DEPARTMENT
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STAFF NOTES

Cadet Inspector E.H. Barker, who recently went to Geraldton as a member of the inspectorial team policing the Abrolhos crayfishery prior to the opening date, met with an accident on the Geraldton wharf and was compelled to return to Perth for medical treatment. Mr. Barker was replaced by Cadet Inspector D.H. Smith, who also returned to Perth because of sickness. Cadet Inspector R.G. Emery has now taken Mr. Smith's place.

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Cadet Inspector E.H. Barker, after recovering from his injury, returned to Geraldton on permanent transfer as assistant to Inspector Crawford.

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Assistant Inspector H.D. Kavanagh has gone to Geraldton for a few weeks to assist in the supervision of the inshore fisheries during the flush of the Abrolhos season.

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Miss K.P. Cann has been appointed typist in place of Mrs. Priest. She took up duty at head office on March 6, 1959.

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Mr. S. La Roche, after a period on crayfish work, has now returned to Mandurah as assistant to Inspector Green.

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The Superintendent (Mr. Fraser), accompanied by Research Officer B.K. Bowen, visited Harvey on Sunday March 15, to attend the quarterly meeting of the Trout Acclimatisation Council of W.A. Mr. Fraser visited Mandurah on Labor Day (March 2) to be present at the official "Fishpot" luncheon and the presentation of prizes. He also visited Geraldton from March 26 to 30.
Mr. Fraser has been re-appointed a member of the W.A. State Committee of C.S.I.R.O. for the ensuing three years.

DEFEAT OF GOVERNMENT

The defeat of the Government at the general election held on March 21, means that the Minister for Fisheries, Mr. Kelly, who has occupied that position for the past six years, will go out of office. Mr. Kelly has at all times during his term as Minister exhibited a very keen interest in fisheries and given every assistance, at the higher levels, to the prosecution of developmental and research projects. All members of the staff extend to him their appreciation of his many kindnesses and best wishes for the future.

PERSONAL PARAGRAPHS

Dr. R.G. Chittleborough, Research Officer, Division of Fisheries and Oceanography, C.S.I.R.O., Cronulla, N.S.W., who is well known to departmental officers in this State, paid a fourteen day visit to Western Australia during March. Dr. Chittleborough, who is the biologist in charge of whaling research, came to Perth to tie up a number of loose ends in relation to activities in this State.

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On March 6, at an informal function in Head Office, a presentation of a sum of money was made to Mrs. V. Priest on the eve of her resignation from the Public Service. Many complimentary remarks in relation to Mrs. Priest's 5 years' association with the Department were made by the section heads, all of whom extended the felicitations of the officers in their respective sections.

RESEARCH STAFF MOVES

During the month the Entomology Section of the Department of Agriculture moved from 108 Adelaide Terrace to their new laboratories at South Perth. The Section's roomy laboratory which was then vacated has now been made available to Mr. Bowen and the Department's research personnel, who have now moved in. The new setup will greatly facilitate the Department's research activities.

PERTH DISTRICT OFFICE

The new district office at Ellam Street, Victoria Park, has now been connected by telephone. The number is 6 - 3996.

KANGAROO INVESTIGATIONS

Mr. E.H.M. Ealey, of the Wildlife Survey Section, C.S.I.R.O., Nedlands, has furnished the following report in relation to his Section's kangaroo research during 1957/58, and agreed to its reproduction -

> Observations of marked euros, Macropus robustus, during the summer of 1956/57 indicated that euros could exist for long periods without water. This was confirmed by placing six animals in a 6-acre paddock without water. Three survived the e months, September, October and November.
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> Tame animals deprived of water lost 25 per cent body weight, without distress, most of which was immediately replaced when water was again provided. Evidence from feeding trials suggests that euros normally exist on a low protein diet and as they become dehydrated they eat less, so less water is required to remove nitrogenous wastes. The urine is highly concentrated when produced.

A seasonal series of blood and urine values has been obtained in co-operation with the University of Western Australia in an endeavour to understand how this animal can exist where sheep cannot, and for long periods without water. In conjunction with these tests an extensive series of food plant samples, stomach contents, and faecal pellets has been collected and will be analysed for seasonal changes in water and protein content.

During the summer until it rains euros spend the hot part of the day in granite caves where hygrothermograph records show that temperatures seldom exceed 90° despite outside air temperatures exceeding 110°F.

The results show that the euro is highly adapted in physiology and behaviour to exist for long periods without water. However, an extensive trial in the summer of 1957 showed that in a dry season water poisoning with arsenic can be effective. Night observations of marked animals have shown that a large proportion are sedentary. Poison trials have confirmed this, as a useful area can be cleaned by the efficient poisoning of a single watering point. How fast it would be re-invaded has not yet been determined.

A method of aging euros by the teeth is being worked out. At present they can be accurately aged to 7 years and roughly to 20 years. Some 3,000 skulls have been collected from poisoned and shot samples and taken to Perth where the various populations they represent will be analysed for age distribution and mortality patterns.

Large samples of female euros have been shot to check on birth rates and mortality rates of the young. There appear to be three main peaks in births, only one of which can be correlated with rainfall.

The Woodstock team has now moved to Perth where feeding trials will be carried out on 20 animals that have been flown down, and the result of four years' work will be assessed and written up.

COMMONWEALTH CRAYFISH REGULATIONS.

The attention of all officers is directed to the article on page 9 of Fisheries Newsletter (February 1959) announcing publication by the Federal Government of conservation notices affecting the crayfish fishery.

The notices, which were gazetted and came into force on January 15, are to the following effect -

1. Prohibiting the taking in "Australian waters" of the crayfish Panulirus longipes which measured in a straight line from
   (a) the anterior tip of the superior rostrum, or
   (b) the anterior point of the inferior rostrum,

   to the centre of the posterior edge of the carapace do not exceed $2\frac{3}{4}$".

   (NOTE: This is $2\frac{3}{4}$" carapace length as measured under State law).

2. Prohibiting the taking in "Australian waters" of the crayfish Panulirus longipes during the period from and including
   (a) August 16 in each year to and including March 14 in the next succeeding year from the area known as the Abrolhos Islands, and
   (b) September 1 in each year to and including November 14 succeeding, between latitudes 30°S 33°S.

Notices for posting on Fisheries office notice boards and at local markets, processing works and the like, have been provided by the Commonwealth Director of Fisheries (Mr. F.F. Anderson) and are being sent to inspectors at Fremantle and Geraldton.

MANDURAH FISHPOT.

The Superintendent has received the following letter from Ampol Petroleum Ltd., concerning the recent Ampol Fishpot at Mandurah :

Dear Mr. Fraser,

I want to take this opportunity, on my return to Sydney, to express on behalf of the Company our deep appreciation of your magnificent co-operation during the recent Ampol Fishpot at Mandurah.

Will you be kind enough to thank Mr. Smith, who so ably tagged the fish, on our behalf.

It was indeed a pleasure to be associated with you both and I look forward to renewing our association at the next Fishpot next year.

Once again, our very sincere thanks.

Yours sincerely,

T. SOUTHWELL-KEELY,
CHIEF OF PUBLIC RELATIONS.

March 10, 1959.

PRAWN INVESTIGATIONS IN EASTERN AUSTRALIA.

Dr. A.A. Racek, of the New south Wales Fisheries Department, has recently published, as that Department's Research Bulletin No. 6, a paper entitled "Prawn Investigations in Eastern Australia". Dr. Racek's paper which, is a particularly valuable publication, can be made available on loan to any Departmental officer on application.

In connection with these investigations, and to assist Dr. Racek in his taxonomic work, a series of specimens from Western Australian waters were recently sent to Sydney. The Department has now received the following letter from the Superintendent of Fisheries in New South Wales :

Dear Mr. Fraser,

I understand that Dr. A.A. Racek has recently received a valuable prawn collection from the Shark Bay and Exmouth areas. Dr. Racek tells me that the samples were accompanied by very useful graphs showing maturity and condition factors, as well as a detailed list of localities, weather conditions, etc.

I am informed that the inspection of the material would not only be extremely useful for our own research but the interpretation of the data will, in Dr. Racek's opinion, be of value to your Office. However, before providing a full report on the material Dr. Racek desires to clarify some questions of a strictly scientific nature and proposes to correspond direct with Mr. Bowen of your Office in this regard. He will afterwards submit a detailed report which I will forward on to you as soon as available.

I should like to take this opportunity of thanking you for making these specimens and the very valuable supporting material available to Dr. Racek.

Yours faithfully,

N.V. HARRIS,
Superintendent of Fisheries.

March 12, 1959.

ABROLHOS CRAYFISH SEASON.

A record number of 210 boats are at present operating in the Abrolhos Islands, where the current season opened on March 15. Several thousand tons of craypots, crates, building materials, stores food and water were, prior to the opening date, conveyed from Geraldton to various stations on the island groups.

The departmental vessels "Lancelin" and "Kooruldhoo" were sent to the Abrolhos on February 28, to prevent illegal operations, and an inspector was located on each of the three main island groups. The value of this pre-seasonal supervision can be gauged from the fact that instead of nearly 500 bags of crayfish reaching Geraldton from the Islands on the opening day of the season in 1958, there were only approximately 120 bags delivered to the processing plants on the opening day of the current season.

The weather has not been kind to the fishermen at the Abrolhos. Strong southerlieshave prevented work for at least half the time since the season opened.

WOMAN FISHERMAN BLASTED.

Miss Muriel Thomas, the only woman skipper of a crayfish boat in Western Australia, had an unfortunate experience on March 10, when preparing to take the £1,200, 19 foot crayboat "Val Marie" to the Abrolhos Islands for the opening of the season. The boat was in mid-harbour when a terrific blast occurred. Miss Thomas was blown out of the boat into the water. The blast is believed to have come from a new motor which had had less than 20 hours' use.

Other fishing boats in the harbour immediately dashed to the woman's aid. While one took her ashore for treatment others went alongside the burning boat. Phil Travia, a member of the crew of the "Lady Joyous" (he is a son of G. Travia, of the Fishermen's Advisory Committee) went aboard the "Val Marie" and put out the fire with extinguishers thrown to him by crews of other vessels.

Miss Thomas, who received burns to the leg and arm and shock, was able to sail to the Abrolhos in another boat a day or two after the accident.

WHALING QUOTAS FOR 1959.

According to a press announcement, the Federal Minister for Primary Industry (Mr. Adermann) has fixed the whaling quotas for the five Australian land-based stations this year at 2,020 humpbacks. No reduction has been made in the quota of 1,000 for the Nor'-West Whaling Company of Carnarvon, nor of the 120 quota for the Cheynes Bay Whaling Company of Albany.

When announcing the quotas the Minister said that the catch on the west coast last season was 148 below the maximum quota of the two Western Australian stations. However, in view of the explanations made for the reduced take, it had been decided not to interfere with the existing quotas.

Mr. Adermann added that the future of the International Whaling Agreement, which governs the operations of pelagic whaling fleets in the Antarctic, might not be clarified until the International Whaling Commission met in London in June of this year. *

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* The future of pelagic whaling is rather in the air at the moment, following the withdrawal from the Agreement of Norway and Holland - Ed.

DEPARTMENTAL PROSECUTIONS.

January 1 - March 31, 1959 :

Date	Defendant	Court	Charge	Result
23.1.59	Contorinis, Geo.	Bunbury	Undersize fish	Fined £5.
27.1.59	O'Brien, R.B.	Collie	Fishing in closed waters	" £5.
12.1.59	Ceasare, B.	Fremantle	Crayfish pots in closed waters	" £5.
do	Iannello, F.	do	do	" £5.
16.2.59	Carnemolla, F.	do	Undersize crayfish	" £10.

Date	Defendant	Court	Charge	Result
16.2.59	Orton, E.	Fremantle	Undersize crayfish	Fined £5.
9.3.59	Pansini, F.	do	do	" £5.
do	Melvin, J.R.	do	do	" £10.
do	Walkerden, E.R.	do	do	" £5.
do	Janse, Geo.	do	do	" £2.
do	Pell, J.A.	do	do	" £5.
do	Bilcich, V.	do	do	" £2.
do	Ruly, N.	do	do	" £10.
do	Ruljancich, L.	do	do	" £2.
do	Allecretta, M.	do	do	" £2.
do	Hill, C.	do	do	" £2.
16.3.59	Smith, G.	do	do	" £2.
do	do	do	No boat number	" £2.
do	Dean, F.	do	Undersize crayfish	" £2.
do	Lester, E.	do	do	" £2.
do	Reddin, L.T.	do	do	" £2.
do	do	do	No fisherman's license	" £2.
do	Maraldi, Geo.	do	Undersize crayfish	" £2.
do	Todd, Wm.	do	do	" £2.
do	Zoronich, S.	do	do	" £2.

Date	Defendant	Court	Charge	Result
16.3.59	Brozicevich, J.	Fremantle	Undersize crayfish	Fined £2.
do	Corich, P.	do	do	" £2.
9.2.59	Smith, M.T.	Geraldton	do	" £5.
do	Perham, L.	do	do	" £5.
do	Rowe, D.	do	do	" £4.
do	Daher, H.	do	do	" £4.
do	Saxton, A.	do	do	" £4.

PUBLIC SERVICE RECLASSIFICATION

The Public Service Commissioner on March 25, issued his quin-quennial reclassification of the public service to have effect from January 1, 1959. Very few changes have occurred in relation to the staff of the Fisheries Department. The Department's establishment remains unaltered.

The following positions only are affected -

Superintendent.	Title changed to "Director and Chief Inspector." Salary increased one class.
Clerk-in- Charge.	Title changed to "Chief Clerk". Salary increased one class.
Inspector, Fremantle.	Title changed to "Senior Inspector". Salary increased one class.
Pearling Inspector.	Title unchanged. Transferred from Inspection Division to Administration. Salary increased one class.

Any officer has the right to appeal to the Public Service Appeal Board in relation to any matter in or arising out of the reclassification which affects the office he occupies. This includes salary, designation or title of office, allowances and anomalies. Appeals must be lodged within one month of the date of issue of the reclassification - i.e., not later than April 25. Forms of appeal are available on application to the General Secretary, Civil Service Association, 29 Barrack St., Perth. Four copies should be prepared. Of these two go to the Clerk to the Public Service Appeal Board; one to the Association and one to the appelant.

INSTRUCTIONS FOR SKIPPERS OF DEPARTMENTAL VESSELS STATIONED AT FREMANTLE.

Following the appointment of a Fleet Maintenance Officer, it is deemed desirable to set down in detail the responsibilities of skippers of departmental vessels. These instructions cannot of course cover every eventuality, and skippers will at all times be expected to use common sense. The Fleet Maintenance Officer's responsibility extends to the organisation and supervision of maintenance and repair work, but his responsibility ceases when after refit he hands the vessel over to the skipper. It is the latter's responsibility to undertake minor repairs (e.g. the replacement of spark plug, etc.,) while away from Fremantle.

The Officer in charge of a vessel is responsible for

(a) the work and discipline of the crew;

(b) the safety of the vessel while at sea, in anchorages and on moorings at home port;

(c) maintenance of all gear and equipment in good order and condition;

(d) running repairs to engine and general boat maintenance while absent from Fremantle. Atomisers, injectors, fuel pumps and governor controls must be serviced by a qualified diesel mechanic only, and no officer should interfere with any such;

(e) preparation and keeping boat's inventory and handing over statements;

(f) submitting reports concerning the condition of the vessel, running gear, necessary engine repairs, slipping requirements and gear replacements;

(g) advising the Fleet Maintenance Officer of the time of departure from an outstation and E.T.A. Fremantle.

All reports concerning patrol vessels must, whenever possible, be forwarded direct to the Fleet Maintenance Officer prior to the departure of the vessel from outstation port.

The Fleet Maintenance Officer is solely responsible for making arrangements for engine repairs, slipping, etc.

During a refit, the officer in charge and his crew, and all other officers made available by the Supervising Inspector, are subject to the direction of the Fleet Maintenance Officer. All valuable equipment such as instruments, binoculars and the like, must be stored in the Fremantle office.

No equipment whatsoever is to be transferred from one vessel to another or removed for any purpose without the prior approval of the Fleet Maintenance Officer.

Boat crews when in Fremantle because of bad weather or for any other reason, must, unless they are actually engaged on maintenance work on their boats, place themselves under the orders of Senior Inspector A.K. Melsom.

SOUTH COAST CRAYFISH SURVEY.

Tenders have been called by the Commonwealth Fisheries Office for the charter of a freezer vessel for the survey of crayfish resources off the South coast of Western Australia. Initially work will be restricted to waters out to the 40-fathom line between Cape Nuyts and Cape Riche. Later other areas, such as the Recherche Archipelago off Esperance may be included. Tenders closed on March 24. The survey, which it is expected will start very soon, will last for 52 weeks.

The name of the successful tenderer has not yet been announced.

AVICULTURAL DISPLAY

On March 9, the Minister for Fisheries (Mr. L.F. Kelly) officially opened an exhibition of cage birds staged in the Perth Town Hall by the Avicultural Society of W.A. The display continued to March 14.

This Department participated by providing a number of posters relating to such matters as protected birds, licensing provisions and the like. At the same time it screened a number of transparencies depicting various species of local birds.

The whole setup was most impressive, and the exhibition was visited by several hundred school children as well as large numbers of adults. The whole show was so successful as to encourage the society to make the exhibition an annual event.

AQUATIC LIFE SHOW.

Officially opened by the Hon. Mr. Justice Nevile on March 16, and lasting until March 21, the aquatic life show organised by the Aquarium Society of W.A., in the Perth Town Hall was an outstanding success. It too was inspected by many hundreds of adults and school children, and like the cage bird show of the previous week, was of considerable educational value.

NATIONAL PARKS AND RESERVES

The Australian Academy of Science recently formed a Committee to advise on National Parks and Reserves. Each State will have a sub-committee to collect and compile information.

Director of Western Australian Museum, Dr. W.D. Ride, has been appointed State Chairman and the Director of Fisheries, Mr. A.J. Fraser a member of the Committee.

CLEARING HOUSE.

Poison From the Air.

by D.L. Allen.

("Field & Stream"
New York, N.Y.,
February, 1959.)

The campaign began a little more than a year ago, in November 1957, financed by a Federal appropriation of $2,400,000 - funds to be matched by state and local money. This outlay was for the year only. The total cost, over twenty years or more, would come to not less than $50,000,000, and very likely would be twice that figure.

The target of attack was the imported fire ant, an alien bug that evidently gained a beachhead at Mobile, Alabama, about 1918. Since then it has spread in a spotty distribution over nine states - a total infestation, says the Department of Agriculture, of more than 20,000,000 acres.

About ten years ago reports began to circulate that the imported fire ant damaged field crops, vegetables and fruit trees. Farmers complained of whopping losses. Also, the bite of the insect was painful and poisonous (even fatal, it was said) to farm animals and human beings. In the public press such stories were played up; the situation was viewed with alarm. A recent magazine article created the impression that grave danger threatened vast areas of the country if total war was not declared at once on the fire ant. It called for "eradication," nothing less.

The war began. In its first year some 500,000 acres were treated, mainly by spreading from aircraft a granular formulation of two powerful new insecticides - dieldrin and heptachlor. These are "chorinated hy-drocarbons" related to DDT. Unquestionably, they are effective against fire ants. But when the "eradication" program was announced, wildlife authorities and conservationists were seriously concerned. What would these relatively unknown poisons do to game and other wildlife?

They had good cause for concern. Broadcasting of insecticides by aircraft had produced the heaviest wildlife losses in the past. Dieldrin had wiped out the local fish population when a Florida salt marsh was treated for sand flies. Laboratory studies by the U.S. Fish and Wildlife Service had shown heptachlor and dieldrin to be from ten to twenty times more toxic than DDT. Five pounds of DDT per acre was lethal to birds and many mammals - the fire ant application of two pounds of these new poisons per acre might have the effect of twenty to forty pounds of DDT.

No one really knew the answers, but this big control program got off the ground with no provision for finding out. Now that it's been going for more than a year, we're beginning to learn a few things.

It will take several more years to get some of the critical facts, but evidence of wildlife damage is accumulating, and it makes grim reading. Alabama is the center of the infestation, and a 3,600 acre experimental area was set up there by the Cooperative Wildlife Research Unit at Alabama Polytechnic Institute, working with the U.S.D.A. Plant Pest Control Division (in charge of the control program). Maurice F. Baker, leader of the wildlife unit, made a survey of the test area after its treatment with insecticide. Results were not slow in showing up:

The survey crew found 36 dead mammals, including 17 rabbits, 4 red foxes, a housecat, and a skunk. A total of 114 birds were picked up, including a duck, 2 hawks, 3 snipe, a woodcock, an owl, 13 meadowlarks and 13 cardinals. Also listed as casualties were 2 snakes, 21 frogs and 14 birds. The first 100 specimens were sent to the insecticides laboratory of the Fish and Wildlife Service for analysis. All but six contained enough insecticide to have killed them.

Of special interest to sportsmen was the effect on quail. Part of the lore on the imported fire ant concerned its alleged depredations on that esteemed target of southern gunners, the bobwhite. This despite the fact that some of the best quail populations in the South are in areas of fire-ant infestation.

On the treated area, Baker found that all birds in 13 coveys of quail were killed. Two coveys that did survive ranged mainly off the treated land. Whether fire ants kill quail or not, it seems clear that these insecticides do. In Georgia, Walter Rosene of the Fish and Wildlife Service made a census of quail on two 10,000-acre tracts, one of which had been treated with heptachlor and dieldrin several months before. The other was a "check" area - no insecticide.

From May to July, Rosene took counts of whistling cocks. On the check area he found 27.4 cocks per thousand acres; on the treated land the count was only 3.7 cocks per thousand acres. And with one exception the surviving birds were either on the edge of the poisoned unit, presumably ranging off it, or in tracts deliberately skipped in the operation.

This seems bad enough as an immediate effect, but another question looms. Both dieldrin and heptachlor are stable poisons. They are intended to have a 3-year, "residual" effect in killing fire ants. Biochemist James B. DeWitt at the Patuxent Research Refuge, Laurel, Maryland, recently tested the effects of minute, day-to-day dosages of heptachlor in the food of quail. He found that breeding is disrupted, and the birds produce fewer eggs. Eggs showed lowered fertility and hatchability, the survival of chicks is reduced. And no young birds survive to the next breeding season if there is any heptachlor at all in their daily ration!

This does not say what will happen in the field. But it certainly does mean that serious chances are being taken if this fire-ant program goes ahead without more facts.

Another followup on the control operation was made by Leslie Glasgow of the Forestry Department, Louisiana State University. Glasgow and his students checked a 300-acre area three days after treatment and found 10 dead birds and 13 mammals - including 6 rabbits and 2 dogs. On four farms 72 domestic ducks were lost. Other wildlife losses occurred on a second study area. Muskrats and doves, however, seemed unaffected. Biologists checked a treated tract in Georgia and another in North Carolina where no wildlife damage was found.

Glasgow made a survey of earthworms before and after applications of heptachlor. After treatment, worm numbers declined through July and then began to recover. Samples collected in July contained heptachlor in significant amounts. Earthworms are a main food of woodcock and snipe, and there has been particular concern that these birds would be killed off in their southern wintering grounds. Research men are not forgetting findings on the campus of the University of Illinois. After summer spraying of trees with DDT, earthworms concentrated the fat-soluble hydrocarbon in their bodies by eating contaminated leaf litter. The following spring, 21 dying robins were picked up. They had the "DDT'S" as a result of eating worms.

One of the most significant wildlife jobs in the fire-ant program was by Daniel W. Lay in Hardin County, Texas. In two weeks following treatment of the Fralise Ranch, bird populations were reduced by 85 to 97 percent. On sample plots 125 dead birds of 20 species were found, indicating a loss of several thousand on the entire 2,500-acre area. Mammals killed included raccoons, armadillos, opossums, cottontails, nutria and small rodents. Of 41 specimens analyzed, all contained heptachlor.

So it goes, and it raises a question: Just how serious a menace is the fire ant? This is crucial, for if the insect is anywhere near as dangerous and destructive as it has been represented, its "eradication" would be worth a high price indeed - possibly even as high as is being paid.

I looked up the 1952 Yearbook of Agriculture, which was entitled "Insects". It dealt with many kinds of pests - and it might be assumed to include the most important ones in the country. But the fire ant was not so much as mentioned.

That book was published more than six years ago. Has the situation changed since then? On May 30, 1958, the weekly "Cooperative Economic Insect Report" of the Plant Pest Control Division printed a table of "Some of the More Important Pests for 1957." Every state was included. Only two - Louisiana and Mississippi - mentioned the fire ant. By sensationalized popular report, Alabama was being taken over by fire ants, but Alabama didn't know it. In that state the foreign bug is not even considered to be among the twenty-five most important insect pests.

Kirby L. Hays, entomologist at Alabama Polytechnic Institute, went to Argentina to check on the fire ant in its native range. There, he found, it is regarded as beneficial, since it feeds almost entirely on other insects. Back in Alabama, Hays collaborated on an article entitled, "Facts About the Imported Fire Ant," with F.S. Arant, head of the Zoology-Entomology Department at API, and Dan W. Speake of the Wildlife Research Unit.

One of their laboratory colonies of Argentine fire ants consumed 20 boll weevils in two hours. They found that, although fire ants sometimes will eat seeds high in fat content and occasionally attack such crops as okra and potatoes, damage to plants by fire ants feeding on them is uncommon. "Captive laboratory colonies," says the article, "became cannibalistic rather than feed on growing plants they had been reported to relish." As for preying on livestock, "No damage to livestock has been observed. Cattle and sheep graze over the mounds in which fire ants live and even lie down near them. Newly born livestock is rarely if ever killed."

This is the menace against which the taxpayer is waging a multimillion-dollar war of eradication. I found that many responsible entomologists regard this great campaign as one of containment and local control, believing that complete elimination is impossible at any price within reason.

No one questions that this unwelcome immigrant is a pest in its heavy infestations. In a news release, Arant called it a major nuisance that does economic damage in some situations. It commonly inhabits open fields, where it builds mounds that interfere with the operation of farm machinery. It has a painful sting - comparable to that of a bee - and laborers refuse to work in infested fields. In regard to dealing with the nuisance, Arant said:

"Control of the imported fire ant is essential on certain croplands, pastures, hayfields and lawns. Excellent control procedures have been developed by the API Agricultural Experiment Station. When treatment is limited to individual fields and pastures where control is actually needed, the insecticides used as recommended cause no serious hazards to wildlife or domestic animals."

This certainly cannot be said of the aircraft broadcasting of dieldrin and heptachlor. Aside from many records of wildlife losses, the applications have killed large numbers of chickens and ducks as well as dogs and cats. Losses of larger livestock have been reported, but not confirmed.

Actually, statements from different sources disagree sharply on nearly every phase of the fire-ant program. There has been bickering and bitterness. Attempts have been made in four states, through legislative and congressional representatives, to have wildlife research men removed from their jobs. This has done nothing to soothe tempers on either side.

But surely it can be said that the fire-ant campaign got rich quick and went too far too fast. Changes now appear likely. It is common knowledge that agricultural officials have arranged for an impartial evaluation of the whole operation by a competent, non-Government scientist endorsed by all the agencies concerned. A "Methods Improvements Laboratory" is in operation at Gulfport, Mississippi, and this will undoubtedly help to solve many problems. One constructive decision already made was to delay treatment of major woodcock and waterfowl wintering grounds until spring, after the birds are gone. All these are steps in the right direction and better late than never.

More than a special issue, the fire ant hassle is a sign of the times. It's safe to assume that from now on there will be large-scale shemical warfare against public pests. This era began in 1945, when DDT first became available for public use. DDT was a bug-killing wonder drug, and during the war it worked miracles in holding down such insect-borne scourges as typhus and malaria. Soon it was being sprayed over field crops, gardens, cattle sheds and kitchen screens.

That was only the beginning. In the years since, industrial laboratories have turned out more than 200 effective new compounds for blitzing unwanted insects, rodents and weeds. Today some 6,000 brand-name formulations are on the market. In this past year chemical control was practiced in some form on about 100,000,000 acres.

This big industry can render important public service, if well managed. But it has vast possibilities for harm, if someone gets in too much of a hurry. And each year, while many millions go into research on the development of new chemicals, we run far behind in studying the effects of their application.

In this entire field. the outstanding need is for more research - beginning with more work by the entomologists themselves. These scientists need to know intimately the habits of pest insects in order that cheap, "biological" control methods - such as the use of parasites and diseases - can be employed wherever possible. Work is being done now on ingenious new attractants to lure insects to destruction and on "systemic" poisons that will make particular plants lethal or repellent to the pests that eat them. There are possibilities of developing chemicals poisonous to one bug and harmless to useful creatures. Work of this kind costs money, of course, but not much in comparison with the cost of big, speculative operations.

Spreading poisons over the land is, after all, a pretty crude way of killing bugs in terms of modern science and technology. We can do better. The Agricultural Research Service has some of the most able and respected research entomologists in the world. Congress would do well to hold back a little on operations and invest in more facts. Unfortunately, we seldom hear of a pressure group rooting for research.

This same need exists in the wildlife field. The wildlife-insecticides investigations of the Fish and Wildlife Service operated on a shoestring for ten years after the beginning of 1947. A big improvement finally came last year with passage of the pesticide research law, in which Congress recognized this program and appropriated $125,000 for the remainder of the fiscal year. This money made possible some of the wildlife work in the fire ant operation.

In the same action, Congress "authorized" future appropriations up to $280,000 per year for studies of wildlife relationships to insecticides, herbicides and fungicides. The actual appropriations are yet to come, but conservationists are urging that the full amount be made available for fiscal year 1960, beginning next July 1. A program of this magnitude is long overdue.

The Patuxent laboratory, with good help from U.S.D.A. entomologists, has produced reliable specifications for safe use of DDT in forest spraying and other situations. They have useful facts on a number of other compounds. But those lean research years have left a big backlog of catching up to do. One immediate extension of the program will be to the Denver Wildlife Research Laboratory, where grasshopper control (9 million acres last year) and other western problems will be studied.

It would be wrong for wildlife conservationists to oppose pest control generally. Today blights and bugs are being transported around the world at ever-increasing rates. The American chestnut was wiped out by an alien plague, and maybe the elms and oaks are next. Huge crop losses may be involved. We must give our farms and forests every possible protection.

To be realistic about it, sometimes we will need to accept local and temporary wildlife losses to accomplish a major public benefit. This type of loss will be restored in one breeding season. But damage with long-term effects is something else. We would not do it deliberately, and we should not do it by irresponsible spray-shooting sprees.

These new wonder potions are like fire, sex and whisky. They need to be used with competence, respect and moderation.

Who Wants Five Million or More Dogfish Sharks?

by Petrale

("Pacific Fisherman"
Portland 5, Oregon, U.S.A.)
December 1958.

In 1944, fishermen along the West Coast of the United States and Canada caught 110 million pounds of dogfish. The 13 million pounds of livers landed were valued at $6,000,000 at the fishermen's level. During the heyday of the vitamin A shark industry, 1940 to 1948, trawlers, gill netters, and line fishermen from Northern California to Alaska sought out and captured the highly prized dogfish.

Today, 14 years after the peak of dogfish shark fishing, the species has become a scourge to fishermen of the Pacific Northwest. Since the cessation of the intense fishery, populations of dogfish have increased and overrun many of the traditional fishing grounds. These increasing numbers have caused considerable damage to net and line fishermen, as well as to salmon sport fishermen. A species that once was "Swimming Gold" has been reduced to the category of pest, predator, and competitor.

On September 2, 1958, the 85th Congress of the United States passed public law 85-887 (S-2719) "authorizing and directing the Department of Interior to investigate and eradicate the pedator dogfish sharks to control the depredations of this species on the fisheries of the Pacific Coast, and for other purposes." A sum of $95,000 was authorized to be spent to carry out the purposes and objectives of the act.

To formulate a well planned program for dogfish control or study the Bureau of Commercial Fisheries has named a three-man committee: Samuel J. Hutchinson, Bureau of Commercial Fisheries; Milo Moore, Washington Department of Fisheries, and John Wedin. They will be responsible for summarizing information on dogfish abundancy, distribution, etc., and will make recommendations for carrying out the dogfish bill.

The destructive and damaging effects of dogfish is not a new problem nor is it peculiar to the West Coast of the United States. The same species of dogfish which plague local fishermen also inhabits the waters off Japan and northern China and is found throughout the temperate and subarctic waters of the North Atlantic.

Just after the turn of the century, the English government was faced with a problem similar to that which faces the West Coast today ... "What to do with the dogfish." Their answer was to encourage its use for human consumption through cookery experiments and by subsidizing transportation costs. The experiments were successful and a fishery for dogfish grew slowly. Following World War II, dogfish became common on the fish docks throughout Europe. The Food and Agriculture Organization of the United Nations reported that close to 85,000,000 pounds of dogfish were landed in Europe during 1955.

Dogfish caught for human food in Europe is skinned shortly after being landed. Most of the flesh in England is used in the fish and chip trade while in Germany it is kippered. The species is also used for human food in Japan and China.

On the West Coast of the United States, dogfish were important to the Indian tribes who used it for food flavoring, paints, finishing wood and dressing animal skins. Early settlers arriving in the Puget Sound area paid premium prices for dogfish oil, using it for lighting lamps, lubricating machinery and for greasing skidways.

The development of low priced petroleum oils soon put the dogfish back in the pest category where it remained until the early forties. The discovery of high vitamin A concentrate in dogfish and soupfin shark initiated a new fishery along the West Coast just before World War II.

When the war started foreign sources of cod liver and other fish oils were cut off and a major fishery for dogfish developed. Throughout the war, shark livers were the major source of vitamin A used in this country and the catch of dogfish from 1941 through 1947 exceeded half a million pounds. Following the end of the war imports of foreign oils and the development of synthetic vitamin A put an end to our domestic shark fishery. By 1951 dogfish landings had dwindled to less than 10 million pounds and in 1955 total landings of the U.S. and Canada amounted to about two million pounds.

The dwindling fishery has allowed dogfish stocks to rebuild to a high level of abundance. How to control these stocks of sharks is the problem to be solved by the "Dogfish Committee." The answer is not simple. Control on a coastwise basis would mean the removal of from 40 to 50 million pounds of dogfish each year. With the present small market demand, interest in harvesting dogfish would have to be stimulated by Government subsidy or bounty. Unfortunately, $95,000 won't begin to operate a coastwise bounty program.

Some workers feel development of useful by-products which are unique to dogfish would solve the problem, but this may take time and require higher duty rates to protect local fishermen from foreign competitors. Development or use of dogfish for human food has also been suggested. However, the great variety of more desirable bottom fish that are available on West Coast grounds that are not now fished seems to make this possibility slim.

One thing is definite. We have 50 million pounds of dogfish that could be marketed annually. Anybody have a buyer...?

The Sixty-four Dollar Duck

by Sir Miles Thomas

("The Sunday Times",
London.
25th January, 1959.

I doubt if the four distinguished American generals who were fined 30 dollars each for shooting more than their fair share of duck at Thomasville, Georgia, willbe ostracised by their fellow-sportsmen. Sooner or later - usually sooner - a penalty of this kind is imposed on most people who shoot for the sport of it in the great United States.

Despite the millions of duck that annually, as the weather hardens, migrate from Canada and Alaska down the Mississippi flyway to near the Gulf of Mexico, the allowable limit per gun per day is four birds. Duck hunting, as it is locally known, is more than a sport; it is a cult in America. And it is an expensive cult at that. The arrangements connected with bagging four duck per gun are staggering in their complexity.

The very rich own large tracts of flat, floodable land near the Missouri or Mississippi or White rivers. They build hunting lodges that have every possible amenity to make pre-dawn arising bearable. There are electric stoves to heat quick breakfast food snatched out of vast deep-freezers; tack-rooms (the abbreviation is for tackle, I suppose) furnish guests with every size and kind of rubber-waterproof boots and wind-cheaters. Weapons ranging from twelve-gauge auotmatic repeaters to English type double-barrel twenty-bore are proudly proffered.

Call time for the hunters is an hour before shooting time (specified to a split second each day as dawn varies). Stern indeed are the glances greeting the guest who is late responding to the call of "come and get it" at a breakfast-table laden with a curious assortment of antidotes for hangovers.

But before stumbling forth in the darkest hour, each hunter has to be checked by his host for his licence. This is not a cheap affair. My Arkansas small game licence cost, with stamp, seventeen dollars - say £6. My Alabama non-resident trip hunting licence, valid only for seven consecutive days, cost 5 dollars. These entitled me to shoot eight quail, four duck or two geese per day. Moreover, no hunter is permitted to keep more than a specified number of birds in the home larder.

Game - wardens - bluff, dedicated men - are on the prowl throughout the hunting season. They prowl in the pre-dawn dark to ensure that not a shot is fired before hunting-time. They prowl around kitchens to see that larders are not stocked above the specified limits. This all-American cult is carefully preserved and honoured.

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The actual duck hunt is rather less strenuous than the word conveys to British ears. What are small woods or copses in the dry weather are flooded to the depth of a couple of feet or so by a series of levees. The hunter either stands, thigh-booted, in the water, or on a camouflaged platform called a blind. The latter is more comfortable for the tyro who finds swinging to keep a bead and a lead on a down-wind mallard less hazardous when standing on a couple of firm planks than when more than knee-deep in the water with only a slippery foot-hold of decaying leaves.

The most important unit in the "hunt" is the caller. Sometimes he is dignified by the name of guide. Whatever his title, his job is to blow on a stubby pipe and make noises that attract the dawn-flighting duck to the decoys that have been laid around the "blind" or the clearing where the more intrepid hunters stand.

There is a great art in calling. County championships are held annually to nourish the practice. It is not enough merely to squawk in the conventional duck language. There are the finer points of gurgling and chucking; the urgent, seductive sounds that cause the lusty drake to circle once again and investigate by landing alongside the source of such inviting sounds.

Others follow the leader, and upwind will come a flight of six or eight duck, wings aspread, ready to alight. That is the hunter's moment.

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Theoretically, with an automatic that fires three shells (cartridges to you) it is possible to get not only the equivalent of a right and a left, but even a treble. But that is very rare. At the first shot not only the duck near the decoys but every one for half a mile radius quits the area.

Then begins the laborious job of the caller attracting other birds into the target area. Usually the hunter - more particularly be he a guest - is asked to shoot the guide's limit of four as well as his own. It takes a goodish shot to bag eight duck in an hour and a half.

Then back to a second breakfast and, on weekdays, back to the office by 10 a.m. At week-ends luncheon parties are held, at which the duck, cooked rare or medium rare, are barbecued on charcoal broilers. Coloured chefs, suitably caparisoned, prepare them with much devotion and mystique.

Membership of such a club is distinctly a mark of social standing. Entrance fees in one of the exclusive Missouri county clubs are as high as 3,000 dollars. Annual dues, plus transportation, upkeep of guns and gear, ammunition, casual entertaining and the like can tot up to another 3,000 dollars a year. To executives in big firms earning say $80,000 p.a. these are sizeable sums, after tax. And the season is short - about sixty days only. None the less, great is the pride when one's cap bears the metal badges of the clubs at which one has shot the "limit".

An accountant friend worked out that on average each duck shot in his neighbourhood cost at least $64. And as an inducement to take the very early morning air, as well as a valid passport to the aristocracy of regular sportsmen, it is traditionally well worth while.

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Use of Refrigerated Sea Water for Small Fishing Vessels.

(Fisheries Council of
Canada Bulletin,
January 19, 1959.)

The use of refrigerated sea water for the preservation of fish can now be adapted to small fishing vessels. A Fisheries Research Bureau of Canada report describes installations in two steel vessels built in British Columbia during 1958. In their construction the engineering staff of the Board's technological station at Vancouver worked in collaboration with a naval architect and the shipbuilders to develop over-all plans and equipment layouts which give the vessels considerable versatility. As a result it was proved that refrigerated sea water can be applied to a vessel with little hindrance to its main function of catching fish.

Most important of the new and interesting features of one of these vessels was the installation of double-walled steel tanks for preserving fish in refrigerated sea water without reducing its normal holding capacity. This vessel is primarily a salmon troller but it has also operated successfully as a seiner and as a fish packer. In addition, it can be used for crabs, which can be brought to port alive in the tanks. Furthermore, it can easily be employed for long-line halibut fishing or for use as a trawler. The report also stated that a refrigerated sea-water installation for a salmon cannery, completed in 1958, had given a successful practical demonstration of the suitability of this medium for refrigerating large quantities of salmon for short term holding. The chilling of whale meat by this method is being investigated on the Pacific coast. The suitability of refrigerated sea water in Atlantic coast fisheries is being assessed on the coast also.

Canadian Government to Pay Bounty For Dogfish Livers

("Market News Service"
February 18, 1959.)

As a result to pressures brought by various local fishing organizations, the Canadian Government has provided C$130,000, in the form of special bounties to aid in the elimination on the West Coast of the predatory dogfish--which is related to the shark family.

The dogfish, which have been increasing considerably in recent years, have resulted in heavy losses of food fish as well as damage to fishermen's nets. Local fishermen will receive a bounty of 10 cents a pound for dogfish livers that are delivered to processing plants in Vancouver or Prince Rupert.

In addition, the Federal Department of Fisheries will charter five trawlers to help in eliminating the dogfish menace. The fish caught will become the property of the Government of Canada for such disposal as may be directed.

The Fisheries Association of British Columbia has announced that an annual kill of at least 30,000 tons of dogfish must be made in order to reduce the damage caused food fish.

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