

been completed up to the outskirts of Ryhall. It had reached a stage sufficient to demonstrate its effectiveness on 26th/27th February when the village did not suffer from flooding which would previously have occurred after such rain as fell on those two days.

The syphonic weir at Newstead Mill continued to operate efficiently, and preliminary observations made in the previous year as to its performance were confirmed.

*R. Welland, Market Harborough Flood Alleviation. LDW 17460. Estimated cost: £176,088.*

As was recorded in the First Annual Report, the Ministry of Agriculture, Fisheries and Food authorised tenders to be obtained to enable a detailed cost examination to be made of the proposed flood regulating reservoir, some four miles above the town. When the tenders were received and a provisional estimate of land compensation was considered it became apparent that a scheme to widen and improve the river through the town would provide the same degree of protection at no greater expense, and would have certain advantages, besides being preferred by Market Harborough Council. After a very careful re-examination of the alternatives it was decided in October to adopt the "through the town Scheme" in preference to a flood regulating reservoir.

Details of the through the town scheme were prepared with the greatest expedition, and submitted to the Ministry of Agriculture, Fisheries and Food in January, so that the change of plan should not cause delay in alleviating the threat of flooding to which the town centre had been subject for many years following heavy rain. It should be put on record, however, that the Scheme will not ensure that the town will be completely immune from all flooding. The river channel through the town will be enlarged to the maximum possible capacity without extensive demolition of property and the reconstruction of two main road bridges. This will effect a significant reduction in the incidence of flooding to cater for the accepted maximum flood discharges, but not for catastrophic conditions.

The Scheme is to be carried out by direct labour, and plant is available for a start to be made the moment the Ministry's approval is received.\*

It is hoped to be able to start work early in 1967/8, and it is anticipated that it will be completed by the end of the following summer, given favourable weather conditions.

The Urban District Council agreed to make a contribution of £7,000 towards the Scheme, and not to claim compensation in respect of any of their land and some buildings which might be affected.

*R. Nene, Cromwell Road Piling. LDW 21381. Estimated cost: £125,000.*

Installation of the tension anchorages referred to in the First Annual Report proceeded without incident. The remainder of the sheet piles were driven, the concrete capping beams fabricated, and the batters re-formed with stone pitching at the base, and the scheme was completed in December.

*R. Nene, Ditchford Improvement. LDW 21597. Estimated cost: £18,070.*

Intermittent flooding of the previous year continued, and work had to be suspended again in April, following which the site was pumped out to permit the installation of the apron to the new sluice gate. The river was re-opened to navigation at the end of May, and the Scheme was completed during the summer.

*R. Nene, Clifford Hill Improvement LDW 21906: Estimated cost: £4,591.  
LDW 22308: Estimated cost: £3,933.*

The Scheme comprises the installation of a syphon beneath the river, the reconstruction

\* Work was started immediately after the 14th April, 1967, when the Ministry's approval in principle was received, and permission was obtained to proceed without prejudice pending a decision as to grant on the preliminary works.

of a weir, and the improvement of the channel. As the site is four miles downstream of the flood control sluices at Northampton it is subject to rapid changes in water level, and in January it was necessary to suspend the work due to adverse conditions. The syphon had then been installed, and the wing piling and main concrete work at the weir had been completed.

*R. Nene, Barnwell Improvement. LDW 22605. Estimated cost: £19,833.*

Work commenced in November. The Scheme comprises channel improvement, the construction of three small bridges, the underpinning of a road bridge and the installation of a battery of syphons, and it will provide discharge capacity to accord with the graduated provision originally adopted for the River Nene Improvement Scheme.

Although progress was severely restricted by flooding, excavation for the foundations and cut off piling for the syphons was completed, the new footbridge and accommodation bridges were erected, and half of the widening below the main road was completed.

*R. Nene, Slips opposite Bath's Cottages. (Horseshoe Corner). LDW 22580. Estimated cost: £66,034.*

The scheme is to safeguard a length of tidal bank of friable silt which is endangered by erosion. It was originally intended to use brushwood mattresses, but that method was soon discontinued as the mattresses slipped into mid channel as a result of the batter collapsing after preliminary excavation. The alternative was to form a substantial pell-mell stone wall, in an excavation at the toe of the batter, and to place on this successive rows of brushwood fagots as accretion takes place.

*Wingland 1954 Sea Bank. LDW 22702. Estimated cost: £2,074.*

*Sea Bank Improvements. Estimated cost: £29,503.*

Remedial work to make good settlement along a short length of the Wingland 1954 Sea Bank commenced in October. As it was subsequently decided to adopt a uniform standard of protection along the whole of the 30 miles of sea bank, a scheme providing for the improvement of some 7½ miles of Sea Bank was submitted for the Ministry's approval in March.

*R. Nene, Bank Protection above Dog-in-a-Doublet Sluice. LDW 22540. Estimated cost: £1,575.*

The scheme provided for driving "Unibank" Asbestos sheeting (with the appropriate walings, tie rods and filling) along 350 lineal yards to arrest marked erosion on the North Barrier Bank and the Whittlesey Wash Cradge Bank. Work commenced in December. The sheeting appears to provide an economical and efficient method of safeguarding these banks along much of the frontage, and an extension of the work is under consideration. On a short length near Fitzwilliam Bridge the depth of water and the poor subsoil caused some movement of the sheeting, and experience shewed that the use of pell-mell stone would have been preferable.

*R. Nene, Tydd Outfall Sluice Improvement. LDW 20943. Estimated cost: £27,000.*

The Tydd Outfall Sluice was constructed under the supervision of Robert George Stephenson in 1859, and major modifications and improvements to this massive structure were carried out in 1880, 1896 and in 1944.

In March work commenced on the fourth major improvement to restore its efficiency, having regard to the large area of very valuable agricultural land at risk in the event of failure.

#### *Miscellaneous Works.*

Further works were carried out on sections of the Welland Major Improvement Scheme, and on Stabilization Schemes for channels and banks. At the Ministry's request, earlier schemes



have been closed as the estimated expenditure has been reached, or the object of the scheme attained.

Some further stone was deposited in the scour hole downstream of the Cowbit Road Sluices.

Stone was deposited to check erosion in the channel near Lolham Station and downstream of the cataract above Tallington Road Bridge.

As erosion above Tallington Bridge was extensive the Ministry approved remedial works costing £1,765, and the scheme has been regarded as an extension to the Tallington to Uffington Stabilization Works (LDW 20247).

## (ii) Future works agreed in principle

*R. Welland, Stamford Upstream Improvement. Provisional Estimate: £200,000.*

The Scheme provides for the improvement of the River Welland on a length of about 40 miles between Stamford and Market Harborough, the tributaries to be dealt with as work proceeds. Unfortunately, there is little factual information relating to the extent of previous flooding, and an extensive survey has been made and data of more recent flooding has been assembled. The scheme has been submitted to the Ministry, and it is hoped that in the near future it will be possible to demonstrate the need for improvement works.

*Car Dyke, Newark Hill to Peakirk Improvement. Estimated cost: £41,000.*

Discussions have taken place with Peterborough City Council as to improvement of the Car Dyke between Newark Hill and Peakirk. Flooding occurs near Newark Hill following heavy rain, and proposed building development will further accentuate the trouble. Test boring was carried out to enable a more accurate assessment to be made of the cost.

*R. Nene, Foul Anchor Improvement. Provisional Estimate: £140,000.*

Severe scour caused the batters to slip along about one mile of the tidal river near Foul Anchor, and observations and surveys indicate that the deterioration will develop and extend. A scheme for remedial work is being prepared for submission to the Ministry of Agriculture, Fisheries and Food.

*R. Nene, Cromwell Road upstream Improvement. LDW 21381. Provisional Estimate: £109,000.*

Following completion of the Cromwell Road Piling Scheme, preparation is being made for further improvement work upstream to protect the tidal river banks to the vicinity of Bevis Hall. As part of the work will protect the A.47 road, the Ministry of Transport has been invited to make a contribution towards the cost.

*R. Nene, Denford Improvement. Provisional Estimate: £14,970.*

A scheme is in preparation for the installation of siphons and for channel improvement at Denford, which will provide for flood discharges in accordance with the graduated capacity agreed with the Ministry for the principal River Nene Improvement Scheme.

*R. Nene, Barton Mill Improvement. Estimated cost: £12,000.*

This scheme failed to qualify for grant aid on the worthwhileness test. The discharge of flood water at Barton Mill will continue to be half of the graduated capacity provided at other controls on the river in accordance with the principal River Nene Improvement Scheme until an acceptable scheme can be completed.

## (iii) Other matters relating to grant aided or other works

### (a) Nene Outfall.

The annual survey in the vicinity of Elbow Bend was carried out, and revealed that erosion

had continued. The shoal at the end of the training walls is less extensive and about 2 feet lower, and similar conditions were observed in the shipping channel to the north of Big Tom beacon. The ebb tide channel around the Elbow Bend is 2 feet deeper, and the shoal at that point is smaller in area. The trend of the channel south of Big Annie beacon to erode and move westwards continued.

### (b) Northamptonshire County Council Drainage Schemes.

Northamptonshire County Council were assisted in the preparation of land drainage schemes which will be carried out on a re-chargeable basis.

A scheme for Faxton Brook will cost £3,665. Apart from the land drainage improvement, the watercourse can be used as a feeder channel for the Pitsford Reservoir. Work commenced on the extremely heavy pioneer clearance preparatory to dredging.

A scheme for Strixton Brook will cost £2,720. The length upstream of Wollaston Brook (main river) is  $2\frac{3}{4}$  miles and it is hoped to commence work in the summer of 1967.

## 2. MAINTENANCE

Weedcutting and clearance of other seasonable growth was carried out along 332 miles of main river. Where the depth of water was insufficient for the 10 weedcutting launches and 6 floating elevators motor scythes were used, and occasionally a dredger. Contract labour was employed as necessary to supplement direct labour.

Maintenance of banks embraced a variety of work, including repair of storm damage, control of vermin, grass and rubbish, removal of sea borne silt from the batters of the tidal rivers, the protection of friable batters with stone and fagots, and attention to overhanging trees and bushes. The need for remedial work to check inconvenient or unsightly erosion, particularly in gravel areas, is assessed according to the location and possible loss in the efficiency of the river channel.

Maintenance dredging was carried out to remove gravel shoals near Higham, Lower Barnwell, Perio and Nassington. Extensive re-dredging on a mile of the Kislingbury Branch of the River Nene between Duston and Upton Mill resulted in lower water levels, and also improved the drainage of adjacent land, and it showed the need to extend the work upstream and to widen the channel. A shoal downstream of Fulney Lock in the tidal River Welland was dredged. Removal of gravel from the upstream side of Nine Arches Bridge (Maxey Cut) is an annual task, and the gravel was used for access tracks and for roads along the banks. A survey of this flood relief channel is to be made in order to ascertain whether the erosion of the gravel bed is significant relative to the design profile.

Stone was deposited to check the effect of erosion near Water Newton Sluices, Ferry Bridge, Elton Lock, Perio Lock and Ashton Sluice.

Regular inspection, repair and servicing at all sluices and at the thirty eight locks was carried out. Steel pointing doors were installed at Northampton Lock to replace the timber doors installed in 1935, and steel balance beams were fitted at Titchmarsh Lock.

A new concrete deck was constructed at Chain Bridge, near Thrapston. The deck of Eldernell Bridge was widened to take modern agricultural equipment, and the Nene Washlands Commissioners contributed to the cost.

Further storage accommodation for materials and equipment was provided at Fosdyke Depot, and improvements to the lavatory accommodation and washing facilities were completed.

Improved lavatory accommodation and washing facilities were provided at Wellingborough Office and Depot.

The former brewery premises recently acquired adjacent to Head Office are being converted into a main stores depot, and the removal of stores, plant and equipment from the Oundle



workshops has facilitated development there required to maintain the increasing mechanical plant of all kinds.

Fitters and carpenters at the depots and workshops continue to maintain the previous high standard of workmanship. Their versatility and efficiency appears to keep pace with the increasing variety and volume of their tasks and responsibilities.

Plant and machinery have been repaired and serviced at the South Holland Land Drainage Board's Workshop at Holbeach as and when convenient, and this assistance is appreciated.

### 3. WORK IN INTERNAL DRAINAGE DISTRICTS

#### (a) Administered Boards

Two Internal Drainage Boards are administered, namely the Nene Valley Drainage and Improvement Commissioners (First District) above Northampton, and the Nene Valley Drainage and Navigation Improvement Commissioners (Second District) from Northampton to Peterborough.

In addition to routine clearance work, weedcutting was carried out on  $1\frac{3}{4}$  miles of First District main drains, and on 15 miles of Second District drains.

Northamptonshire County Council are reconstructing Skew Bridge over a Second District drain near Rushden, and arrangements were made to re-align the channel to meet drainage requirements.

Closure of the Northampton to Peterborough railway, constructed in 1845, affords an opportunity of carrying out drainage improvement works involving the widening and reconstruction of culverts at several places in the Second District, the cost of which would have been prohibitive when the railway was in use. The levels and capacity of many of the railway crossings over the river and tributary streams were inadequate for drainage requirements, especially in view of the marked increase in the acreage of arable land and the increased run off from Urban Development. Survey work has been carried out in preparation for schemes to remedy some drainage difficulties which have existed for many years.

#### (b) Wisbech District Boards

As was said in the First Annual Report, the Authority have not taken on any further commitments in the preparation of Land Drainage Schemes.

It is anticipated the scheme for the Wisbech Northside Internal Drainage Board, Town Ten Drain to Cox's Lane will be nearing completion in 1967.

The work for the Hundred of Wisbech Internal Drainage Board has been confined to advice on culverting one of the main drains as part of a road improvement scheme at Weasenham Lane, and should be completed in 1967.

### 4. FLOODS

For the second successive year rainfall was above average, resulting in periods of sustained high river flows.

Heavy rainfall in April, following the wet winter, flooded cultivated land in the flood plain. Some person attempted to prevent flood water flowing on to Whittlesey Wash at Northey Gravels weir by replacing the flash boards. The police were unable to trace the culprit, but the boards were removed before his contravention of the bye-laws succeeded in flooding the land of others.

Rainfall of 3.32 ins. in the upper reaches on two days in August resulted in inconvenience and apprehension, rather than any serious flooding.

After October successive above average discharges with varying degrees of flooding occurred which necessitated long periods of river regulation rather than control work for major floods.

Average Monthly Rates of flow of the River Nene at Orton

Month	Long Term Monthly Average		Average Flow 1966/67	
	Cusecs	M.G.H.	Cusecs	M.G.H.
April .. ..	329.	7.83	776.4	17.40
June .. ..	121.5	2.72	150.9	3.38
August .. ..	83.58	1.87	173.8	3.90
October .. ..	134.6	3.02	600.9	13.47
December .. ..	461.4	10.34	1,112.	24.93
March .. ..	548.5	12.30	626.2	14.04

The peak river levels and discharges were as follows:

Site	Date	Water level O. D. Newlyn	Maximum Discharge	
			Cusecs	M.G.H.
River Welland, Tixover .. ..	31/8/66	103.45	370	8.2
do .. ..	12/12/66	106.44	800	18.
River Nene, Wansford .. ..	31/8/66	28.74	1,245*	28.
do .. ..	14/12/66	30.51	2,172	48.8

\* The flow at Wansford on 31st August is the highest recorded in that month since the continuous records were commenced in 1939.

### 5. DRAINAGE CHARGES

It has not been opportune to consider raising a General Drainage Charge under the provision of Part I of the Land Drainage Act 1961. There have been representations and pressure that drainage improvements should be carried out on some of the lesser streams outside the internal drainage districts, and the matter will have to be examined, but it would be untimely to do so when amendments to that legislation are pending.

### 6. STATUTORY SCHEMES FOR INTERNAL DRAINAGE BOARDS

No petitions for Statutory Schemes were received.

Pressure of work and the possibility of certain amendments to the Welland and Nene/Lincolnshire boundary in proximity to the North Welland Internal Drainage District delayed preparation of 4 (i) (b) Schemes to amend the boundaries of some Drainage Districts. It is also understood that there may be an opportunity to consolidate some of the Districts in the Welland Catchment.

A request has been received for a Scheme to transfer part of the Hundred of Wisbech Internal Drainage District east of Wisbech to Wingland Internal Drainage Board.

The River Nene Catchment Board (South Holland Drainage Trustees—Alteration of Boundaries) Order 1936 incorporated the Little Sutton Marsh Reeves within the South Holland Drainage District, but the Marsh Reeves Commissioners were never formally dissolved, and for some reason they were permitted to continue functioning within the South Holland District as an independent drainage board in respect of their area. It has been decided that a Scheme shall be made to dissolve the Commissioners and to put the 1,600 acres of land under the complete jurisdiction of the South Holland Drainage Board.



## 7. OTHER MATTERS

### (a) Extension of Main River

Main River was extended by the addition of King Street Drain and New River.

King Street Drain, three miles in length, is an artificial channel to convey water from the Barham or Stowe Brook into the River Glen at Kate's Bridge, and protects the Baston and Langtoft Internal Drainage District from flood water. It also provides water to maintain the Summer level in the Baston and Langtoft Drains.

The New River, eleven and a half miles long, flows parallel to the Barrier Bank from near Peakirk to Spalding, and its principal function is to drain the Crowland and Cowbit Washes. The adjoining Barrier Bank is a work in connection with Main River, and the seven miles from Peakirk to Brotherhouse Bar was taken over from the North Level Commissioners and the five miles from Brotherhouse Bar to Locks Mill Spalding was taken over from the South Holland Drainage Board.

### (b) Railway Bridges

The policy has been adopted of acquiring for a nominal consideration disused railway bridges which are of value in providing access for works. Arrangements were concluded with the British Railways Board for bridges crossing the Counter Drain and the River Glen near Tongue End, for the bridge crossing Bourne Eau between Tongue End and Bourne, and for the bridge over the River Gwash at Belmesthorpe.

Following the closure of the Sutton Bridge Railway line crossing the Coronation Channel at Spalding, British Railways Board in accordance with the Agreement made when the railway bridge was to be built in 1951 agreed to refund £8,100 of the £9,385 which had been paid by the Welland River Board in respect of future maintenance.

### (c) Town Expansion

Problems arising on the increased discharges of surface water resulting from the substantial expansion of Northampton, Peterborough, Daventry and Corby have been considered. Some of the proposals are not sufficiently advanced to enable a proper appreciation to be made of the probable effect of land drainage. Discharges from vastly greater impervious areas will be made, and in some cases to relatively small streams. There are proposals to develop the flood plain for landscape, amenity and recreational purposes.

It will be necessary to ensure that the channels are adequate to take the run off from the expanded towns, and if any part of the flood plain is to be developed or encroached upon then alternatives such as dual summer and winter channels must be provided.

### (d) Planning Applications

Considerable work is required in investigating the many planning applications received during the year, and particularly the proposals to develop land adjacent to water-courses, or on the fringe of the flood plain. The advice given and the views expressed on the unsuitability of a site due to the flood risk has not always been followed.

## FISHERIES

### 1. GENERAL REPORT

Numerous reports of dead and distressed fish throughout the Area were first received in June, but (apart from one mortality attributable to oxygen deficiency in the Grendon Quarter Pond at Castle Ashby) the causes could not be ascertained, and the incidents were attributed to post spawning weakness. The number of dead fish in each case was small, and no abnormal external marks were observed.

A report was received on the 5th July that roach in the River Welland at Four Mile Bar (near Spalding) were "infected with bleeding sores", and on an examination of keep nets numerous roach with lesions symptomatic of the bacterial infection *Chondrococcus Columnaris* were found. The Central Public Health Laboratory at Colindale confirmed that the fish were infected with that disease.

Further outbreaks were widespread, and the River Nene, the River Welland, the Grand Union Canal and some enclosed waters were infected. The only substantial mortality was at the Mid-Northamptonshire Water Board's Pitsford Reservoir near Northampton, where it is estimated that three tons of roach were removed and buried in quick lime. Trout in the reservoir were unaffected.

After consulting the Ministry of Agriculture, Fisheries and Food, it was decided initially that it was unnecessary to discourage fishing, but that all anglers should be urged to disinfect their tackle after use. Notices to this effect were posted on waters controlled by the Authority on 13th July.

In early August one of the largest of the country's angling associations with water in this Area decided to prohibit fishing, and the Mid-Northamptonshire Water Board also decided to prohibit fishing in some of their reservoirs.

The Ministry of Agriculture, Fisheries and Food were again consulted, and in view of the deterioration in the situation it was thought right to cancel all match bookings for the waters vested in the Authority on the North Bank of the Nene, on the Welland between Crowland and Spalding, and for the Bugbrooke Trout Water. At the same time all angling clubs and associations with waters in the Area were informed of this decision, and it was suggested that they might also think it advisable to cancel all bookings received from anglers living outside the area. It was also suggested that it would be most inadvisable for local anglers to visit waters outside the area where *Columnaris* was not then prevalent.

It was thought that baths of disinfectant would not be a sufficient prophylactic, as anglers could not all be relied on to wash their tackle effectively.

Although at the time these precautions appeared to be prudent, in retrospect it seems that they may have served no useful purpose. Some local angling clubs did not follow the Authority's example.

By the 5th September the disease was prevalent throughout much of the Midlands and Eastern Counties, although there was evidence that the effect was not as serious or as lasting as had first been feared. It appeared that no useful purpose would be served by continuing precautions which had not been adopted in neighbouring areas, and match fishing in the Authority's water was allowed to continue.

In the 32 days 300 matches in which 13,301 anglers were to have taken part had been cancelled, and booking fees amounting to £312 were refunded.

By the end of September test netting revealed few affected fish.



Permanent concrete stakes installed on the match section of the River Welland between Kennulphs Stone at Crowland and Locks Mill at Spalding were brought into use at the beginning of the season. Two part-time bailiffs were appointed to supervise the bookings, and to direct individual anglers to the unreserved sections. Notices boards were erected at several points along the bank, and unreserved places were advertised.

Match results on the Welland appear to have been satisfactory, but there are no statistics for previous years to enable comparisons to be made.

Reports from angling clubs' fishing matches along the whole of the River Nene showed a marked decrease in weights. It was stated by some clubs that after the *C. Columnaris* outbreak it was very difficult to catch any fish, and very few roach were seen, but there were reports of increased roach catches towards the end of the season in the Earls Barton area.

As a result of these complaints nettings are to be carried out at specific points along the River Nene with a view to estimating the present fish population.

The chemical quality of the water has not substantially altered during the last few years. In order to ascertain the biological condition of the river, consideration is being given to sponsoring a Liverpool University, Post-Graduate Research Student who will spend three years on a biological investigation.

**River Nene—North Bank Fishery**

Matches fished on the North Bank of the Nene numbered 224, and 11,142 anglers competed. The highest winning weight was 25 lbs. 14 ozs, which is almost 2 lbs. less than that of the previous season. The total weight of 1 ton 2 cwts. 57 lbs. for the top ten anglers in each match, showed an average weight per rod of 1 lb. 15 ozs. 5 drams, which is 1 lb. 5 oz. 13 drams less than the average weight per rod last year.

The monthly totals for the first ten anglers in all matches were as follows:

June .. .. .	435 lbs.	November .. ..	111 lbs.
July .. .. .	1,104 lbs.	December .. ..	3 lbs.
August .. ..	matches cancelled	January .. ..	no matches
September ..	623 lbs.	February .. ..	no matches
October .. ..	225 lbs.	March .. .. .	20 lbs.

The total of 1 ton 2 cwts. 57 lbs, compared with 4 tons 2 cwts. 30 lbs. in 1965/6, 4 tons 17 cwts. 49 lbs, in 1964/65, and 4 tons 1 cwt. 83 lbs. in 1963/64.

In August, 81 matches in which 3,846 anglers were to have taken part were cancelled because of the ban imposed during the *C. Columnaris* outbreak.

**River Welland—Crowland (Kennulphs Stone) to Spalding (Locks Mill)**

Matches fished on the River Welland numbered 342, and 23,857 anglers competed. The highest winning weight was 38 lbs. 5 ozs. 8 drams.

The total weight of 2 tons 12 cwts. 71 lbs. for the top ten anglers in each match showed an average weight per rod of 2 lbs. 12 ozs.

The monthly results are as follows:

June .. .. .	1,134 lbs.	November .. ..	364 lbs.
July .. .. .	2,110 lbs.	December .. ..	5 lbs.
August .. ..	37 lbs.*	January .. ..	no matches
September ..	1,309 lbs.	February .. ..	10 lbs.
October .. ..	869 lbs.	March .. .. .	57 lbs.

\* matches cancelled.

The ban on match fishing during the *C. Columnaris* outbreak caused the cancellation of 157 matches in which 7,877 anglers were to have taken part.



Annual Upstream Viewday—8th September 1966  
Members and guests on M.V. George Dallas  
(Photograph by courtesy of L. Gordon Turnell, A.I.P.P.)





Weedcutting Launch and Elevator—River Nene  
(*Photograph by courtesy of A'Court Photographs Ltd.*)



Clifford Hill improvement—River Nene  
Stone pitching to stilling bay at the Weir



Cromwell Road Piling—River Nene



Dodford Gauging Station—River Nene





Welland Outfall Scheme—South Training Wall looking upstream



Welland Outfall Scheme—South Training Wall looking seawards

The Welland Championship was fished in July, and the individual winner had a weight of 24 lbs. 9 ozs, as compared with 15 lbs. 2 ozs. 4 drams the previous year.

#### Coronation Channel, Spalding

The Coronation Channel is not permanently staked, but a bailiff is employed to peg out the bank as required. The water can accommodate 240 anglers.

Matches fished on the Coronation Channel numbered 146, and 6,156 anglers competed. The highest winning weight was 26 lbs. 8 ozs.

The total weight of 16 cwts. 105 lbs for the top ten anglers in each match showed an average weight per rod of 2 lbs. 0 ozs. 10 drams.

The monthly results are as follows:

June .. .. .	228 lbs.	November .. .. .	81 lbs.
July .. .. .	675 lbs.	December .. .. .	no matches
August .. .. .	matches cancelled	January .. .. .	no matches
September .. .. .	515 lbs.	February .. .. .	no matches
October .. .. .	398 lbs.	March .. .. .	no matches

The ban on match fishing during the *C. Columnaris* outbreak caused 61 matches, in which 2,088 anglers were to have taken part, to be cancelled.

#### Bugbrooke Trout Water

The Authority's Bugbrooke Trout Water comprises a 3 mile length of the Upper Nene between Upper Heyford and Kislingbury, and is the only trout stream available to the public in the Area.

It was restocked with 300 9/10 inch Brown Trout each month in May, June, July and September, and a further 650 in late March.

It is gratifying to record that even though the fishery was closed for five weeks during August and September due to the outbreak of *C. Columnaris* 375 permits were sold as compared with 135 permits for the previous year. This total has only been exceeded once before, when 468 permits were sold in 1961, the opening year.

The heaviest recorded trout taken weighed 2 lb. 13 ozs.

#### Burghley Park Trout Hatchery

The Marquess of Exeter permitted the Authority to use the trout hatchery and rearing ponds at Burghley Park, Stamford for an experimental period of one year. Fifty-thousand eyed Brown Trout ova were put in the hatchery on 9th March, 1966. The fry were transferred to the four rearing ponds during April and May, when approximately 7,000 ova had been lost.

At the end of October 14,353 fish had survived for grading, of which 10,148 were not greater than 3 inch, 3,944 were between 3 and 4½ inches, and 261 were greater than 4½ inches.

The trout were hand fed daily, and a satisfactory growth rate was maintained. In February it was noticed that several had a fungal infection, and to prevent its spread all fish were dipped in a 3 per cent salt solution.

It has been decided that as the operation of the hatchery is likely to prove uneconomic and hazardous it shall only be operated for a further year to enable the present stock of trout to develop to a size sufficient to enable them to be used for restocking.

#### Willow Brook

This trout water fished moderately well in view of the fact that major dredging work was carried out in the previous year. It was again electro-fished to remove coarse fish before the trout season opened.



Pitsford and Ravensthorpe Reservoirs

Pitsford Reservoir was closed for five weeks during August and September because of the *C. Columnaris* outbreak, but Ravensthorpe was unaffected and remained open. Results from Pitsford are believed to have been below average, while those from Ravensthorpe were above average, but the Mid-Northamptonshire Water Board have few recorded results.

River Gwash

The trout waters on the River Gwash controlled by the Guash Fishing Club were electro-fished prior to the commencement of the trout season to remove coarse fish and grayling. It is of interest to note that many fingerling trout were observed, so it appears that trout are breeding naturally in the river. The season was an average one.

Eye Brook Reservoir

During the year 2,782 persons fished Eye Brook Reservoir and the rod days numbered 13,069. The figures for the previous year were 2,479 persons and 11,764 rod days. The total number of fish caught was 14,875, with an average weight of 1.03 lbs. The best fish was a Brown Trout weighing 8 lbs. 6 ozs.

Restocking

Restocking was carried out, but there was great difficulty in obtaining sufficient fish. Details of fish transferred are as follows:

Release Point	Source	Number	Species
River Nene			
Warmington ..	Clipsham Ford Lake, Empingham ..	2,700	Roach, Perch
Wellingborough ..	Turnells Mill Lane Pit ..	3,005	Roach, Tench, Rudd, Pike
Oundle ..	Pitsford Reservoir ..	580	Roach, Perch
Flore ..	Stortons Pit, Northampton ..	147	Roach, Bream, Perch, Pike
Nassington ..	Stock Ponds, Holywell ..	620	Roach, Rudd, Bream, Dace, Chub
Nassington ..	Clipsham Ford Lake, Empingham ..	696	Roach, Perch, Tench, Pike
Nassington ..	New Wryde Drain ..	540	Roach, Tench, Bream, Perch
North Bank ..	North Brook ..	315	Roach, Dace, Perch, Pike
North Bank ..	Newark Gravel Pit ..	901	Roach, Rudd, Perch, Chub, Tench
Wellingborough ..	Bugbrooke Trout Water ..	710	Roach, Bream, Dace, Perch, Chub, Pike
Thrapston ..	Thorpe Malsor Reservoir ..	20	Perch
River Welland			
Tinwell ..	River Gwash ..	181	Roach, Dace, Bream, Pike
Wakerley ..	Willow Brook ..	626	Roach, Dace, Chub, Perch, Pike
Crowland/Spalding	Clipsham Ford Lake, Empingham ..	4,000	Roach, Perch
Crowland/Spalding	Tidal River Nene ..	1,400	Bream, Roach
Crowland ..	Maxey Cut ..	3,634	Roach, Bream, Chub, Perch, Pike
Tallington ..	Maxey Cut ..	712	Roach, Bream, Dace, Perch, Chub, Pike
Stamford ..	River Gwash ..	145	Roach, Dace, Perch, Chub, Pike
Vernatts Drain	Willow Brook ..	2,509	Roach, Dace, Chub, Tench, Pike
Thrapston Large Gravel Pit	Hillside Farm Pond, Cranford ..	3,000	Bream
Stock Ponds, Holywell	Old Manor Farm Lake, Knossington	1,420	Roach, Carp, Rudd
Vernatts Drain	Counter Drain ..	93	Roach, Bream, Tench
Stock Ponds, Holywell	Peterborough Brick Pits ..	1,200	Tench

Tallington Small Gravel Pit	Tallington Large Gravel Pit	150	Roach, Bream, Perch
Lower South Holland Main Drain	Upper South Holland Main Drain	836	Bream, Roach, Perch, Tench, Pike
		30,140	

Length Range in inches of fish used for restocking:			
Bream ..	10/15	Dace ..	5/7
Carp ..	5/12	Perch ..	4/10
Chub ..	8/10	Pike ..	10/26
		Roach ..	6/15
		Rudd ..	6/7
		Tench ..	5/9

Fish Mortalities

Several thousand bream and roach died in the Grendon Quarter Pond at Castle Ashby in June. The cause of death was a deficiency at dawn of dissolved oxygen, caused by a wide diurnal variation in oxygen in solution.

Approximately 100 roach and perch died in Buccleuch Quarry, Finedon in July as a result of pollution by tip drainage.

Some 300 bream died in the Upper South Holland Main Drain when the Drainage Board lowered the level to enable work to be carried out on bridge footings and the fish were left stranded in a few inches of water.

Several thousand fish died in the River Welland between the Coronation Channel and the tidal sluice. The river level had been kept low after recent rain in anticipation of flood conditions. Due to a defect a storm overflow in Spalding continued to operate after the storm, with the result that the river through the town became almost devoid of dissolved oxygen. The situation was remedied by flushing out with fresh water.

In September 100 roach died near the outlet of Wicksteed Park Lake, Kettering. The fish showed no signs of disease or injury, and no cause for the mortality could be found.

A dozen roach died in Sywell Reservoir. On biological examination the fish were found to be heavily infested with the parasite *Argulus foliaceus*, and it was presumed that the fish had become weakened by the parasite and died of natural causes.

2. SALMON AND MIGRATORY TROUT

No salmon or migratory trout were seen in either the Nene or the Welland.

3. LICENCES ISSUED

The new scale of licence fees came into operation on 1st January, 1966. Licences issued in the year ended 31st December, 1966 were as follows:

Instruments other than rod and line	Eel baskets, dead lines and nets at 10s.	89
Rod and Line	Trout and Freshwater Fish, or eels or elvers	
	Annual at 7s. 6d.	3,351
	Freshwater Fish or eels or elvers	
	Annual at 5s. 0d.	35,866
	Freshwater Fish or eels or elvers	
	Seven-day at 2s. 0d.	27,604
General Licences (for Charity Competitions)	at 1 guinea each	3
River Welland Permits	Annual at 5s. 0d.	1,741
	Weekly at 1s. 0d.	20,411



#### 4. COMMERCIAL SALMON AND TROUT FISHERIES

There are no commercial salmon or trout fisheries in the Area.

#### 5. PROSECUTIONS

Ninety-two persons were reported for fishing without a rod licence, or for being unable to produce a rod licence when required so to do.

In most cases it was thought that a caution would suffice. Prosecutions were taken against two anglers, one of whom was reported for fishing without a licence twice within a period of a few weeks. He was fined £1 for the first offence, and £3 for the second offence, when he was ordered to pay an Advocate's fee of £3 3s. 0d.

The other was fined 10/- and ordered to pay an Advocate's fee of £3 3s. 0d.

#### 6. ASSESSED FISHERIES

There are no assessed fisheries in the Area.

#### 7. RESEARCH

The Central Electricity Generating Authority have continued their research into the effect of the heated effluent from Peterborough Electricity Generating Station, but no final conclusions have been made.

## PREVENTION OF POLLUTION

### 1. QUALITY OF WATER

During the year 776 samples of river water, mostly taken on routine surveys, were analysed in the laboratory. The results are tabulated on pages 63 to 68.

#### River Welland—Non-tidal

Three full surveys of the non-tidal river were made, and seven supplementary surveys at approximately monthly intervals were included in the sampling programme. The supplementary surveys were mainly made at those stations which usually indicate the greatest degree of pollution, namely:

Welham	..	..	..	downstream of Market Harborough sewage disposal works
Gretton	..	..	..	in the middle reaches
Wakerley-Barrowden Road Bridge	..			
Uffington	..	..	..	downstream of Stamford sewage disposal works
Deeping St. James Railway Bridge	..			downstream of Deepings sewage disposal works
Crowland Bridge	..	..	..	downstream of Brook Drain carrying a paper mill effluent

The data obtained near the Wakerley—Barrowden Road Bridge will be of special interest in connection with a flow recorder which is to be installed there.

Comparison with the results of the previous year show that there were minor fluctuations, but that the overall picture remained the same. The Welland is generally satisfactory, and certainly no serious pollution was indicated, although occasionally the river at Welham is not in as good a condition as is desirable.

#### Eye Brook

One survey was made of this tributary, which indicated that it was of satisfactory quality and well able to contain any minor polluting discharges.

#### River Chater

One chemical survey showed the river to be satisfactory. Water is abstracted at a Cement Works for cooling purposes, and the returned effluent carries with it quantities of lime in suspension which upset the balance of aquatic life. As might be expected, a very large number of snails are to be found below the discharge. Fortunately the effect is limited to some several hundred yards below the discharge, and the Chater joins the River Welland in a further half mile.

#### River Gwash

Two chemical surveys and one biological survey were made. The winter survey showed that the quality of the water was highly satisfactory throughout, whereas the summer survey indicated that the headwaters and the middle reaches between Empingham and Great Casterton were somewhat less than satisfactory. The biological survey made at the same time as the chemical survey showed that there was no adverse effect on the aquatic life, as a good variety of species was present at all stations, including *Ephemeroptera nymphs*, and at Ryhall both upstream and downstream of the village there were *Plecoptera nymphs*.