the flood waters, which amount to approximately half the flow.

As regards the second point, I know no details about what the Israelis are doing at Huleh. Technically, I imagine it is quite possible to divert the Jordan below Lake Huleh, but Mr. Bowman's article in *Engineering News Record*, from which I have quoted, clearly shows the diversion much farther up to the north, near the frontier.

On the third point, the idea in the Lowdermilk Scheme was to bring in the Mediterranean Sea lower down the valley, around Beisan. I do not know why the more recent idea is to put it into the Sea of Galilee, unless it is for some strategic reason. Technically, both are no doubt possible, though naturally very expensive.

Mr. BYRT: At the lower end of the Jordan is the Dead Sea, one of the world's main sources of potash. The profits from the potash are equally divided, I understand, between Jordan and Israel. What would happen to all this if salt water, instead of fresh water, were sent down from Jordan into the Dead Sea? What point is there in putting salt water into the Jordan if the fresh water which alone is good for irrigation has gone?

Mr. IONIDES: The plan is to make use of the fall between the Mediterranean Sea and the Sea of Galilee for hydro-electric power. The water that comes out of the hydro-electric station would be waste, and the fact that it is salt is incidental. I cannot think this would make a scrap of difference to the potash works. It might change the level of the Dead Sea a little, but I do not think much difference would be caused by taking fresh water out of the Jordan and putting salt water back; the total flow in the year down the river Jordan into the Dead Sea might be very much the same.

I would judge that the potash works would have to pump their brine a little farther before it gets to the evaporating pans; but, on the other hand, there might be a compensating advantage, because there would be extra mud flats to take new pans; and the disposal of the common salt after evaporation has in the past been quite a problem.

Col. NEWCOMBE: The canal on the western bank of the Jordan, surely, depends on their taking water from the Litani by a tunnel, does it not?

Mr. IONIDES: No; the scheme can be done without the Litani, taking water only from the Jordan. Lowdermilk did also propose additional supplies by diverting the Litani, however.

Col. NEWCOMBE: Will there be enough water from Dan and around that area?

Mr. IONIDES: I doubt if there will ever be enough; but, of course, Israel cannot take water from the Litani without the agreement of Lebanon.

Col. NEWCOMBE: Surely a good deal of the water from Lake Huleh and from Tiberias comes from streams flowing in from the rainfall of that area? At least, a certain amount of it does. It cannot all come from the springs of Dan.

Mr. IONIDES: What happens is this. In the rainy season the water comes not only from the deep-seated springs (which do not vary very much in their flow throughout the year), but also from surface water, and from the little streams and springs in the hills which the people do not want at that time for their irrigation because there is plenty of rain. In the summer every little spring is used on the spot, and the flow of the Jordan comes almost entirely from the deep springs.

Col. NEWCOMBE: There is another thing about the Yarmuk. If you are only going to use the Eastern canal and the Yarmuk: the Yarmuk, surely, varies enormously?

Mr. IONIDES: It varies enormously.

Col. NEWCOMBE: And this affects the eastern canal so much that without the support of the Sea of Galilee as a reservoir I doubt whether it would be really a practical proposition.

Mr. IONIDES: Not quite as bad as that. It is practicable, but, of course, nothing like as good. The flow in the canal would be limited to the steady supply which could be extracted without storage; a big handicap. But it is far better than nothing and it could be started this year, if somebody would put down the money and they were determined to do it, without the slightest difficulty. It could be built in such a way that it would not interfere with subsequent plans.

You need the Sea of Galilee as a reservoir, so that in the summer season you can put the waters in there and use them later, if you want to utilize the maximum possible amount of water; but you can do a lot without it. You do not need to wait for the reservoir in the Sea of Galilee before starting.

Sir DASHWOOD STRETTELL: Would not the canal which the Israelis prepare for hydro-electricity, taking Mediterranean sea water, be very expensive? It would be very expensive to excavate.

Mr. IONIDES: Yes, I should think very expensive.

Col. NEWCOMBE: There is the lake at the head of the Yarmuk, west of Dera'a, which belongs to the Yarmuk. It could be used to a certain extent, if the money was spent on it, as a reservoir and as a waterfall. How much water could be got there, I do not know.

Mr. IONIDES: I know very little about that. I believe that it could be so used, but most of the water comes in, I believe, below it, from the deeper springs.

Technically an artificial lake could be made on the Yarmuk, but the slope is so great that there would have to be a very high dam to save very little water. I believe it might be possible to make some kind of a reservoir to help out a little, but it could not compare with the Sea of Galilee.

Professor CRESWELL: As regards the hydro-electric scheme which involves the tunnel into Lake Tiberias, is not the cutting through limestone rock, and so forth, prohibitive economically?

Mr. IONIDES: I seem to remember that, when I had the pleasure of speaking in 1946, I made the point that Israeli economics are not economics as we understand them at all. I am not necessarily criticizing them for that reason. But they are different, and the sums of money involved for capital development do not enter into their calculations in the same way that they do with ourselves. There is a great deal in the idea that if by expenditure you can reclaim an acre of land for ever, then you are quite justified in writing off the capital cost and not making it a charge. That principle, it always seems to me, is at the basis of their economics, and, humanly speaking, I think there is a lot in it—if one can get the capital.