

[MONTHLY SERVICE BULLETIN  
(WESTERN AUSTRALIA. FISHERIESCALM LIBRARY ARCHIVE  
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2(3) Mar 1953

DEPARTMENT OF PARKS AND WILDLIFE

, WESTERN AUSTRALIA

MONTHLY SERVICE BULLETIN

Vol. II, No. 3

March 1, 1953

CHANGE IN MINISTERIAL HEAD

The Hon. L. F. Kelly, M.L.A. for Merredin-Yilgarn, was sworn-in as Minister for Fisheries on February 23. The new Minister, who it will be remembered was a member of the Royal Commission on the Fishing Industry which sat a few years ago, has been good enough to address a message to the staff of the Fisheries Department. It will be found immediately below. There is also a message from the retiring Minister, the Hon. A. V. R. Abbott, M.L.A. To the former we extend a very warm welcome, and to the latter we say "au revoir" and offer sincere thanks for many personal kindnesses.

(A. J. Fraser)  
SUPERINTENDENT.

From Mr. Kelly

I am very happy to have been honoured with the portfolio of Minister for Fisheries, because the fishing industry is one in which I have always been particularly interested and one which provides abundant scope for any Minister. During the late War the fisheries made great strides right throughout Australia, but the developments which have taken place in the West in the post-war period - developments which are second to none in the Commonwealth and which have been due largely to the energetic policy of the Fisheries Department - make me very proud that I shall be associated with that Department and able to play a part in the

future progress of the industry. I hope I shall soon have the opportunity of meeting all officers individually and of seeing for myself the different sections of the industry at work.

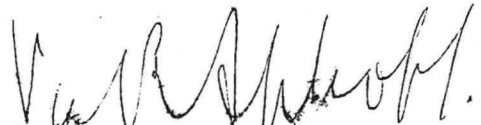


(L. F. Kelly)

MINISTER FOR FISHERIES.

From Mr. Abbott

As I hand over the reins of office to Mr. Kelly, the new Minister, I would like to express to the entire staff of the Fisheries Department, from the Superintendent down to the most junior cadet, my sincere thanks for the whole-hearted co-operation which has been extended to me by one and all during my six-year term. I believe real progress has been made in the fishing industry in that time. Moreover, I feel that with the additional staff and up-to-date equipment which has been made available, the Department will be the more able to consolidate the gains which have been made and to carry to fruition the plans which have been laid for the further development of the industry. My association with the Department has been a particularly happy one, and I wish each member of the staff all success and happiness.



(VAL. R. ABBOTT)



Mr. KELLY



Mr. ABBOTT

# STAFF OF W.A. FISHERIES DEPARTMENT

DECEMBER 8, 1952



*Front Row* (left to right).—Miss Shirley M. Norwood, Messrs. M. Goodlad, E. J. Brownfield, A. J. Fraser, Hon. A. V. R. Abbott, M.L.A. (Minister for Fisheries), J. E. Bramley, H. C. W. Piesse, Miss Patricia A. Davidson.

*Second Row* (left to right).—Messrs. B. A. Carmichael, A. V. Green, M. J. Simpson, I. Bartholomew, S. W. Bowler, V. J. Sinclair, J. Traynor, R. M. Crawford, N. E. McLaughlan, F. A. L. Connell, B. K. Bowen, J. E. Munro, A. J. Bateman, J. C. Thair, L. G. Smith, J. L. Barakonski.

*Third Row* (left to right).—Messrs. B. R. Saville, D. Wright, G. Coombes, J. L. Gallop, R. J. Baird, G. C. Jeffery, J. S. Simpson, W. Davidson, H. J. Murray, A. K. Melsom, L. C. Oliver.

STAFF NOTES

Inspector A. V. Green, of Bunbury, is on annual leave. Inspector A. K. Melsom is relieving him.

The permanent appointment of Mr. B. K. Bowen has been gazetted.

Messrs. Brownfield and Bramley have just concluded a tour of south coast salmon beaches.

Capt. H. C. W. Piesse is at present in the Bunbury area with m.v. "Lancelin".

Inspector M. Goodlad has resumed duty at Broome after sick leave and Inspector Munro has returned to Perth after relieving him.

Mr. L. G. Smith, Technical Officer, accompanied by Messrs. N. Millward and A. Lee, of C.S.I.R.O. Division of Fisheries, is carrying out ruff tagging operations on the south coast between Esperance and Albany.

Mr. J. Traynor, Fauna Warden, has been duck banding in the South West. He met with little success at Bocal, where according to information received ducks were plentiful, but succeeded in banding quite a number of ducks at Lake Wardering, in the Woodanilling district. He has now shifted his traps to Lake Karrinyup, just north of Perth.

Cadet Inspector N. E. McLaughlan has spent the greater part of February in Geraldton assisting Inspector Bowler.

Inspector F. A. L. Connell and Assistant Inspector L. C. Oliver have been on a cruise to Geraldton in m.v. "Kooruldhoo" to investigate complaints that crayfishing was being carried out in closed waters. No evidence was found of illegal practices. They returned to Fremantle about mid-February.

Inspector R. M. Crawford recently had the misfortune to drive a stake into his foot while on duty at Lancelin Island. After treatment Mr. Crawford

was able to resume duty, but the wound has flared up again and Mr. Crawford has had to take sick leave.

Inspector Connell and Assistant Inspector Oliver are at present in the Lancelin Island area.

C.S.I.R.O. PERSONALS

Mr. K. Godfrey has joined m.v. "Lancelin" at Bunbury, having replaced Mr. R. George, who will supervise the crayfish investigational work at the Abrolhos this year.

Mr. W. B. Malcolm is in the Albany area continuing his Australian salmon investigations.

Mr. J. M. Thomson, of the Dunwich, Queensland, Station, is returning east on March 2 after having spent several weeks in Western Australia. Mrs. Thomson is at present receiving congratulations on the birth of another son.

COMMENDATION FROM COMMONWEALTH DIRECTOR

The following note has been received by the Superintendent from Mr. F. F. Anderson, Director, Commonwealth Fisheries Office -

"I have just finished reading your Monthly Service Bulletin for February, 1953, and I would like to congratulate you and your staff on this very fine publication.

As an ex-West Australian of course it brings me in very close touch with what is going on in my home State, but from a fisheries point of view it is invaluable.

The introduction of articles on special fisheries is to be commended. I read with very great interest the one on the salmon fishery written by your goodself.

I am looking forward to further issues of your very useful and informative publication .....

DUCK BANDS RETURNED

Since banding commenced on June 4, 1952, a total of 435 rings have been placed on wild ducks in many parts of Western Australia. The vast majority of ducks banded were of the black (or grey) variety, just a mere handful of teal having been ringed.

Six bands have been returned to the Department, as shown in the following table, which gives an interesting picture of their dispersal. All recoveries were black duck.

No. of ring	Date ringed	Where ringed	Date recovered	Where recovered	Distance travelled
1105	1953 Jan. 21	Queen's Gardens, Perth	1953 Feb. 2	Avon River, Northam	50 miles
1316	" 31	Yanchep	" 8	10m. south of Fremantle	50 "
1097	" 21	Queen's Gardens, Perth	" 8	Gillingarra Moore River	68 "
1190	" 22	do.	" 7	Avon River, Burges' Siding	56 "
1351	Feb. 12	Wardering Lake	" 15	10m. N.E. of Kojonup	10 "
1280	Jan. 27	Yanchep	" 19	Yunderup	71 "

In the April issue of the Bulletin, Messrs. Saville and Traynor will tell the full story of the duck banding operations since their inception.

REFUSAL OF LICENSES

Last year a number of Fremantle fishermen were prosecuted for having removed the berry from, or for having otherwise dealt with, spawning crayfish. A conviction was recorded in each case, but a fine of £1 only was imposed on each offender. There was considerable jubilation on the part of the fishermen

concerned on account of the smallness of the penalty, and it was decided that each would be called on to show cause why his license should not be cancelled. The tone of replies received was very different from that adopted immediately after the decision of Court was announced. All the men concerned were advised that cancellation of licenses would not then be effected but that issue of fresh licenses for 1953 would to a large extent depend on their behaviour in the meantime.

As January 1, 1953, the date for renewal of licenses, drew near, each of the fishermen concerned was interviewed and told that it would be necessary for him to make formal written application for a license for 1953, and that each such application would by direction be placed before the Minister for consideration. In the meantime, if the decision of the Minister were not made known by January 1, the applicant would, if he caught or attempted to catch fish for sale, be liable to prosecution. In fact, the Minister directed that licenses be issued on January 12, but depriving the five men in question of the right to fish for almost a fortnight has had an exemplary effect, and men who for years have been more or less consistent law-breakers are now most careful to remain within the law.

Rather more drastic disciplinary action has been taken this year in regard to three Geraldton fishermen who have an unenviable record of convictions for dealing in undersize crayfish. In these three cases Inspector Bowler, in exercise of his statutory authority, refused to grant licenses for 1953. Appeal was made to the Minister by each man, and upon consideration Mr. Abbott decided to disallow the appeals in part by directing that two of the men would be issued with a license if they applied on March 1 and that the third, who has a formidable list of convictions, would be required to wait until May 1.

The three Geraldton men, it is understood, made an approach to the Geraldton Licensed Fishermen's Association for assistance in presenting their appeals, but advices received by the Department indicate that the Association refused to have anything at all to do with the matter.

OYSTERS

Some officers no doubt read the letter to the Editor appearing in the "West Australian" on February 17, signed "R.V.R." and bearing the above heading.

"R.V.R.", it will be remembered, desired to utter a word of warning, insofar as "it is commonly reported in the city that far too large a percentage of these oysters (hand-shucked oysters brought from Derby to Perth) were females of reproductive age". The correspondent goes on to say that female oysters are more easily detached from the rocks and less troublesome to open and shuck. Oysters, he says, are born males but "turn into" females at two years old and back into males when seven years old.

"R.V.R." thinks the Government should prevent "this wholesale slaughter of females", and introduce "practices so successfully followed at Colchester and Whitstable (England) also the Bellinger River in N.S.W."

The Superintendent has discussed this matter with Mr. J. M. Thomson, the research officer in charge of oyster investigations, C.S.I.R.O. Division of Fisheries, who has been in the West for some time.

Mr. Thomson is firmly of opinion that provided the present rate of taking oysters is spread over the whole oyster-bearing coastline, and not concentrated continuously in one place, the results will be beneficial rather than detrimental as the oysters will be thinned out and better growth promoted. Mr. Thomson in 1948 made a survey as far north as North-West Cape in company with Mr. Keith Sheard, and he says there are several areas, principally in the region of Carnarvon, suitable for oyster farming similar to that practised in New South Wales and southern Queensland.

The biological facts quoted by the "West Australian" correspondent are somewhat erroneous, Mr. Thomson says. It is true, he states, that the majority of oysters first are males and in their second breeding year about 70% change to females. From then on a proportion of these revert to the male sex each year, and not suddenly in the seventh year, as claimed by "R.V.R.". Mr. Thomson does not know of any biological

work which proves the claim that oysters are easier to detach when in the female stage.

In the course of his remarks Mr. Thomson referred to the suggestion that the system adopted in Britain be put into practice here. He said that firstly the British oyster is not of the rock oyster type we have in Australia, being more closely allied to our southern mud oyster, and it is doubtful whether methods applied to the British oyster would be suitable for the rock oyster of the north. In any case, he said, the Whitstable industry is not self-supporting, but it is necessary to import annually large quantities of young oysters from France and Holland to maintain their stocks.

#### W.A. SURF CASTING AND ANGLING CLUB

The Superintendent has accepted the position of patron of this new body, which since its foundation in 1951 has formed two branches in W.A. (at Geraldton and Bunbury) and affiliated with the Australian Anglers' Association. The men originally behind the Club were Gordon Hume, Vic. Davis, D. Brown and N. Smith, and although two of these have now left Perth the Club is flourishing and boasts 37 very active members.

The objects, which should commend themselves to all fishery workers, are to bring together those who appreciate the pastime of angling; to establish a definite regard for and maintain an active interest in the preservation of fish and fauna; to observe the Fisheries laws; and to conduct, organise and supervise angling outings on the coast.

The Hon. Secretary is Mr. L. M. Dunn, of 31 Aberdare Road, Shenton Park.

#### RECOVERY OF TAGGED RUFF

While working at Esperance towards the end of February, Mr. L. G. Smith, Technical Officer, was handed internal belly tag No. 1854 recovered from a "night herring" (ruff) caught by Mr. Don Mathieson, of Norseman. On enquiry from Mr. W. B. Malcolm, of the C.S.I.R.O. Division of Fisheries, it was learned that tag 1854 was one of a series inserted in ruff at Ceduna, South Australia, on June 18, 1952.

TROUT ACCLIMATISATION IN WESTERN AUSTRALIA

- by -

A. J. FRASER

Superintendent, Fisheries Department, W.A.

INTRODUCTION

A few brief notes in old departmental files show that during the 'nineties some desultory attempts were made to establish trout in Western Australia. Plantings of fry were made in the Preston River and the Collie River, but no record exists of the localities in which liberations occurred. Neither is there any record or report of trout having been caught or seen, and the only conclusion that we can reach is that the whole project proved abortive.

The history of trout acclimatisation as we know it really began in 1930 at Pemberton, a saw-milling town about 215 miles from Perth, situated at the centre of the State's beautiful karri forests in the Warren River district. Mr. Cyril A. Glew, the local schoolmaster, had recently during a holiday visit to the eastern States been impressed with the similarity between some of the best Victorian trout streams and the unstocked streams of the Warren and Donnelly River systems in Western Australia. He could not see why if trout had been successfully acclimatised in Victoria, the same thing could not be done here, and the almost barren waters be made to provide food and sport. He talked the matter over with executive officers of the Ballarat Acclimatisation Society and the Department of Fisheries and Game in Melbourne, and decided to "do something about it" when he returned to the West. In 1930 a consignment of 10,000 ova, of which the Victorian Fisheries Department had made a gift to Pemberton, was sent to Western Australia by ship. Unfortunately when opened up at Fremantle they had hatched out and the fry were all dead. This was indeed a severe blow, but nothing daunted Mr. Glew and his associates, who thought that the experiment was sufficiently important to be repeated, and decided to try again.

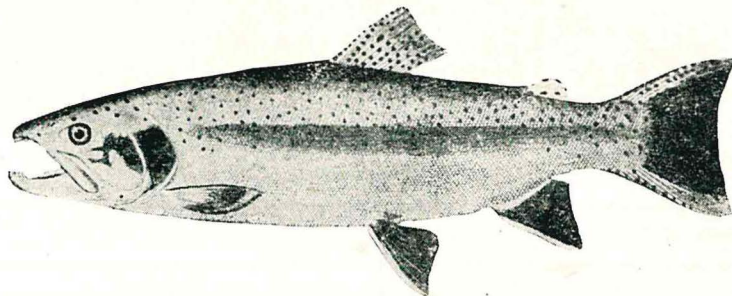
At the instance of Mr. Glew, the Victorian Department in 1931 made a further donation of ova. On this occasion 20,000 eyed eggs were brought across by the newly-inaugurated air service. Seventy-two hours after being loaded on the aircraft in Melbourne they were being unpacked at Pemberton and laid out on improvised hatching trays at the rear of the schoolmaster's quarters. From these eggs there was a hatch of approximately 15,000 alevins, of which perhaps 12,000 reached the fry stage and were planted in nearby streams.

For a few years no further importations of eggs were made, as it was desired to observe the effect of the initial plantings, but the Pemberton people had to wait until 1936 before there was any result. Then a report was received of a strange fish, quite a large fish, in a pool in the East Brook, six miles from the town. This proved to be a female brown trout,  $11\frac{1}{4}$  lb. in weight, and great was the delight of the local enthusiasts. The trout was brought to Perth and displayed in a fishmonger's window, where it attracted considerable attention.

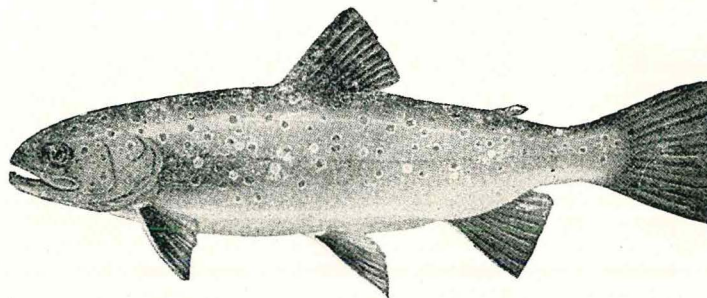
In the same year the Fish and Game Society of Western Australia was created, and was successful in securing a grant of £500 from the Government. With this sum the Society built a small hatchery on the banks of the Lefroy Brook, Pemberton, drawing water from the dam built to supply the turbines of the local hydro-electric scheme (this is known locally as the "Power Dam"). The Society purchased 100,000 eyed brown and rainbow trout ova from the acclimatisation society at Ballarat, Victoria, and brought them to Western Australia by air. From this parcel of eggs about 60,000 fry were hatched and released in the streams in the vicinity of Pemberton and elsewhere in the South West.

In 1938 the Fish and Game Society went into recess and the Pemberton Trout Society was established and assumed control of the local hatchery. Two years later an amendment to the Fisheries Act empowered the Governor to register trout acclimatisation societies whose main objects were hatching, rearing, distribution and protection of trout. Registration would grant autonomy in relation to trout acclimatisation activities within the area for which the society was registered, and would vest the property in all trout in that area in the society. In 1942 the Pemberton Society was registered under the style of "Pemberton-Warren Trout

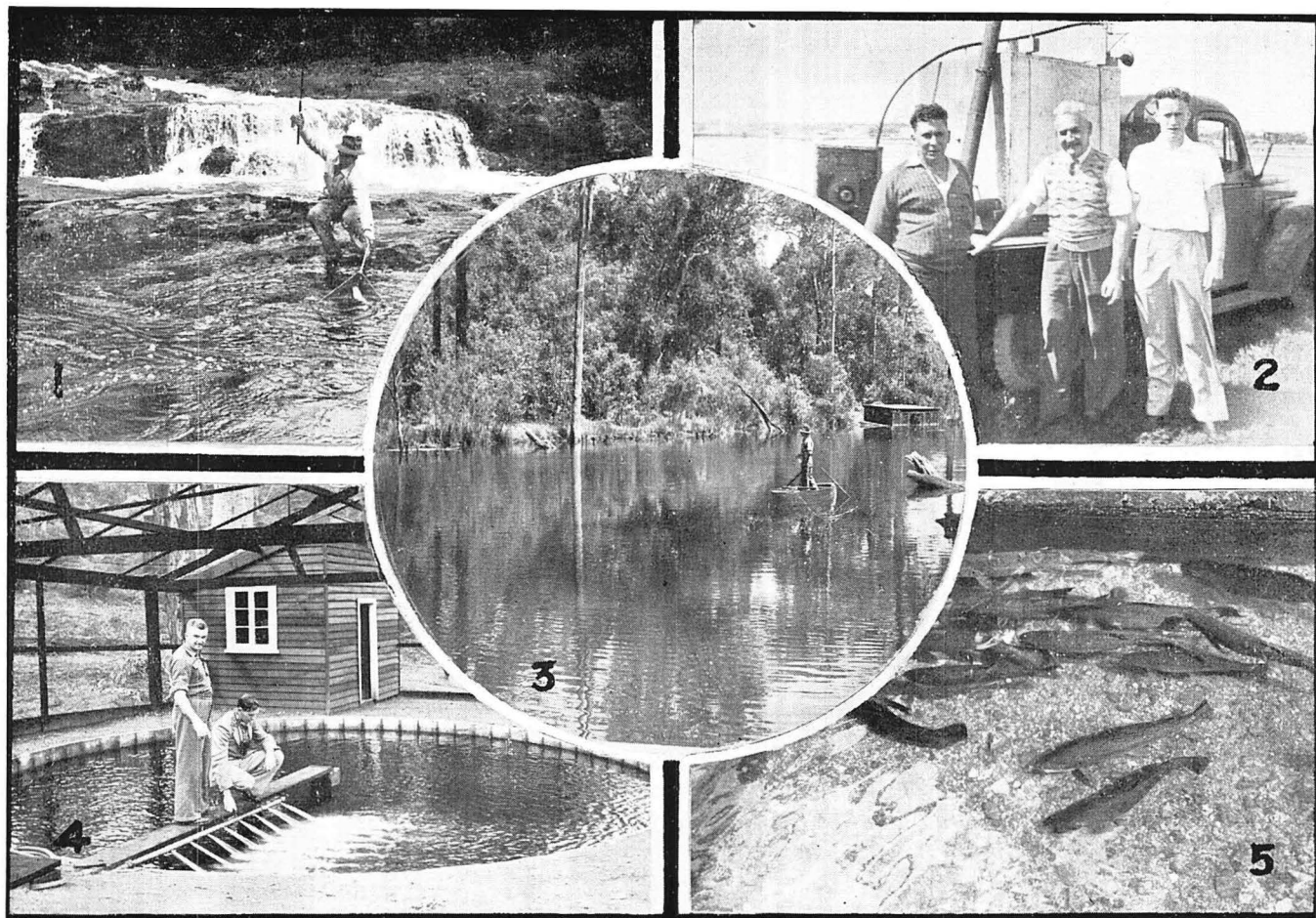
TROUTS ACCLIMATISED IN W.A.



RAINBOW TROUT (*Salmo irideus*)



BROWN TROUT (*Salmo trutta*)



1. J. B. Grosser lands a "big one" in Lefroy Brook.
2. The new fish transport unit. (Left to right: F. Shoobridge, Curator Pemberton hatcheries; Inspector J. S. Simpsen; Cadet Inspector B. A. Carmichael.)
3. Casting on the "Power Dam," Pemberton.
4. One of the new circular ponds at Pemberton. The man standing is A. R. Kelly.
5. Some of the brood stock at Pemberton hatchery ponds.

Acclimatisation Society", with authority over the whole of the Manjimup Road District and of Lake Jasper in the Nannup Road District.

Since then other districts in the South-West have become trout-minded, and societies have been registered as shown -

Collie and District Trout Acclimatisation Society (1943)  
Murray Trout Acclimatisation Society (1947)  
Serpentine-Jarrahdale Trout Acclimatisation Society (1948)  
Blackwood Trout Acclimatisation Society (1949)  
Harvey Fish, Game and Trout Acclimatisation Society (1951)  
Gingin Trout Acclimatisation Society (1952)

The Collie Society at the outset was most active, and set up a hatchery and holding ponds. However, in 1945 a disastrous bush fire destroyed the ponds, and since then the Society has been in recess.

#### POLICY

Provision exists under the 1940 amendment to the Fisheries laws for the cancellation of the registration of a society which fails in its duty or neglects to carry out efficiently the functions imposed by the Act, and for the transfer to the Minister of the whole of any such society's powers and for the vesting in the Minister of the whole of the society's assets. In this sense, therefore, although the control of the hatching, rearing, distribution and protection of trout in its area is vested in a registered society, the Fisheries Department is given overriding authority to ensure that a society does its job properly. Furthermore, all registered societies are to a greater or lesser extent dependent on Government subsidies and these would most likely be withheld if the Department were not satisfied with the bona fides or general efficiency of any society. Without such subsidies some at least would be compelled to go out of existence. Departmental control of the overall policy of all societies is thus retained, and in practice the Department is invariably consulted in relation to all matters of major policy. The Department has never had need to crack the whip, as it were, because relations between the societies and the Department have been of a most cordial nature and on the highest plane always.

In purely domestic matters the societies are supreme. The Department has no desire to interfere in matters of this nature. As a matter of fact, the Department's confidence in the ability of the societies to run their domestic affairs efficiently had grown to such an extent that in 1949 the Government was prevailed upon to amend the law and grant them the right, with the consent of the Minister, to make by-laws. By-laws may now be made to have effect in the area in which a society is registered for -

- (a) prescribing the limits in or about the mouth of or within any river, creek, stream, etc., within which it shall not be lawful for any person to fish by means of net or fixed engine;
- (b) determining the times and seasons at which the taking of any species of fish shall commence and cease or be permitted or prohibited;
- (c) prohibiting all persons from taking any fish of any specific species by means of any specified capture or by any means of capture whatsoever;
- (d) providing that under license from the society fish may be taken from waters to which the by-laws apply;
- (e) fixing the fees payable for and the duration of a license;
- (f) prescribing the conditions on which any license shall be granted and providing that on the breach of any condition a license shall be cancelled;
- (g) providing for all matters which are necessary or convenient to be prescribed for the purposes of carrying out or giving effect to by-laws as fully as if they were regulations or proclamations under the Act;
- (h) the detention, punishment and apprehension of offenders and the prevention of offences;
- (i) the forfeiture to His Majesty of property or articles used or intended to be used and fish taken in breach of any by-law; and
- (j) imposing a penalty not exceeding five pounds for the breach of any by-law.

There is a further provision that where any by-laws made by a society relate to the same subject matter as or are in conflict with the provisions of the Act, the latter shall prevail.

Broad hatching and distribution policy is however determined by the Trout Acclimatisation Council of Western Australia. This non-statutory body, which came into existence in 1949, consists of the Chief Inspector (Superintendent) of Fisheries as Chairman, the Deputy Chief Inspector as Vice Chairman, and one representative of each affiliated trout acclimatisation society. In addition, the Government Entomologist, the Conservator of Forests, a representative of the Division of Fisheries C.S.I.R.O., a representative of the State Gardens Board, and a representative of the Government Tourist Bureau, are named as honorary members without voting rights. It is further provided that the Secretary-Treasurer shall be a person who does not hold any executive office in any member-society. The Council meets quarterly in each society's area in turn, all annual meetings being held at Pemberton. Among its objects are -

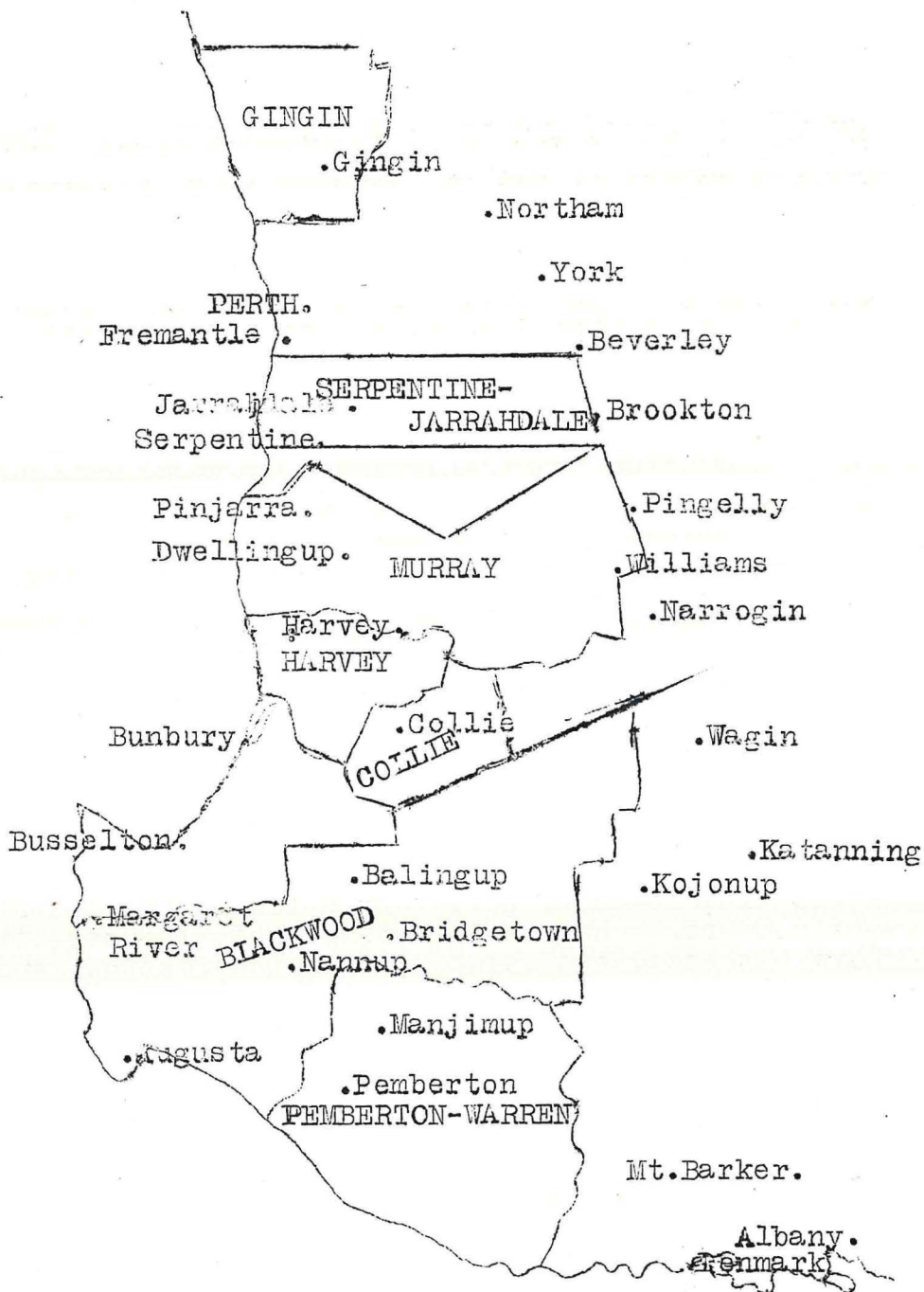
- (1) the co-ordination of the activities of registered trout acclimatisation societies; and
- (2) the determination of the manner and numbers in which trout fry and yearlings produced at Pemberton hatcheries shall be distributed.

A prerequisite to membership of the Council is agreement on the part of a trout acclimatisation society to surrender to the Council so much of its autonomy as will permit the Council to develop a properly streamlined overall policy on hatching and distribution, but no more. Under this arrangement, the societies have not lost, but rather gained in prestige, and the Council has worked exceptionally well as a policy-building body. The independence of the Council's executive officers (Chairman and Secretary) ensures a completely objective approach to the problems of acclimatisation.

#### HATCHING

The all-important consideration in hatchery practice is water. Given an abundant and constant supply of good water, uncontaminated by deleterious

MAP OF SOUTH-WESTERN PORTION OF WESTERN AUSTRALIA  
SHOWING THE APPROXIMATE AREAS CONTROLLED BY REGISTERED TROUT ACCLIMATISATION SOCIETIES (Feb. 28, 1952)



industrial or agricultural pollutants, and not subject to violent temperature fluctuations, little difficulty should be experienced in operating a successful trout hatchery. Unfortunately one of the most important of these desiderata, constancy of supply, was lacking in the hatchery built in 1936. Several stoppages occurred, and it was necessary on one occasion to bring water in buckets from Lefroy Brook to the hatchery throughout the whole of one night. In view of this unsatisfactory state of affairs, it was decided in 1939 to abandon the existing hatchery and to design a new building to be erected closer to the town on One-Mile Brook. It was felt that a hatchery with the capacity of 1,000,000 eggs should be the goal, and about the year 1943 plans were prepared by the Society accordingly. An adequate and suitable water supply was found in a spring providing 100 gallons of excellent water a minute, with a 20-foot head above the proposed site of the hatchery. An approach was made to the Government in the following year for funds for construction of the new building and installation of the necessary equipment. In 1944 World War II was still at its height, and the Government felt it would be hard put to justify the expenditure of £1,100, the estimated cost of the new structure, on non-essential works. At the same time it indicated its preparedness to finance the construction of a hatchery at half the estimated cost, and to this proposal the society readily agreed. In the same year a new building just half the size of that planned and capable of incubating 500,000 ova only was erected at a cost of £550, which was made available by the Treasury.

In the interim, from 1941 to 1943, hatching was carried out with makeshift plant in races in the newly constructed holding and rearing ponds in One-Mile Brook, just below the site of the proposed new hatchery. Conditions here were most difficult and the operations met with but indifferent success. During the 1944 season 50,000 ova were most successfully handled in the new hatchery in raised cement troughs, an interesting innovation as far as hatchery practice in Australia was concerned. This was the source of much gratification to the Pemberton Society, who were now satisfied they had broken the back of the job of hatching, and of considerable satisfaction to the Government and the Fisheries Department, who were most happy that their confidence had not been misplaced.

In 1945 a quarter-of-a-million eggs were laid down, and in 1946 the number was increased to 400,000, which in those days was considered the maximum quantity which could safely be handled in one season. From 1947 onwards no hatching problems have been met with - as a matter of fact in 1952 1,053,000 eggs were incubated with a total hatch of 825,000 alevins. This is indeed remarkable!

To secure ova for incubation it is first necessary to get ready the trout which will be "stripped". Males and females are segregated and corralled, and when all is ready they are placed in "cradles" constructed of small mesh fishing net on wooden frames. Three or four females are stripped, the eggs being deposited in an aluminium dish, and the milt from one male is then extruded over the eggs, which are gently shaken and stirred to ensure complete fertilisation. After being allowed to stand for approximately 30 minutes (the "hardening-up" time, as the hatchery workers call it) the eggs are removed to the hatchery where they are laid out on shallow wire mesh trays in troughs through which water is coursing. Covers of masonite are finally placed on top of the troughs to exclude light, experience having shown that the mortality among eggs and newly-hatched alevins is much higher in troughs exposed to light. Every morning the eggs are inspected, and any unfertilised or dead eggs are removed, as dead material is highly subject to attack by a fungus (Saprolegnia) which quickly spreads to and suffocates live eggs.

After approximately 14 days the eye of the embryo trout becomes visible through the "shell" - this is known as the "eyed" stage - and it is not until this stage is reached that the eggs are removed from one trough to another, or from hatchery to hatchery. The experience at Pemberton indicates that in the "green", or uneyed stages, the ova are very delicate, and it is almost impossible to move them without heavy mortality. Hatching commences about 14 days after the eggs "eye". On emerging from the egg the alevin has attached to its body a sac known as the yolk sac which contains the nutriment on which the young fish obtain all the food they require for the first three weeks (in the case of rainbows) or five weeks (in the case of browns). It is not until the sac is practically absorbed that the fish commences to feed by the mouth.

At first the food given to the young fish consists solely of very finely divided bullock's liver, and this diet is not varied while they remain in the hatching troughs. In normal practice this lasts for about four weeks, at which stage the fry are either transferred to the rearing ponds or liberated in the streams.

Hatching statistics prior to 1943 are rather sketchy, but each year since then the Pemberton-Warren Trout Acclimatisation Society has put out a printed annual report which contains hatch figures. The following table has been compiled from that source -

<u>Year</u>	<u>Ova incubated</u>	<u>Fry produced</u>
1943	141,000	91,000
1944	50,000	No record
1945	250,000	150,000
1946	400,000	300,000
1947	300,000	180,000
1948	304,000	235,000
1949	208,000	145,000
1950	233,000	140,000
1951	520,000	392,000
1952	1,053,000	825,000

#### REARING

Trout are reared for two purposes - firstly as brood stock for producing eggs for hatching and, secondly, for liberation in suitable streams as fingerlings or yearlings.

It was early appreciated that the cost of importing eyed ova year after year from Victoria or Tasmania would be greater than the Pemberton Society could afford. It was felt too that the source of supply in the eastern States might at any time dry up and leave Western Australia in the lurch. The only alternative was to establish an independent source of supply right at the society's doorstep.

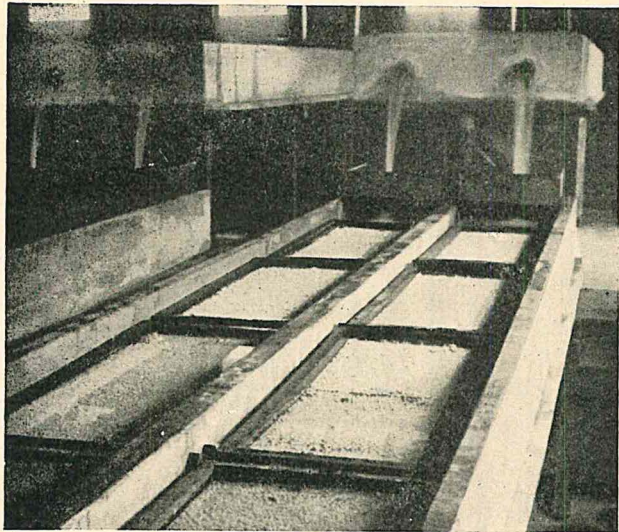
Holding ponds, in which would be held fry, yearlings and mature fish, were an essential. An

approach to the Government resulted in the grant of £185 towards the cost of a series of six ponds, for which the plans had been drawn by the Hydraulics Branch of the Public Works Department. More money was required, but a timely legacy from the late J. MacCallum Smith took care of that aspect. Finally, by dint of hundreds of hours of voluntary labour given by local enthusiasts, the ponds were constructed in One-Mile Brook in Pemberton National Park and were ready to receive trout by the end of 1941. The official opening ceremony was performed on July 19, 1942, by the Hon. W. H. Kitson, M.L.C., Chief Secretary, who named them "The MacCallum Smith Memorial Ponds".

Brood fish also were needed. The job of securing them turned out to be an epic task, and the story of the Society's efforts in this direction is best told in "Trout in the Karri Country" (Government Printer, Perth, 1947) produced jointly by the Pemberton-Warren Trout Acclimatisation Society and the W.A. Tourist and Publicity Bureau, as follows -

"This task proved a much more difficult job than putting them (fish) into the streams. We tried to net them, but the logs and snags proved too good a cover for the wily trout. We tried driving them upstream and downstream; we tried baited traps, 'tickling' and hooking. Perhaps the last-named was the most successful. Parties of half-a-dozen would go out after work, spend the evening until midnight catching a few fish which they would hold in a cage and bring in the next morning to the ponds. One enthusiast rode two miles along a railway track at midnight with a solitary 12 in. trout in a bucket on the handlebars, and kept it alive in the bath until morning.

"By 1940, it was evident that we would never get enough trout by this means, so an attempt was made to trap them on the spawning 'run'. Many week-ends were spent in building several traps of an American design. This consisted of a boom with wooden slats one inch apart across the main stream at the mouth of a small feeder. The idea was to divert the ascending fish up the feeder into a cone trap made to receive them. This was a total failure. The slatted grilles collected the floating debris holding up the water which flowed over the top and allowed the spawners to go over. We got one trout out of that season's work!

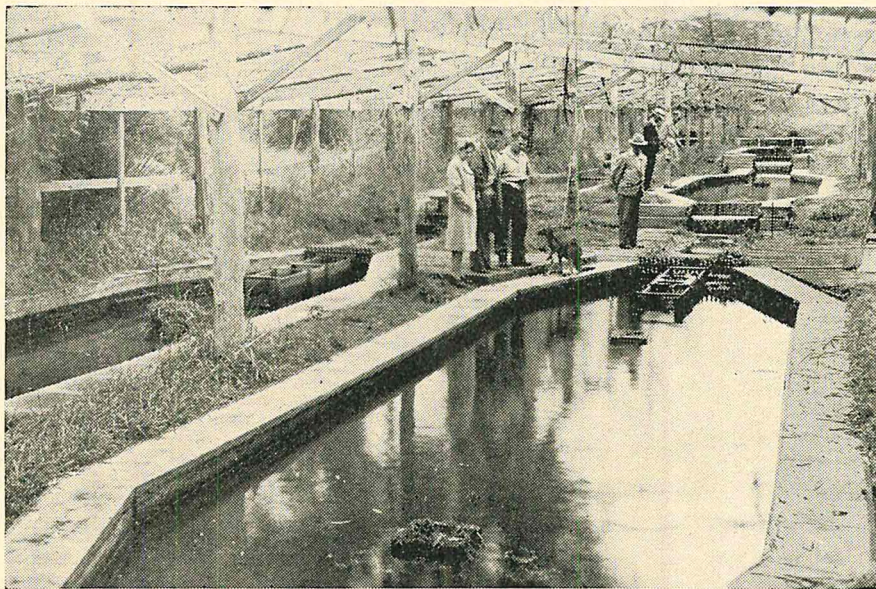


CEMENT HATCHING TROUGH, PEMBERTON.



LEFROY BROOK TRAP.

A. R. Kelly and J. S. Simpson cleaning the grilles.



ORIGINAL HOLDING PONDS, PEMBERTON HATCHERY.

(Courtesy A. R. Kelly.)

"In 1941, no trap construction was undertaken, and all efforts were concentrated on the building of holding ponds.

"The Chief Inspector of Fisheries, of Victoria, Mr. F. Lewis, visited Pemberton and gave us some ideas on Victorian trap construction, and for the 1942 run an experimental trap was built on the Treen Brook. This consisted of a netting barrier with a verandah downstream to prevent the spawners going over the top while still allowing the water to pass. This cord trap was specially made by Mr. J. E. Bramley of the Fisheries Department of W.A. Once more severe pressure of winter water proved too much and we saw our labour float downstream after catching two trout.

"It was now evident that we would have to design something suitable for our own conditions - it had to be of sufficient strength to stand the winter's water, and at the same time stop the ascending spawners. In the ultimate design, the wooden slats and netting were replaced with grilles of  $\frac{3}{8}$  in. round iron,  $1\frac{1}{2}$  in. apart, in wooden frames. Four of these were set in slots in a heavy log frame across the stream. The cylindrical cord trap was again used in 1943. The trap was a success inasmuch as it handled the water well, but didn't catch the trout because the corded trap rotted out at the critical moment. However, progress was being made and for 1944, the cord trap was replaced by a rigid wooden box arrangement. This worked splendidly and 107 breeders were captured and conveyed to the holding ponds.

"While experiments in trap construction were going on, we endeavoured to nurse a few fry through to two-year-olds in the ponds as a substitute for wild fish. These reached maturity in 1944, but the artificial conditions affected their fertility, and we were again thrown back to trapping. It was a source of great satisfaction to the Society that we had persevered with the trap design. Faced with the necessity of relying mainly on wild fish for 1945, we knew just what we required and set out on an arduous year's programme of trap construction. All resources were staked on the success of this programme. 1,600 hours of voluntary manual work went into the construction of three new traps.

Electrically welded grilles replaced wooden frames and lessons of previous failures were applied with the result that when the run commenced in 1945, 183 trout were captured in four weeks. The season closed then, owing to excessive winter waters.

"In 1946, 274 were taken with little effort. To the success of trapping for 1946 can be added the recovery of the pond-held breeders to something like normal fertility. Following experiments with diet and conditions, healthy eggs were produced by almost every female in the ponds."

A stock of brood fish was now becoming established and the next step was to perfect the technique of stripping. Actually stripping had first been undertaken in 1937, when seven rainbows were caught in the swimming pool at Pemberton. "Trout in the Karri Country" describes this first attempt in these words - "A master of ceremonies sat by reading instructions from a United States 'Wildlife' publication, while other enthusiasts endeavoured to interpret the words into actions. We took a few thousand eggs that year . . . . ."

By 1944 two or three of the local members were really expert strippers, and the loss of ova incurred during the very vulnerable stage immediately following fertilisation of the egg has been consistently low each season.

A change in distribution policy decided upon by the Trout Acclimatisation Council almost immediately after its creation in 1949, i.e., liberation of fingerlings or yearlings instead of fry, necessitated re-orientation of the rearing policy. Hitherto, although small numbers of fish had been sent out of the hatcheries at the fingerling or yearling stage, most of the fry retained in the ponds were kept as brood stock, and nearly all the fish liberated in the streams had not progressed beyond the fry stage. Immediately following the decision of the Council, the various societies began demanding fingerlings or yearlings. The existing setup however would not on account of restricted space permit the holding of sufficient fry to meet the societies' fingerling and yearling needs. More holding ponds were required. This time it was decided to instal circular ponds on the banks of the Lefroy Brook just below the Power Dam, which could supply all water needed. Experience overseas showed that from many angles

circular ponds were superior to the old rectangular type then (and still) in use. Once more the Government came to the rescue. The Hydraulics Branch again prepared plans, specifications and quantities, and the Premier approved grants totalling £4,500. To this sum the Society added £840, and by doing its own contracting and using pre-fabricated cement slab sides, it was able to build eight ponds 25 feet in diameter and a 10 in. cement pipe line 17 chains in length, as well as completely enclose the ponds with wire netting on timber frames, for the sum of £5,340. The new ponds were officially opened by the Hon. A. V. R. Abbott, M.L.A., Minister for Fisheries, on September 6, 1952.

As soon as the new ponds were brought into commission upwards of 250,000 fry were planted in them. Some have already been distributed as fingerlings, some are about to be distributed, some will be held to the yearling stage in August next and then liberated. The remainder will be retained as brood stock.

#### DISTRIBUTION

In the "good old days", when trout were sent out to the various streams as fry, very few transport problems were met with. Provided the water temperature in the 10-gallon cans in which the fish were carried was maintained at a fairly constant level, and the water itself did not suffer undue de-oxygenation, there was little that could go amiss. In warmer weather temperatures could be kept down by the use of ice in the cans, and oxygen could be, and in fact was, fed into the water through diffusers connected with an air pump and receiver carried on the transporting vehicle. Losses at times did occur, but rarely if officers of the Fisheries Department or the Pemberton Society were in charge of the transport unit. If they did happen it was frequently due to neglect or carelessness on the part of the person in charge.

Fry were transported in this manner to all areas in Western Australia where trout were acclimatised, from Gingin in the north to Albany in the south. In later years fingerlings and yearlings have been carried successfully by the same means to places up to 300 miles distant from Pemberton. In the case of these larger fish, of course, the number carried in each can is very considerably reduced. However, when the new distribution policy was adopted it became necessary to consider the desirability of providing improved

means of transporting fingerlings and yearlings, not so much because of the likelihood of any undue losses in transit, but rather because of the great number of 10-gallon cans, with relatively few fish in each, required to transport any quantity of fish, and of the excessive costs which would be incurred in the hire of motor trucks.

About the same time "Progressive Fish Culturist", published by the U.S. Fish and Wildlife Service (Vol. 12, No. 3; July, 1950) carried an article describing a transport unit developed in North Carolina for distributing live shad. This incorporates an apparatus for re-oxygenating the water in the tank by means of an aspirator and mixing chamber. It appeared to be the answer to the problem and the Pemberton Society decided to build an experimental unit of its own. A 150-gallon iron crockery tank was procured and a unit based on the U.S. design, of which plans were furnished, was constructed. It was found in practice that certain modifications were needed, but it was not long before it was operating satisfactorily under test. The power unit which is mounted on the transport truck, is a  $1\frac{1}{2}$  h.p. petrol motor belt-coupled to a small centrifugal water pump.

The first real test of the new equipment was made at the end of August, 1952, when 74,000 fry about 1 inch long were brought from Pemberton to Perth for distribution to trout societies and private buyers. This journey was made with a loss of only 4 fry, and a later visit to Gingin, nearly 60 miles north of Perth, with a smaller number of more advanced fry, proved completely successful, despite the fact that the transport unit was delayed on the road for over 4 hours while a broken axle was replaced.

It has been found that using the new delivery unit on a 15-cwt. utility allows for the transportation of as many fish at one time as were previously carried in a 3-ton truck, and there does not appear to be any doubt that when one or two refinements are introduced the saving in transport will be much greater still.

The Fisheries Department has now undertaken to transport all fish produced at Pemberton and the new delivery and power units have been made available to the Department for this purpose.

Formerly, when young fish were carried in 10-gallon cans, it was the practice of societies to arrange for voluntary workers to rendezvous at one or more convenient centres to take delivery of the cans of fish for liberation elsewhere in the district. Unfortunately it sometimes happened that through a breakdown in the arrangements the officers in charge of the consignment were left with several cans of fish on their hands, and they were compelled, despite their fatigue after an all-night journey, to find a suitable stream and liberate the fish themselves. But with the new transport unit this would not be possible. The young fish are now in fact decanted from the unit, and it is impossible to stay the flow of fish when any container is full. Under existing conditions it is completely impossible for departmental officers to liberate fish in the streams. Hence the societies, at the suggestion of the Trout Acclimatisation Council, are taking steps to instal holding ponds into which the fish are delivered direct and from which members can secure supplies at their convenience. The Murray Trout Acclimatisation Society has installed one such pond at Dwellingup, and the Harvey Fish, Game and Trout Acclimatisation Society one at Harvey.

#### PROTECTION

Although it is the function of registered societies to appoint wardens for the protection of trout in their respective areas, all inspectors appointed under the Fisheries Act have concurrent power. Frequently departmental inspectors have been made available to patrol trout streams, and a few years ago a full-time trout inspector was added to the Department's establishment. Generally speaking, however, no very great difficulty has been encountered in relation to the protection of trout, and the societies' wardens have never been unduly harassed by unlicensed or out-of-season anglers.

#### ANGLING

"A trout caught this summer is not so large as one caught last summer, but it will be by next summer."

(Saturday Evening Post)

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It is not suggested that the foregoing

quotation applies generally to trout anglers in Western Australia. In fact many really big fish have been taken in different streams, although the orthodox fly-fisherman would undoubtedly be disappointed with the class of fishing available. Trout simply will not rise to a fly in our streams. This is possibly due to the virtual absence of the types of flies common to trout streams in the eastern States and elsewhere. Rod and line is compulsory in all acclimatisation districts, but the type of lure used is largely left to the taste of the individual angler. Devons, Indianas, grasshoppers, and gilgies are all used with success.

The first fly-and plug-casting competitions held in Western Australia was organised by the Trout Acclimatisation Council to be held at Pemberton swimming pool in conjunction with the ceremonies associated with the official opening of the new circular holding ponds in September, 1952. Several fine trophies were presented, and although the number of entries could have been higher, some excellent casting was witnessed.

Apart from the streams at Pemberton, good angling is obtainable in the Serpentine River (Serpentine-Jarrahdale area), Murray River and tributaries (Murray area), Harvey dam (Harvey area) and Blackwood River (Blackwood area). Licenses, the fee for which varies from area to area, must be obtained before angling for trout is indulged in. Licenses are obtainable from the respective trout acclimatisation societies.

#### FUTURE

Lately there have been a great many enquiries for trout for liberation in streams which hitherto for many reasons have not been regarded as being suitable for the purpose, and in farmers' dams. In November, 1952, Mr. A. R. Kelly, President of the Pemberton-Warren Trout Acclimatisation Society and the writer visited many centres in the Great Southern district, starting from York and travelling through Beverley, Brookton, Pingelly, Dwarda, Williams, Kojonup, Katanning, Kendenup, Mt. Barker and Albany. The Avon, Hotham, Hay and Kalgan Rivers were inspected, and numerous soakage and catchment dams. The rivers are all non-permanent, drying up during summer into a chain of pools. All contain an abundance of life - shrimps, beetles, dragon-fly and demoiselle-fly larvae, as well

as several varieties of small fishes, and it would appear at first sight that they would be capable of supporting a substantial trout population. The rivers are non-permanent, as already stated, but the waterholes remaining are all more or less permanent - many are as much as a mile in length and 20 to 30 feet in depth, and there must be an enormous concentration of food in them after the river has broken up.

It is perhaps too early to predict the future of these streams, and although it is proposed at an early date to initiate hydrological investigations, which will include the rivers and certain farm dams (in some of which trout have thrived), it is felt that the final decision as to the suitability or otherwise of these waters for trout will have to be left to the fish themselves. Trial plantings have been made at several places, and if they prove successful there is little doubt but that demands for trout in the Great Southern will snowball.

On the farm of Mr. J. F. Haddleton, at Coompatine, near Katanning, there is a small soakage dam of perhaps  $\frac{1}{4}$  acre in extent into which a few years ago a small number of fingerling rainbow trout were introduced. The shade temperature in this locality often approaches to  $100^{\circ}$  in summer, and analysis of the water in the dam towards the end of summer shows up to 550 grains of salt (NaCl) per gallon. In spite of these obvious disadvantages Mr. Haddleton reared his trout to 17 inches in length in two years. An achievement like this necessitates a change in outlook in relation to trout acclimatisation generally, and perhaps a more liberal approach to the question of fish farming in drier areas.

As far as the recognised trout areas are concerned, the societies will no doubt as time goes on be required to spend time and money in opening up many streams which at the moment are inaccessible to the angling community. There does not appear to be any need just now to be concerned with over-stocking. Most of the waters are understocked, and will carry all the young trout which can be produced at Pemberton hatchery for some time to come. At the same time some attention will need be given before many years are past to the problem of natural food for the trout in the streams.

It is quite evident that the purer waters of the nearer Hills and coastal areas are deficient in natural food resources. In March, 1952, Professor E. Percival, Professor of Biology, Canterbury University College, Christchurch, N.Z., who has done considerable work on the ecology of the trout streams of South Island, New Zealand, spent a day or two at Pemberton as the guest of the Trout Acclimatisation Council. The whole of one day was occupied in a hurried survey of some of the local streams, where some collecting was done, but Professor Percival subsequently expressed amazement at the paucity of the aquatic life to be found. In comparison with trout rivers in New Zealand, he said, our waters were virtually barren of natural food. At the same time he pointed out that trout were well established, and all he had seen were in good condition, which was evidence that they were able to obtain some form of food. By the same token, if as Professor Percival has indicated, the natural food supply is at a low level, what is there will become scarcer still as more fish inhabit the streams, and it may therefore be necessary in the not-too-distant future to consider the desirability of introducing into the streams forage fishes or suitable insect types to enable a good stock of trout to be maintained, or alternatively to plant only fish which have been reared to catchable size - fish which will be caught by the angler before they have had an opportunity of making too great inroads into the natural food stocks.

#### PERSONALITIES

It might not be out of place before concluding this paper to make brief reference to some of the people who have been prominently associated with the work of trout acclimatisation. The following thumb-nail sketches will serve to introduce them -

Cyril A. Glew, the schoolmaster who first thought of trout for Western Australia, must be regarded as the pioneer of trout acclimatisation. Not an angler himself, but a man who firmly believes that all natural resources should be fully developed, his whole interest has been propagation.

Now the headmaster of Perth Boys' High School, he is the diligent and efficient Secretary-Treasurer of the Trout Acclimatisation Council of Western Australia.

A. R. (Ralph) Kelly, Pemberton businessman, is the power behind the throne in the realm of trout acclimatisation. Associated with Cyril Glew in his earliest attempts to establish trout, he later became responsible for general policy direction and planning. In that capacity he has piloted his Society through all its trials and tribulations, and is still its guide and friend. Kelly is not an angler.

John S. Simpson, Inspector of Fisheries, was the first President of the Pemberton Trout Society, and acted as its chief executive for some years. Later appointed curator of the hatcheries, Simpson was responsible for all stripping, hatching and distribution. Later he was appointed to the staff of the Fisheries Department as trout inspector at Pemberton, and in 1951 was sent to Victoria and Tasmania to inspect and report upon trout acclimatisation methods in those States. He is now located in head office as liaison officer between the Department and the acclimatisation societies.

Sydney E. Young, first Secretary-Treasurer of the Pemberton-Warren Trout Acclimatisation Society, and formerly one of its "top" anglers, and Norman W. Martin, present Secretary-Treasurer, who has handled all financial arrangements in latter years.

Gil. Brown, Bob Cave, Laurie Mickle, Lionel Graham, Fred Anderson, Jack Grosser, Mick Love, all members at one time or another of the Council of the Pemberton Society. All have given service second to none in promoting trout acclimatisation in W.A.

Frank Shoobridge, the present Curator at Pemberton, and Howard Dunn, former hatchery operative - loyal and efficient servants.

Jos Simenson, one of the joint secretaries of the old Fish and Game Society, who did an excellent job of organising in the initial stages.

B.V. (Vic.) Cannon, James Morison and Samson Simpson, the men behind the gun in the defunct Collie Society.

W. M. (Bill) Green, foundation President of the Serpentine-Jarrahdale Trout Acclimatisation Society, a man of many parts and great organising capacity; Norman S. Fletcher, the existing President and Mrs. L. E. Shapcott, the present Secretary, who have done, and are doing, an excellent job.

Stanley R. Doust, of Bridgetown, the genial secretary and prime mover in the Blackwood Trout Acclimatisation Society setup.

H. Birmingham, President, and Charles W. Brown, secretary, of the Murray Trout Acclimatisation Society, who have done outstanding work in their district.

On the angling side John Adlard, Fred Anderson, Ted Birmingham, Stan Doust, John Grosser, Rex Hall and A. L. Smith have done as much as anybody to further the interests of anglers.

#### ACKNOWLEDGMENTS

In the preparation of this necessarily brief review of trout acclimatisation activities, I have been greatly dependant on Messrs. A. R. Kelly and J. S. Simpson, without whose advice and assistance the paper would not have been possible.

THE CLEARING HOUSE

Flying Whale-Spotter Says Helicopter is Catcher  
of the Future

The importance of aerial spotting of whales and the possibilities of developing whaling operations from the air were stressed last month in Durban to the "South African Shipping News" by Mr. Alan Bristow, a former Fleet Air Arm pilot who will fly a helicopter from the Melsom and Melsom factory ship "Norhval" during the coming Antarctic whaling season.

The helicopter is one of two which will be used by Norwegian whaling interests. The other will, it is believed, be carried by the Thor Dahl factory ship "Thorshavet".

Mr. Bristow first gained practical experience with a helicopter when he was "spotting" last season for the German-operated "Olympic Challenger", the first factory ship to try the value of aerial spotting. Since then, however, he has become firmly convinced that there is a future, not only for the use of helicopters in spotting whales, but possibly conducting most of the whaling operations from them - with the obvious exception of processing the whales and bringing them to the factory ships.

Aerial Whaling

He said: "There is little or no point in finding out where a whale is if you have to call a catcher to come and kill it. I have gone so far as to try and form a company with the aim of selling the idea of aerial whaling to the whaling companies. One of the great advantages of aerial whaling would be that, whereas a catcher will often scare off the balance of a school of whales when killing one, the whales are not disturbed by an aircraft.

Mr. Bristow said his experience had shown that helicopters could operate in conditions too bad for catchers and five helicopters could be bought for the price of one catcher. Once the technique of the electric harpoon had been perfected, then aerial catching would be a practical proposition for flagging and inflating could also be done from the air, leaving it to the tow boats to "collect and

deliver" the whales to the factory ship.

With Mr. Bristow are three other members of the team who will fly and maintain the aircraft. They are Jan Kirkhorn, the Norwegian second pilot, and two engineers Einar Mork and John Wolley.

### Proving Flights

During the course of the voyage from Aruba to Durban the helicopter was given several proving flights from the "Norhval". The longest of these were on the Union coast. The one being a two hour flip round the factory ship when she was in the vicinity of Cape Point and the second when the aircraft was flown off nearly 100 miles from Durban and brought to the S.A.A.F. 35 Squadron, Congella, where it received a final mechanical check before leaving for the whaling grounds.

### Flight Deck

To accommodate the craft a special flight deck has been constructed on the poop. In area larger than a tennis court and with an all metal hangar built partly between and behind the twin funnels, the deck is self-contained even to the special storage tanks to take the aviation spirit needed for the helicopter.

When the "Norhval" came to take on fuel-supplies for the aircraft she created what is probably a new type of export from Durban, when she took more than 8,000 gallons of aviation spirit. At present petroleum products exported are without exception carried in either drums or cases. This is believed to be the first time that a bulk consignment has been exported. When the new oil refinery is in operation, however, there will be regular shipments of refined products leaving.

Like her consort the "Abraham Larsen", the "Norhval" called to top up her supplies of fuel and food before leaving for the whaling grounds. She also took with her the eight catchers which had refitted in Durban during the off season. Each catcher in turn was supplied with all stores and fuel before the expedition left after a three day visit.

It is not considered likely that the "Norhval" will call at Durban at the end of the season, but should any of her catchers be sent to Durban again this year to refit they will come on ahead and be left here, the crews making their way to Cape Town to join the parent ship there.

("The South African Shipping News and Fishing Industry Review", Cape Town, January, 1953.)

### Whaling

#### Successful Whaling Season

The closing of the 1952 humpback whaling season on October 31 concluded another successful year of whaling for Australian companies, when all but 88 of the permitted quota of whales were caught. The Australian off-shore quota of 1875 humpback whales is set by the Commonwealth Government under agreement with the International Whaling Commission and a similar total is expected to be set for next season's operations. The allocation of the quota between Western Australian and Queensland interests is revealed in the following table:-

Company Quotas and Catches

Company	1951		1952	
	Quota	Catch	Quota	Catch
Australina Whaling Comm. W.A. . . . .	650	650	600	600
Nor-West Whaling Co. Ltd. W.A. . . . .	600	574	600	536
Cheyne's Beach Whaling Co. Pty. Ltd. W.A. . .	-	-	75	51
Whale Industries Ltd. Q'land . . . . .	-	-	600	600
Total . . . . .	1250	1224	1875	1787

#### The Season's Catch

During the past season, world supplies of whale oil have exceeded demand for the first time since the war, leaving an unsold surplus of approximately 12 per cent. of the annual world production with the resultant price of oil between £65-70 per ton in comparison with

£E120 last year. The return from this season's catch, which produced approximately 15,000 tons of high grade whale oil in comparison to 10,000 tons last year, may be somewhat less than the return for 1951 though still in excess of £1 $\frac{1}{4}$  million. Shipments have, in the main, been made to Holland, Germany, Sweden and Italy. The by-products of whale meal and solubles were worth over £250,000, the former, being a much-sought-after fertiliser, is distributed in Western Australia under a rationing scheme controlled by the State Department of Agriculture.

### Shore Stations

The shore station of the Australian Whaling Commission, situated at Babbage Island, Carnarvon, is considered one of the most modern in the world, having a storage capacity of 5,000 tons and able to process eight whales a day. The Nor-West Company at Pt. Cloates, 200 miles north of Carnarvon, has storage facilities for 3,000 tons, whilst Cheynes Beach station near Albany has a storage capacity of 200 tons. During the season both the Commission and the Nor-West Company operated three chasers, the latter being aided by an aerial spotter with varying success. The Cheynes Beach Company, however, operated a single chaser.

Whaling on the east coast was re-established during the season by Whale Industries Limited operating from the shore station at Tangalooma in the Moreton Bay area. The full quota of 600 was caught but the company claims that this is but a small percentage of whales sighted by its three chasers.

("Monthly Summary of Australian Conditions" issued by the National Bank of Australasia Ltd., Melbourne, January 15, 1953.)

### Weird Fish Claimed as "Missing Link"

#### Professor Weeps over Coelacanth in Africa

A weird fish known as a Coelacanth, which is believed to be a missing link between man and his sea ancestors, has been identified by Prof. J. B. L. Smith, a South African scientist. Cables say he wept when he saw it.

Scientists had thought the fish (pronounced Sea-lar-kanth) became extinct 50,000,000 years ago.

A South African Defence Department Dakota flew Professor Smith back from a remote island west of Madagascar to-day with the "Fish with Arms". The specimen is five feet long and weighs 100 lb.

Professor Smith said the fish's condition was not perfect, but "more than satisfactory".

He said he would name it "Malania" after the Prime Minister (Dr. Malan) who lent Professor Smith the Dakota when news of the catch reached Durban.

Professor Smith added that a fisherman named Ahmed Hussein had caught the specimen in 65 feet of water in the Comoro group of islands, 200 miles west of Madagascar.

Eric Hunt, the skipper of a Zanzibar schooner, had recognised it from a pamphlet Professor Smith issued.

Professor Smith said:

"Hunt, who kept the fish in formalin for 10 days, took me on a boat, where he had the fish wrapped in cotton wool.

"I knelt down to look at it, and I am not ashamed to say that I wept.

"This culminates 14 years' search, during which my wife and I tramped thousands of miles along Africa's eastern seaboard and distributed thousands of pamphlets.

"Comoro natives told me they catch two or three similar fish each year in the same region."

In America to-day excited scientists hailed the discovery as the true fish story of the century.

Dr. Albert Parr, Director of the American Museum of Natural History, said:

"The finding of a living specimen of a Latimecia, or Coelacanth, is the most important zoological discovery of this century".

("Tight Lines", Sydney, N.S.W., February 15, 1953).

## Fishing by Electricity

### Excellent Results in Hungary

Interesting experiments have been carried out in Hungary to catch freshwater fish by the use of electric current. The method has been particularly successful in water where plants, reeds, snags and roots prevent the use of traditional fishing implements

Experiments were started by the Hunyadi brothers in 1945 and were sponsored by the National Fish Breeding Institute. In 1950 and 1951 field experiments were carried out for 11 months, mainly in the autumn and winter. The aim was to discover the most suitable type of apparatus and to find out if the current had any harmful effect on the fish and on fish breeding.

The apparatus finally adopted consisted of an electric generator capable of producing up to 300 volts and powered by an 8-h.p. motor. It was found preferable to use the apparatus from a small craft, to which a copper strip had been fitted to the keel to act as a negative electrode.

The positive electrode is fitted to the end of a wooden pole and attached to the generator by a length of cable. It consists of a basketlike construction covered with a fine metal mesh. The fisherman stands in the stern of the craft, which is kept in motion by an oarsman. When the craft is in an area containing fish, the positive electrode is lowered into the water and the current switched on. An electric field is created around the positive electrode and any fish within a radius of one to two metres is attracted to the positive electrode. It is stunned by the current and can be lifted out of the water in a net.

("The Fishing News", London, January 17, 1953)