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Twelfth session

Item 11 of the provisional agenda

SURVEY OF AVAILABLE INFORMATION ON SYNTHETIC AND OTHER NEW NARCOTIC DRUGS

Prepared by the Secretary-General

TABLE OF CONTENTS

LIST OF TABLES

Introduction

1. At the last session the Commission requested that the relevant available data on synthetic and other new narcotic drugs be summarized and analysed in a paper which might serve as a basis for discussion during the twelfth session. It also asked that a plan of a further series of studies in this field should be outlined and that where possible preparatory work should be undertaken.[1/]

2. Besides the basic paper for this item, a paper outlining some of the possibilities as regards further studies (E/CN.7/319/Add.1) and an annotated bibliography of publications by international organizations (E/CN.7/319/Add.2) are being issued separately. In addition, the Commission will have before it the fourth of the joint World Health Organization/United Nations studies on synthetic narcotic drugs prepared under Council resolution 505 C (XVI) (E/CN.7/325).

3. This paper has been prepared after consultation with the Secretariats of WHO and of PCOB and DSB, whose assistance is gratefully acknowledged.

4. The survey concentrates on the data that it was thought would have a particular bearing on the Commission's work.

5. The following abbreviations are used:

"1925 Convention" refers to the International Opium Convention signed at Geneva on 19 February 1925, as amended by the Protocol signed at Lake Success, New York, on 11 December 1946.

"1931 Convention" refers to the Convention for limiting the manufacture and regulating the distribution of narcotic drugs, signed at Geneva on 13 July 1931, as amended by the Protocol signed at Lake Success, New York, on 11 December 1946.

"1948 Protocol" refers to the Protocol bringing under international control drugs outside the scope of the Convention for limiting the manufacture and regulating the distribution of narcotic drugs, signed at Geneva on on 13 July 1931, as amended by the Protocol signed at Lake Success, New York, on 11 December 1946.

"Commission" refers to the Commission on Narcotic Drugs of the Economic and Social Council of the United Nations.

1/ E/2891, paras. 319-322

"Council" refers to the Economic and Social Council of the United Nations.

"Expert Committee" refers to the Expert Committee on Addiction-Producing Drugs of the World Health Organization.

"PCOB" refers to the Permanent Central Opium Board and "DSB" to the Drug Supervisory Body.

"Secretary-General" refers to the Secretary-General of the United Nations.

"WHO" refers to the World Health Organization.

P A R T I

BASIC INFORMATION

6. It has become customary to distinguish between two major categories of manufactured narcotic drug, one of which is termed "natural" and the other "synthetic". This distinction may be explained as follows: manufactured "natural" drugs are those that are made directly or indirectly from natural plant materials which contain narcotically-active components. They include both such components, isolated by the manufacturing process, and also compounds made from them but synthetically altered more or less by the manufacturing process before being put on sale. In point of fact, natural narcotic drugs are all derived from three plants, the opium poppy, the coca shrub, and the cannabis plant. "Synthetic" narcotic drugs, on the other hand, are manufactured entirely by synthetic processes in the drug factory or laboratory from common chemicals that may have been produced in many ways and from a great variety of raw materials.[1)]

7. Although it is now possible to make at least some natural narcotic drugs such as morphine and codeine entirely by synthetic processes, this is not at present of importance industrially, and the traditional distinction between the two major categories of manufactured narcotic drug has been maintained in this paper.

8. In this part of the paper certain basic information regarding the narcotic drugs to which international control has been extended during the past twelve years is set out in tabular form. The drugs include (i) 29 specified synthetic narcotics; (ii) one group of synthetic narcotics comprising the esters of 1-methyl-4-phenyl-piperidine-4-carboxylic acid other than the ethyl and isopropyl esters, and (iii) 8 natural narcotics.

9. The following items are listed in Table A below for each of the drugs concerned: (I) the international non-proprietary name, whether proposed or recommended, or alternatively the name by which the drug is commonly known, if any; (II) the proprietary, trade or other names by which the drug is known (each name applies to

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1) Proposed legal definitions of synthetic narcotics will be found in para. references 20, 47 and 48 of the second draft of the proposed Single Convention (E/CN.7/AC.3/7 and Corr.1; see also E/CN.7/L.85, paras. 2, 3; and Corr.1). A fuller discussion of the nature of synthetic narcotics appears in E/CN.7/259/Rev.1, pp. 3-4.

the basic drug unless listed under one of the salts); (III) the chemical name or names; (IV) the drug's analgesic effectiveness on mice expressed in terms of intensity and duration (the figures show the quantity of the drug concerned which is needed to produce the same analgesic effect as 2.1 mg of morphine per kg of body weight); (V) the drug's addiction-producing liability on man expressed in terms of the physical dependence property (the figures show (a) the quantity of the drug concerned which is equivalent to 50 mg of morphine sulphate in maintaining addiction, and (b) the interval in hours between the last dose and the time that 50% of the peak abstinence intensity is attained); (VI) the normal medical dosage range except as regards drugs not in general use; (VII) some of the medical purposes for which the drug is used, i.e. as an analgesic or an anti-tussive or both; (VIII) the year in which one form of the drug was first placed under full international control; (IX) the international control régime to which the drug has been submitted; (X) the final estimated total world requirements for medical and scientific needs for 1956; and (XI) the provisional estimated total world requirements for medical and scientific needs for 1957.

TABLE A

BASIC INFORMATION REGARDING NARCOTIC DRUGS PLACED UNDER INTERNATIONAL CONTROL SINCE 1945

I International proposed or recommended non-proprietary name (in capital letters followed by (p) or (r)) or usual name (in lower case letters) 2/	II Synonyms (trade, proprietary and other names)	III Chemical names
A. DRUGS OF THE PETHIDINE TYPE		
1. PETHIDINE (p)	Demerol Delantal Dolisan Dolorenil Eudolak Isonipecaine Meperidine Operidine Synlaudine - hydrochloride: Adolens Algantine Algil Alodan Amphosedal Antiduol Biphenal Centralgin D-140 Dispadol Dolantin Dolantol Dolaren Dolarin Dolatol Dolental Dolestine Dolinal Dolisina Dolopethin Dolopetin Dolormin Dolosal Dolosil Dolsin Dolvanol Eudolat Felidin Gratidina Medrinol Mefedina Mephedine Pantalgine Pethanal Piperidino-ethanol Piridosal Precedyl Sauteralgyl Simesalgina Spasmedal Spasmexine Spasmodolin Suppolosal Supradol	1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester

2/ The names kotobemidone, isomethadone, levomethorphan, phenadoxone, racemethorphan and racemorphan were recommended as international non-proprietary names by WHO in April 1955 (Chronicle of the WHO, 1955, 9, pp. 185-194). The other international non-proprietary names entered in this Table have been or are being proposed as such. For details regarding the procedure for selecting these names, see Chronicle of the WHO, 1956, 10, pp. 26-35 and paras. 183-189 below.

TABLE A (contd.)

I International proposed or recommended non-proprietary name (in capital letters followed by (p) or (r)) or usual name (in lower case letters)2/	II Synonyms, (trade, proprietary and other names)	III Chemical names
A. DRUGS OF THE PETHIDINE TYPE		
2. PROPERIDINE (p)	- hydrochloride: Gevelina Spasmo-dolisina	1-methyl-4-phenyl-piperidine-4-carboxylic acid isopropyl ester
3. -	-	Other esters of 1-methyl-4-phenylpiperidine-4 carboxylic acid
4. HYDROXYPETHIDINE (p)	Bemidone Hoechst 10446	1-methyl-4-(3 hydroxyphenyl)-piperidine-4-carboxylic acid ethyl ester, or 1-methyl-4-metahydro-xyphenyl-piperi-dine-4-carboxylic acid ethyl ester
5. KETOBEMIDONE (r)	Hoechst 10720 K-4710 VIN 1539 - hydrochloride: Cliradon	4-(3-hydroxyphenyl)-1-methyl-4-piperidyl ethyl ketone, or 1-methyl-4-metahydroxy-phenyl-4-propionylpiperidine
6. ALPHAPRODINE (p)	Nisentil NU-1196 Prisilidene	α-1,3-dimethyl-4-phenyl-4-propionoxypiperidine
7. BETAPRODINE (p)	NU-1779	β-1, 3-dimethyl-4-phenyl-4- propionoxypiperidine

TABLE A (contd.)

I International proposed or recommended non-proprietary name (in capital letters followed by (p) or (r)) or usual name (in lower case letters) 2/	II Synonyms (trade, proprietary and other names)	III Chemical names
A. DRUGS OF THE PETHIDINE TYPE		
8. ALPHAMEPRODINE	NU-1932 (α - meprodine)	α-1-methyl-3-ethyl-4-phenyl-4-propioxypiperidine
9. BETAMEPRODINE	β-meprodine	β-1-methyl-3-ethyl-4-phenyl-4-propionoxypiperidine
10. ANILERIDINE	-	1-[2-(p-aminophenyl)-ethyl]-4-phenyl-piperidine-4-carboxylic acid ethyl ester or 1-[2-(p-aminophenyl)-ethyl]-4-carbethoxy-4-phenylpiperidine

TABLE A (contd.)

I International proposed or recommended non-proprietary name (in capital letters followed by (p) or (r)) or usual name (in lower case letters) 2/	II Synonyms (trade, proprietary and other names)	III Chemical names
B. DRUGS OF THE METHADONE TYPE		
11. METHADONE (p)	Adanon Amidone Amidosan AN-148 Depridol Diaminon Dianone Dolafin Dolamid Dolcsona Dolophine Dolorex Dorexol Heptadol Heptanal Hoechst 10820 Ketalgin Mepecton Methadon Miadone Moheptan Myanesine Polamidon Sin-algin Symoron Turanone - bitartrate: Levadone (laevorotatory form) - hydrochloride: Algidon Algolysin Algoxale Amidon Butalgin Fenadone Heptadon Mecodin Methenon Metadon Phenadon Physeptone Porfolan Synthanal Vemonyl	4,4-diphenyl-6-dimethyl-amino-haptanone-3 or 6-dimethylamino-4,4-diphenyl-3-heptanone
12. ISOMETHADONE (r)	Iso-adanone Iso-amidone Isopolamidon	4,4-diphenyl-5-methyl-dimethylaminohexanone-3, or 6-dimethylamino-5-methyl-4, 4-diphenyl-3-hexanone

TABLE A (contd.)

I International proposed or recommended non-proprietary name (in capital letters followed by (p) or (r)) or usual name (in lower case letters) 2/	II Synonyms (trade, proprietary and other names)	III Chemical names
B. DRUGS OF THE METHADONE TYPE		
13. ALPHA-METHADOL (p) DIMEPHERTANOL (p) 14. BETA-METHADOL (p)	Amidol N.I.H.2933	α-4,4-diphenyl-6-dimethylaminoheptanol-3 or α-6-dimethylamino-4, 4-diphenyl-3-heptanol β-4,4-diphenyl-6-dimethylaminoheptanol-3 or β-6-dimethylamino-4, 4-diphenyl-3-heptanol
15. ALPHACETYLMETHADOL (p)	Methadylacetate N.I.H.2953	α-4,4-diphenyl-6-dimethyl-amino-3-acetoxyheptane or α-6-dimethylamino-4, 4-diphenyl-3-acetoxyheptane
16. BETACETYLMETHADOL (p)		β-4,4-diphenyl-6-dimethylamino-3-acetoxyheptane or β-6-dimethylamino-4,4-diphenyl-3-acetoxyheptane
17. PHENADOXONE (r)	C.B.11 Hochst-10600 Hepagin Morphodone - hydrochloride: Fenadoxon Heptalin Heptalgin Heptazone	4,4-diphenyl-6-morpholino-heptanone-3, or 6-morpholino-4, 4-diphenyl-3-heptanone
18. NORMETHADONE (p)	Component of preparation "Ticarda"	4,4-diphenyl-6-dimethyl-amino-3-hexanone

TABLE A (contd.)

I International proposed or recommended non-proprietary name (in capital letters followed by (p) or (r)) or usual name (in lower case letters) 2/	II Synonyms (trade, proprietary and other names)	III Chemical names
B. DRUGS OF THE METHADONE TYPE		
19. DIOXAPHETYL BUTYRATE (p)	Amidalgon	4-morpholino-2, 2-diphenyl ethyl butyrate or ethyl-2, 2-diphenyl-4-morpholinobutyrate
20. PROPOXYPHENE (p)	-	4-dimethylamino-1, 2-diphenyl-3-methyl-2-propionoxybutane
21. DIPIPANONE (p)	Piperidyl-amidone Pipadone - hydrochloride: 379 - C.48	4,4-diphenyl-6-piperidino-3-heptanone or 6-piperidine-4, 4-diphenylheptan-3-one
C. DRUGS OF THE MORPHINAN TYPE		
22. LEVORPHANOL (p)	Levo-dromoran Levorphan - tartrate: Dromoran	(-)-3-hydroxy-N-methyl-morphinan
23. RACEMORPHAN (r)	Methorphinan Metorfinan NU-2206 - hydrobromide: Cetarin Dromoran	(±)-3-hydroxy-N-methylmorphinan

TABLE A (contd.)

I International proposed or recommended non-proprietary name (in capital letters followed by (p) or (r)) or usual name (in lower case letters) 2/	II Synonyms (trade, proprietary and other names)	III Chemical names
C. DRUGS OF THE MORPHINAN TYPE		
24. LEVOMETHORPHAN (r)	-	(-)-3-methoxy-N-methyl-morphinan
25. RACEMETHORPHAN (r)	-	(±)-3-methoxy-N-methyl-morphinan
26. PHENOMORPHAN (p)	-	3-hydroxy-N-phenethylmorphinan
D. DRUGS OF THE DITHIENYLBUTENYLAMINE TYPE		
27. DIMETHYLTHIABUTENE (p)	Chton	3-dimethylamino-1,1-di-(2'-thienyl)-1-butene
28. ETHYLMETHYL-THIAMBUTENE (p)	-	3-ethylmethylamino-1,1-di-(2'-thienyl)-1-butene
29. DIETHYLTHIABUTENE (p)	Themalon	(3-diethylamino-1,1-di-)2'-thienyl(-1-butene)
E. DRUG OF THE HEXAMETHYLENEIMINE TYPE		
30. PROHEPTAZINE (p)	-	1,3-dimethyl-4-phenyl-4-propionoxyhexamethylen-eimine

TABLE A (contd.)

I International proposed or recommended non-proprietary name (in capital letters followed by (p) or (r)) or usual name (in lower case letters) 2/	II Synonyms (trade, proprietary and other names)	III Chemical names
F. DRUGS DERIVED FROM OPIUM ALKALOIDS		
31. ACETYLDIHYDRO-CODEINE	- hydrochloride: Acetylcodone	Acetyldihydrocodeine
32. DIHYDROCODEINE	Codhydrine Hydrocodeine Paracodin(e) - bitartrate: Novicodina	Dihydrocodeine
33. METOPON (p)	-	7-methyldihydro-morphinone
34. METHYLDIHYDRO-MORPHINE (p)	-	6-methyldihydro-morphine
35. PHOICODINE (r)	Ethnine - hydrochloride: Homocodeine	β-4-morpholinlethyl-morphine
36. METHYLDESORPHINE (p)	-	6-methyl-Δ^6-desoxymorphine
37. OXYMORPHONE (p)	-	Dihydrohydroxy-morphinone
38. MYROPHINE (p)	-	Myristyl ester of benzylmorphine

TABLE A (contd.)

DRUG dl=racemic form l =laevorotatory form d =dextrorotatory form	IV Analgesic activity 3/ (on mice) 4/		V Physical dependence property 3/ (on man) 4/	
	Quantity of drug required to produce the same analgesic effect in mice as morphine given in a dose of 2.1 mg. per kg. weight 5/	Duration of effect in minutes (morphine=129)	Equivalence to 50 mg. of morphine sulphate for maintenance of addiction (mg)	Time from last dose to 50% of peak abstinence intensity in house (morphine=14.4)
1. Pethidine	9.9	125	> 120 6/	4.5
2. Properidine	-	-	-	-
3. -	-	-	-	-
4. Hydroxypethidine	6.6	100	> 500	< 6
5. Ketobemidone	1.6	127	50	7.5
6. Alphaprodine	1.9	88	> 75 7/	-
7. Betaprodine	0.7	128	35	-
8. Alphameprodine	-	-	-	-
9. Betameprodine	1.3	96	35	-
10. Anileridine	3.1	88	143	-

3/ A dash (-) indicates data not available.

4/ The data in columns IV and V and footnotes 6-10 and 12-13 were taken from Eddy, N.B., Halbach, H., Braenden, O.J., "Synthetic Substances with Morphine-like Effect - Relationship between Analgesic Action and Addiction Liability with a discussion of the Chemical Structure of Addiction-Producing Substances" in WHO Bulletin, 1956, 14, pp. 365-380.

A fuller explanation of the meaning of the data included in these columns will be found in paras. 233-236 below.

5/ Thus the figures of less than 2.1 mg. indicate a drug stronger than morphine and those above 2.1 mg. show a weaker analgesic effect than morphine.

6/ Dose indicated would not suppress the morphine abstinence syndrome completely.

7/ Doses of 60-90 mg. at the 34th hour of morphine abstinence suppressed the abstinence syndrome only partially.

TABLE A (contd.)

DRUG dl=racemic form l =laevorotatory form d =dextroratatory form	IV Analgesic activity 3/ (on mice) 4/		V Physical dependence property 3/ (on man) 4/	
	Quantity of drug required to produce the same analgesic effect in mice as morphine given in a dose of 2.1 mg. per kg. weight 5/	Duration of effect in minutes (morphine=129)	Equivalence to 50 mg. of morphine sulphate for maintenance of addiction (mg)	Time from last dose to 50% of peak abstinence intensity in hours (morphine=14.4)
11. Methadone dl	1.6	70	12	60
l	0.8	80	6	60
d	25.7	74	8/	-
12. Isomethadone	2.5	97	37	16
13. Alphamethadol	18.9	213	>120	-
14. Betamethadol	7.2	84	8/	-
15. Alphacetyl-methadol dl	1.2	101	>15 - <50	-
l	1.8	196	33	>84
d	0.3	127	16	-
16. Betacetyl-methadol d	4.6	319	33	>84
17. Phenadoxone	1.1	48	<60	1.0
18. Normethadone	2.5	54	50	-
19. Dioxaphetyl-butyrate	6.4	109	143	-
20. Propoxyphene dl	27.3	328	>400 9/	-
d	8.3	135	>200 10/	-

8/ Does not produce a morphine-like effect in post-addicts nor does it suppress the morphine abstinence syndrome. Has no addiction liability.

9/ Single doses of 50-400 mg orally did not induce morphine-like effects in post-addicts. 400 mg orally every 4 hours did produce significant reduction in the intensity of the morphine abstinence syndrome. The compound was judged to have addiction liability no greater than that of codeine.

10/ Doses of 200 mg orally every 4-6 hours caused definite reduction in the intensity of the morphine abstinence syndrome. Withdrawal after direct addiction to 825 mg daily (divided into three oral doses) was followed by abstinence symptoms milder in degree than those which follow abrupt withdrawal of codeine. Its addiction liability was judged to be less than that of codeine.

TABLE A (contd.)

DRUG dl=racemic form l =laevorotatory form d =dextroratatory form	IV Analgesic activity (on mice) 3/ 4/		V Physical dependence property 3/ (on man) 4/	
	Quantity of drug required to produce the same analgesic effect in mice as morphine given in a dose of 2.1 mg. per kg. weight 5/	Duration of effect in minutes (morphine= 129)	Equivalence to 50 mg. of morphine sulphate for maintenance of addiction (mg)	Time from last dose to 50% of peak abstinence intensity in hours (morphine= 14.4)
21. Dipipanone	2.0	98	50	-
22. Levorphanol	0.5	124	>7.5 - <25	16
23. Racemorphan	0.9	119	>15 - <50	16
24. Levomethorphan	3.0	136	21.5	48
25. Racemethorphan	8.1	111	43	48
26. Phenomorphan l	0.14	124	1.5	-
27. Dimethyl-thiambutene	-	-	-	-
28. Ethylmethyl-thiambutene	2.4	97	50	-
29. Diethyl-thiambutene	4.2	80	50	-
30. Proheptazine	1.0 11/	103 11/	200 11/	approx. 3.0 11/
31. Acetyldihydro-codeine	-	-	-	-
32. Dihydrocodeine	12.4	130	175	24.0
33. Metopon	0.5	156	7	4.5
34. Methyldi-hydromorphine	5.4	140	>50	approx. 20.0

11/ Data cover only the α form.

TABLE A (contd.)

DRUG dl = racemic form l = laevorotatory form d = dextroratatory form	IV Analgesic activity 3/ (on mice) 4/		V Physical dependence property 3/ (on man) 4/	
	Quantity of drug required to produce the same analgesic effect in mice as morphine given in a dose of 2.1 mg. per kg. weight 5/	Duration of effect in minutes (morphine= 129)	Equivalence to 50 mg. of morphine sulphate for maintenance of addiction (mg)	Time from last dose to 50% of peak abstinence intensity in hours (morphine= 14.4)
35. Pholcodine	176.0	88	> 750 12/	-
36. Methyldesorphine	0.2	52	6	< 6
37. Oxymorphone	0.17	122	5	4.0
38. Myrophine	none	-	13/	-

12/ 500-750 mg orally or subcutaneously every 4-6 hours, after abrupt withdrawal of morphine from stabilized addicts, substituted so poorly for morphine that during its administration an abstinence syndrome developed almost as intense as when morphine was abruptly withdrawn without substitution.

13/ No morphine-like effect was produced by doses of 25-600 mg orally. Also, 100 mg orally every 6 hours, after abrupt withdrawal of morphine from stabilized addicts, failed completely to substitute for morphine or to prevent the appearance of the morphine abstinence syndrome.

TABLE A. (contd.)

DRUG	VI Normal dosage 14/ (mg)	VII Whether usually employed as an analgesic or as an anti-tussive 14/ 15/	VIII Year placed under control
1. Pethidine	50-100	Analgesic	1951 16/
2. Properidine	-	Analgesic	1954
3. -	Not in general use	-	1954
4. Hydroxypethidine	Not in general use	-	1951 16/
5. Ketobemidone	5-10	Analgesic	1951 16/
6. Alphaprodine	-	Analgesic	1951 16/
7. Betaprodine	Not in general use	-	1951 16/
8. Alphameprodine	Not in general use	-	1956
9. Betameprodine	Not in general use	-	1952
10. Anileridine	Not in general use	-	1956
11. Methadone	10	Analgesic, anti-tussive	1951 16/
12. Isomethadone	Not in general use	-	1951 16/
13. Alphamethadol	Not in general use	-	1951 16/
14. Bethamethadol	Not in general use	-	1951 16/
15. Alphacetylmethadol	Not in general use	-	1951 16/
16. Betacetylmethadol	Not in general use	-	1951 16/
17. Phenadoxone	10 - 30	Analgesic	1951 16/
18. Normethadone	-	Anti-tussive	1954
19. Dioxaphetyl butyrate	Not in general use	-	1955
20. Propoxyphene	Not in general use	-	1955
21. Dipipanone	-	Analgesic	1954
22. Levorphanol	2 - 3	Analgesic	1952
23. Racemorphan	-	Analgesic	1952
24. Levomethorphan	Not in general use	-	1952
25. Racemethorphan	Not in general use	-	1952
26. Phenomorphan	Not in general use	-	1955

TABLE A (contd.)

DRUG	VI Normal dosage 14/ (mg)	VII Whether usually employed as an analgesic or as an anti-tussive 14/ 15/	VIII Year placed under control
27. Dimethylthiambutene	-	Analgesic	1953
28. Ethylmethylthiambutene	-	Analgesic	1953
29. Diethylthiambutene	-	Analgesic	1955
30. Proheptazine	Not in general use	-	1955
31. Acetyldihydrocodeine	-	Anti-tussive	1951 16/
32. Dihydrocodeine	10 - 50	Anti-tussive	1951 16/
33. Metopon	-	Analgesic	1949
34. Methyldihydromorphine	Not in general use	-	1954
35. Pholcodine	10 - 30	Anti-tussive	1952
36. Methyldesorphine	Not in general use	-	1953
37. Oxymorphone	-	-	1954
38. Myrophine	Not in general use	-	1955

14/ A dash (-) indicates data not available.

15/ For the purposes of this paper, the classification has been reduced to these two principal clinical uses: for fuller information see the fourth joint World Health Organization/United Nations study (E/CN.7/325). An example of other clinical uses is the spasmolytic use of pethidine during childbirth which is a major factor in its total consumption.

16/ The year indicated is that in which one form of the drug (generally the basic substance) was first placed under full international control. Other forms of the drug were placed under control in 1952, 1953 or 1954.

TABLE A (contd.)

DRUG	IX International control status 17/	X Final estimated total world requirements for 1956 18/	XI Provisional estimated total world requirements for 1957 18/
		kg g	kg g
1. Pethidine	Group I	16 328 464	14 928 624
2. Properidine	Group I	65 000	36 000
3. -	Group I	-	-
4. Hydroxypethidine	Group I	1 747	240
5. Ketobemidone	Group I	92 456	62 300
6. Alphaprodine	Group I	83 989	62 722
7. Betaprodine	Group I	9 732	8 230
8. Alphameprodine	Group I	-	-
9. Betameprodine	Group I	1 700	200
10. Anileridine	Group I	-	-
11. Methadone	Group I	691 380	696 243
12. Isomethadone	Group I	18 222	11 830
13. Alphamethadol	Group I	)	)
14. Betamethadol	Group I	) 2 502	) 100
15. Alphacetylmethadol	Group I	)	)
16. Betacetylmethadol	Group I	) 1 502	) -
17. Phenadoxone	Group I	105 196	69 636
18. Normethadone	Group I	107 589	92 400
19. Dioxaphetyl butyrate	Group I	19/	2 000
20. Propoxyphene	Group II	-	-

17/ The groups I and II referred to are those established in Article 1 of the 1931 Convention and to which drugs brought under international control by the procedures of the 1948 Protocol are assimilated.

18/ The first estimated total world requirements published by the DSB each year undergo several revisions. As a result, the provisional estimates of a given year are not fully comparable with the final estimates of the preceding year; the former are generally smaller. The data in these columns have been taken from E/DSB/13/Add.4 and E/DSB/14.

19/ Only datum available for 1956 is that the desired level of reserve stocks was 6 kg.

TABLE A (contd.)

DRUG	IX International control status 17/	X Final estimated total world requirements for 1956 18/	XI Provisional estimated total world requirements for 1957 18/
		kg. g.	kg. g.
21. Dipipanone	Group I	19 400	15 120
22. Levorphanol	Group I	122 245	81 792
23. Racemorphan	Group I	2 775	2 840
24. Levomethorphan	Group I	1 700	-
25. Racemethorphan	Group I	1 610	110
26. Phenomorphan	Group I	-	-
27. Dimethylthiambutene	Group I	4 029	9 300
28. Ethylmethylthiambutene	Group I	1 000	5 000
29. Diethylthiambutene	Group I	17 158	15 150
30. Proheptazine	Group I	50	50
31. Acetyldihydrocodeine	Group II	10 420	4 720
32. Dihydrocodeine	Group II	1 806 525	1 268 860
33. Metopon	Group I	3 622	3 005
34. Methyldihydromorphine	Group I	-	-
35. Pholcodine	Group II	1 085 507	777 376
36. Methyldesorphine	Group I	1	-
37. Oxymorphone	Group I	6 000	3 000
38. Myrophine	Group I, provisional control, final decision pending	-	-

PART II

LICIT USE

10. During the past several sessions, the Commission has considered the entry into general medical use of new narcotic drugs and the question of the relationship between this phenomenon and the development of addiction. In this paper, the licit use and abuse of new narcotics are considered separately in Parts II and III respectively, except in Section E of Part III, where the two aspects have, so far as the available data permit, been correlated.

11. The statistics of the PCOB show that most of the large group of new substances placed under international control during the last ten years have not yet come into very widespread medical use. However, they reflect a relatively rapid development in the use of strong addiction-producing analgesics and anti-tussives which is still under way. The number of such substances in general use continues to increase. This trend, of course, is not limited to the field of narcotic drugs but is, to some extent, part of a broader trend involving far-reaching developments in pharmacology generally.

12. An investigation of clinical experience in the use of the newer narcotic drugs has been made by the Secretariats of WHO and the United Nations and is being issued as the fourth in the series of joint scientific studies called for under Council resolution 505 C (XVI). By reviewing the purposes for which the newer narcotics are being used, this study is expected to give some indication of the extent to which they are being substituted for the more traditional ones, or, alternatively, used for purposes for which the older drugs would be unsuitable.

13. As a complement to the joint study, the present paper gives quantitative data on the extent to which the principal narcotic drugs are being consumed, and the changes in consumption from year to year, if taken in conjunction with the data on clinical practices, may throw light on the important question of how far the new drugs are being used in place of the older ones and how far in other connexions, e.g. pethidine in childbirth. This part of the study is devoted to a new presentation of consumption statistics for the various narcotics, which it is hoped will facilitate the making of valid comparisons.

14. Information is also furnished on the extent to which the newer narcotics are being manufactured.

A. The consumption of natural and synthetic narcotics

15. Attempts to measure the extent to which a drug is being used meet with certain difficulties. Although governments, under the narcotics treaties, report the quantities consumed of most narcotics, weights alone do not directly indicate how widely each drug is being employed medically and scientifically. The analgesic effectiveness of a substance is also of importance, since, for example, 100 kg of pethidine and 10 kg of morphine may represent the same amount of analgesic power, and there is perhaps a close relationship between analgesic power and addiction liability. The quantity of the drug ordinarily given in a single dose may likewise be of importance in evaluating the extent of medical use.

16. The effectiveness or "power" of a drug is composed of two components - the intensity of the effect and the length of its duration. Certain narcotics, such as diacetylmorphine, are potent, but their effect is short-lived; others, like methadone, are less strong, yet their effect is of relatively long duration.

17. Comparable figures for the analgesic effectiveness of the various drugs on man have, however, been obtained in relatively few instances, and any figure for the analgesic effect of a substance in man is too often unavailable.[1/] The question whether a scientifically dependable way of evaluating the intensity or persistence of an analgesic on man or of correlating the two factors has, or can be sufficently developed, would go beyond the scope of this paper.

18. The effectiveness of a narcotic drug is one of the factors determining the average therapeutic dose; other factors would be the maintenance of an adequate margin between the therapeutic and toxic doses, the degree to which unwanted side-effects are produced, the physical conditions for which the drug is usually prescribed, accepted medical practice in the country concerned, etc.

19. The average therapeutic dose is the standard dose (which for widely-used drugs appears in pharmacopoeias as a guide to the medical profession) rather than the mathematical average of all doses rendered throughout the world. Usually it is expressed in terms of a range rather than a single figure.

1/ WHO Bulletin, 1956, 14, p.381.

20. Whether consumption is best expressed in terms of the number of doses consumed or in terms of the analgesic power of the quantities consumed depends upon the purpose that the information is designed to serve. If information concerning the relative medical use of several drugs or groups of drugs is wanted, the total number of doses which reflects physicians' prescription habits, would seem to be more significant than the total analgesic power involved. In this connexion, the strength of the average dose, e.g. whether it is a potent analgesic prescribed to counter acute pain or a mild anti-tussive for persistent coughing, is perhaps of less importance. The average therapeutic dose also does not fully take into account the differing lengths of time for which narcotics are effective although this likewise may not be of major importance.

21. If, on the other hand, information relating the medical consumption of narcotics to the development of addiction is desired, the analgesic power - which is more closely connected with the addiction liability - would seem to provide a more useful basis for comparison than the average therapeutic dose. However, as has been stated above, figures by which the analgesic effectiveness of the various narcotics on man may be quantitatively related to one another do not seem to be available. Until such figures can be obtained, the average therapeutic dose which - with some exceptions - is based to a considerable extent on a drug's effectiveness, is perhaps the best available means of determining consumption in such a way as to give an indication of the addiction liability involved.

22. The average therapeutic dose has, therefore, been used as a means for giving an indication of the extent to which the various narcotics under international control are consumed. The establishment of a suitable scale of values for these dosages was, however, complicated by the fact that the figures for many drugs do not yet appear in the various pharmacopoeias. 2/

23. Furthermore, in order to simplify the presentation of the data, single values were chosen from the range of values given in the pharmacopoeias or scientific articles. 3/ Especially as regards the newer drugs and the drugs having different

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2/ In this work the advice and assistance of Dr. N.B. Eddy as consultant to the WHO and co-author of the joint study on synthetic narcotics referred to above was obtained, and is gratefully acknowledged.

3/ The full range of values for new drugs has been given in Section I above; the single value used for the present calculations has been indicated in each case in Tables B and C below.

ranges for the various types of medical use, these single values to some extent represent a subjective appraisal. However, the same value is used for all countries, and should there be differing views on one or two of the values for the less widely used newer drugs, the overall results would not be significantly affected.

24. In order to enable the consumption of the various narcotic drugs to be compared, figures showing the consumption of each of the fifteen narcotics most commonly used, in terms of doses per thousand population per annum, have been prepared for the world as a whole (Table B) and for 50 of the principal consuming countries (Table C). The world-wide information covers the eight years 1948-1955, and the country-by-country data the three years 1953-1955. For present purposes, narcotics have been classified in three main categories: natural analgesics, synthetic analgesics, and natural anti-tussives. Some narcotics are used both as analgesics and anti-tussives, but one type of use usually predominates, and they have been arranged accordingly. The synthetic drugs and one of the anti-tussives (pholcodine) are new, and dihydrocodeine is new in the sense that it has only recently come under international control. The figures for each category have been totalled, and the totals for the eight analgesics, for the ten natural narcotics, and for all fifteen narcotics have likewise been calculated.

25. The population statistics employed in calculating the figures for the tables were in general the mid-year estimates of the United Nations Statistical Office for the year in question;[4/] and the consumption figures were those published by the PCOB or obtained from its Secretariat.[5/] It may be borne in mind that the latter figures are given to the nearest kilogramme, which may affect the reliability of the results if the consumption of the drug concerned was very small. It may also be noted that since governments are not bound under the international narcotics treaties to furnish such figures for some of the drugs included in the table[6/], many of the figures used were those calculated by the Secretariat of the PCOB on the basis of other official data.

4/ The relevant figures were taken from the series of United Nations statistical papers entitled Population and Vital Statistics Reports, the latest available figure having been employed in each case. The following issues were used: for 1948, series A 9; for 1949, ST/STAT/Ser.A/17; for 1950, ST/STAT/Ser.A/21; for 1951, ST/STAT/Ser.A/25; for 1952, ST/STAT/Ser.A/29; for 1953, ST/STAT/Ser.A/33; for 1954, ST/STAT/Ser.A/37; for 1955, ST/STAT/Ser.A/39. In a few cases, mid-year estimates for the year in question were not available, and the required population figures were calculated by pro-rating the available data. The countries concerned were Czechoslovakia, Iraq, Pakistan, Poland, Romania, Union of Soviet Socialist Republics and Vietnam.

5/ E/OB/12, Table IX.

6/ Codeine, dionine, dihydrocodeine and pholcodine.

TABLE B

WORLD CONSUMPTION OF THE PRINCIPAL NARCOTIC DRUGS, 1948-1955

Expressed in Terms of Number of Doses Consumed per Thousand Population 7/

Figures following the name of each drug indicate the average therapeutic dosage used for the calculations.

Year	Natural Analgesics				Synthetic Analgesics						TOTAL, NATURAL AND SYNTHETIC ANALGESICS	Natural Anti-tussives								TOTAL, NATURAL NARCOTICS	TOTAL, NATURAL AND SYNTHETIC NARCOTICS
	Morphine (10 mg)	Diacetyl-morphine (5 mg)	Hydromor-phone (2 mg)	TOTAL, Natural Analgesics	Pethidine (100 mg)	Methadone (10 mg)	Ketobe-midone (7.5 mg)	Levorphanol (2 mg)	Phenadoxone (20 mg)	TOTAL, Synthetic Analgesics		Codeine (20 mg)	Dionine (20 mg)	Hydrocodone (5 mg)	Acetyldihydro-codeinone (7.5 mg)	Oxycodone (10 mg)	Dihydro-codeine (30 mg)	Pholcodine (20 mg)	TOTAL, Natural Anti-tussives		
1948	235	56	37	328	18	1	-	-	-	19	347	899	73	25	9	9	-	-	1 015	1 343	1 362
1949	242	47	25	314	27	62	-	-	-	89	403	900	74	34	8	7	-	-	1 023	1 337	1 426
1950	234	34	23	291	33	13	-	-	1	47	338	1 080	85	41	8	8	-	0.6	1 223	1 514	1 562
1951	241	36	24	301	37	16	-	2	1	56	357	1 150	106	40	6	8	0.2	0.9	1 311	1 612	1 668
1952	208	22	20	250	42	16	1	4	1	64	314	1 172	97	40	6	9	0.3	1	1 325	1 575	1 639
1953	208	17	22	247	43	19	3	5	1	71	318	1 354	110	47	6	10	5	3	1 535	1 782	1 853
1954	191	11	18	220	43	21	3	5	0.9	73	293	1 329	110	45	6	9	13	8	1 520	1 740	1 813
1955	170	12	15	197	49	21	3	5	0.8	79	276	1 433	106	54	6	11	12	10	1 632	1 829	1 908

7/ The world figures on drug consumption per thousand population in Table B were calculated on the basis of the mid-year estimates of total world population of the United Nations Statistical Office and the data on drug consumption of the PCOB. The PCOB has indicated that its totals are incomplete, although the countries for which there is no information are not numerous and vary to some extent from year to year. Since the total drug consumption is thus somewhat higher than indicated, the same holds true for the figures of consumption per thousand population in this Table. It is believed, however, that this does not affect the comparability of the results to any significant extent.

TABLE C

CONSUMPTION OF THE PRINCIPAL NARCOTIC DRUGS BY COUNTRY, 1953-1955

Expressed in terms of Number of Doses Consumed per Thousand Population

Figures following the name of each drug indicate the average therapeutic dosage used for the calculations.

A dash (-) indicates: no consumption, consumption below 1 kg or no information available

Country and Year	Natural Analgesics				Synthetic Analgesics							Natural Anti-tussives								
	Morphine (10 mg)	Diacetyl-morphine (5 mg)	Hydro-morphine (2 mg)	TOTAL Natural Analgesics	Pethidine (100 mg)	Methadone (10 mg)	Keto-bemidone (7.5 mg)	Levorphanol (2 mg)	Phenadoxone (20 mg)	TOTAL Synthetic Analgesics	TOTAL, NATURAL AND SYNTHETIC ANALGESICS	Codeine (20 mg)	Dionine (20 mg)	Hydrocodone (5 mg)	Acetyl-dihydro-codeinone (7.5)	Oxycodone (10 mg)	Dihydro-codeine (30 mg)	Pholcodine (30 mg)	TOTAL Natural Anti-tussives	TOTAL, NATURAL NARCOTICS	TOTAL, NATURAL AND SYNTHETIC NARCOTICS
Argentina																				
1953	359	11	-	370	16	-	-	-	-	16	386	2 441	661	11	-	16	-	-	3 129	3 499	3 515
1954	357	-	-	357	-	-	14	133	-	147	504	1 635	502	-	-	11	-	-	2 148	2 505	2 652
1955	277	-	-	277	14	-	-	-	-	14	291	2 917	594	-	-	10	-	-	3 521	3 798	3 812
Australia																				
1953	1 518	408	-	1 926	524	204	-	-	28	756	2 682	6 320	130	227	-	-	-	-	6 677	8 603	9 359
1954	1 402	200	-	1 602	319	67	-	-	22	408	2 010	8 256	100	134	-	-	-	50	8 540	10 142	10 550
1955	1 304	261	-	1 565	525	272	-	-	16	813	2 378	8 075	206	261	-	-	-	168	8 710	10 275	11 088
Austria																				
1953	417	-	-	417	17	230	-	-	-	247	664	3 286	86	86	77	14	5	-	3 554	3 971	4 218
1954	301	-	-	301	22	201	-	-	-	223	524	3 415	79	86	77	14	-	-	3 671	3 972	4 195
1955	315	-	-	315	32	158	-	-	-	190	505	4 596	86	86	76	14	-	-	4 858	5 173	5 363
Belgium																				
1953	570	228	-	798	56	91	15	-	-	162	960	6 847	359	524	167	148	8	-	8 053	8 851	9 013
1954	726	204	-	930	45	91	15	-	-	151	1 081	6 877	397	431	227	159	11	11	8 113	9 043	9 194
1955	575	203	-	778	62	90	30	-	-	182	960	7 431	468	609	271	124	23	11	8 937	9 715	9 897
Brazil																				
1953	32	-	-	32	3	39	-	-	-	42	74	666	198	22	-	2	5	-	893	925	967
1954	39	-	-	39	4	9	-	-	-	13	52	952	180	11	-	4	3	-	1 150	1 189	1 202
1955	21	-	-	21	9	10	-	-	-	19	40	846	169	21	-	2	3	-	1 041	1 062	1 081
Bulgaria																				
1953	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	82	-	-	82	14	-	-	-	-	14	96	1 599	456	109	-	-	-	-	2 164	2 246	2 260
1955	40	-	-	40	36	-	-	-	-	36	76	424	815	26	-	-	-	-	1 265	1 305	1 341
Canada																				
1953	521	311	34	866	202	61	-	34	-	297	1 163	5 057	152	54	-	7	-	-	5 270	6 136	6 433
1954	461	369	-	830	220	72	-	-	-	292	1 122	5 986	56	118	-	13	-	20	6 193	7 023	7 315
1955	314	167	-	481	238	38	-	32	-	308	789	7 330	103	64	-	32	-	10	7 539	8 020	8 328

TABLE C (cont.)

Country and Year	Natural Analgesics				Synthetic Analgesics						TOTAL, NATURAL AND SYNTHETIC ANALGESICS	Natural Anti-tussives								TOTAL, NATURAL NARCOTICS	TOTAL, NATURAL AND SYNTHETIC NARCOTICS
	Morphine (10 mg)	Diacetylmorphine (5 mg)	Hydromorphone (2 mg)	TOTAL, Natural Analgesics	Pethidine (100 mg)	Methadone (10 mg)	Ketobemidone (7.5 mg)	Levorphanol (2 mg)	Phenadoxone (20 mg)	TOTAL, Synthetic Analgesics		Codeine (20 mg)	Dionine (20 mg)	Hydrocodone (5 mg)	Acetyldihydrocodeinone (7.5 mg)	Oxycodone (10 mg)	Dihydrocodeine (30 mg)	Pholcodine (20 mg)	TOTAL, Natural Anti-tussives		
Ceylon																					
1953	49	-	-	49	12	-	-	-	-	12	61	12	6	-	-	-	-	-	18	67	79
1954	48	-	-	48	17	-	-	-	-	17	65	18	-	-	-	-	-	-	18	66	83
1955	47	-	-	47	17	-	-	-	-	17	64	12	6	-	-	-	-	-	18	65	82
Chile																					
1953	165	-	-	165	8	49	-	-	-	57	222	379	280	99	-	-	-	-	758	923	980
1954	171	-	-	171	9	31	-	-	-	40	211	1 101	341	31	-	-	-	-	1 473	1 644	1 684
1955	251	-	-	251	12	-	-	-	-	12	263	747	362	118	-	-	-	-	1 227	1 478	1 490
China [8]																					
1953	266	-	-	266	-	-	-	-	-	-	266	369	24	-	-	-	-	-	893	659	659
1954	244	-	-	244	-	-	-	-	-	-	244	284	17	-	-	-	-	-	301	545	545
1955	213	-	-	213	-	-	-	-	-	-	213	264	22	-	-	-	-	-	286	499	499
Colombia																					
1953	83	-	-	83	-	-	-	-	-	-	83	384	33	-	-	-	19	-	436	519	519
1954	89	-	-	89	5	-	-	-	-	5	94	477	20	-	-	-	35	-	532	621	626
1955	87	-	-	87	-	-	-	-	-	-	87	502	67	-	-	-	29	-	598	685	685
Czechoslovakia																					
1953	672	-	-	672	10	8	-	-	-	18	690	9 676	504	47	-	16	-	-	10 243	10 915	10 933
1954	232	-	-	232	13	8	-	-	-	21	253	6 088	660	31	-	15	-	-	6 794	7 026	7 047
1955	199	-	-	199	7	-	-	-	-	7	206	5 424	428	61	-	15	-	-	5 928	6 127	6 134
Denmark																					
1953	1 991	46	-	2 037	449	572	610	-	-	1 631	3 668	15 038	1 019	732	336	92	-	-	17 217	19 254	20 885
1954	2 133	45	114	2 292	422	499	605	-	-	1 526	3 818	18 293	931	635	303	91	-	-	20 253	22 545	24 071
1955	1 915	-	-	1 915	484	405	691	-	-	1 580	3 495	18 202	743	405	210	90	-	-	19 650	21 565	23 145
Egypt																					
1953	5	-	-	5	0.5	-	-	-	-	0.5	6	105	2	-	-	-	-	-	107	112	113
1954	9	-	-	9	0.4	-	-	-	-	0.4	9	143	13	-	-	-	-	-	156	165	165
1955	4	-	-	4	3	-	-	-	-	3	7	183	9	-	-	-	-	-	192	196	199
Finland																					
1953	555	724	-	1 279	2	386	32	-	12	432	1 711	9 889	1 340	145	-	48	-	-	11 422	12 701	13 133
1954	644	477	-	1 121	29	382	32	-	60	503	1 624	10 119	1 337	191	-	48	-	-	11 695	12 816	13 319
1955	755	472	-	1 227	19	283	-	-	47	349	1 576	11 318	1 344	283	-	-	-	-	12 945	14 172	14 521

[8] Statistics incomplete.

TABLE C (contd.)

Country and Year	Natural Analgesics				Synthetic Analgesics						TOTAL, NATURAL AND SYNTHETIC ANALGESICS	Natural Anti-tussives								TOTAL, NATURAL NARCOTICS	TOTAL, NATURAL AND SYNTHETIC NARCOTICS
	Morphine (10 mg)	Diacetyl-morphine (5 mg)	Hydro-morphone (2 mg)	TOTAL, Natural Analgesics	Pethidine (100 mg)	Methadone (10 mg)	Ketobe-midone (7.5 mg)	Levorphanol (2 mg)	Phenadoxone (20 mg)	TOTAL, Synthetic Analgesics		Codeine (20 mg)	Dionine (20 mg)	Hydrocodone (5 mg)	Acetyldihydro codeinone (7.5 mg)	Oxycodone (10 mg)	Dihydro-codeine (30 mg)	Pholcodine (20 mg)	TOTAL, Natural Anti-tussives		
France																					
1953	205	42	-	247	61	-	-	-	-	61	308	6 233	1 606	-	-	98	-	128	8 065	8 312	8 373
1954	181	23	-	204	69	-	-	-	-	69	273	5 769	1 606	-	-	81	-	191	7 647	7 851	7 920
1955	233	32	-	265	69	-	-	-	-	69	334	6 302	1 679	-	-	86	-	233	8 300	8 565	8 634
German Democratic Republic																					
1953	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	281	-	-	281	9	-	-	-	-	9	290	-	-	45	-	6	-	-	-	-	-
1955	239	-	-	239	54	-	-	-	-	54	293	4 308	39	-	-	11	-	-	4 358	4 597	4 651
Germany, Fed. Rep. of																					
1953	340	-	88	428	101	92 [9/]	34	20	-	247	675	3 040	157	390	208	111	34	-	3 940	4 368	4 615
1954	308	-	87	395	103	170	59	39	-	371	766	3 531	147	352	196	99	237	-	4 562	4 957	5 328
1955	291	-	77	368	112	172	54	19	-	357	725	4 070	173	349	199	94	166	-	5 051	5 419	5 776
Greece																					
1953	102	-	-	102	9	-	-	-	-	9	111	454	6	-	-	-	-	-	460	562	571
1954	76	-	-	76	5	-	-	-	-	5	81	329	-	-	-	-	-	-	329	405	410
1955	88	-	-	88	10	-	-	-	-	10	98	389	-	-	-	-	-	-	389	477	487
Guatemala																					
1953	131	-	-	131	56	-	-	-	-	56	187	65	-	-	-	-	-	-	65	196	252
1954	64	-	-	64	60	-	-	-	-	60	124	318	-	-	-	-	-	-	318	382	442
1955	61	-	-	61	18	-	-	-	-	18	79	199	-	-	-	-	-	-	199	260	278
Hungary																					
1953	1 137	21	-	1 158	6	-	-	-	-	6	1 164	4 997	819	-	-	-	-	-	5 816	6 974	6 980
1954	1 104	21	-	1 125	5	-	-	-	-	5	1 130	5 871	1 656	-	-	-	-	-	7 527	8 652	8 657
1955	377	-	-	377	-	-	-	-	-	-	377	6 892	1 677	-	-	-	177	-	8 746	9 123	9 123
India																					
1953	75	0.5	-	76	2	0.3	-	-	-	2	78	66	7	-	-	-	-	-	73	149	151
1954	65	-	-	65	2	1	-	-	-	3	68	71	10	-	-	-	-	-	81	146	149
1955	51	3	-	54	3	-	-	-	-	3	57	69	8	-	-	-	-	-	77	131	134

9/ The statistics cover only the period July - December.

TABLE C (contd.)

Country and Year	Natural Analgesics				Synthetic Analgesics							Natural Anti-tussives								
	Morphine (10 mg)	Diacetyl-morphine (5 mg)	Hydromor-phone (2 mg)	TOTAL, Natural Analgesics	Pethidine (100 mg)	Methadone (10 mg)	Ketobe-midone (7.5 mg)	Levorphanol (2 mg)	Phenadoxone (20 mg)	TOTAL, Synthetic Analgesics	TOTAL, NATURAL AND SYNTHETIC ANALGESICS	Codeine (20 mg)	Dionine (20 mg)	Hydrocodone (5 mg)	Acetyldihydro-codeinone (7.5 mg)	Oxycodone (10 mg)	Dihydro-codeine (30 mg)	Pholcodine (20 mg)	TOTAL Natural Anti-tussives	TOTAL, NATURAL NARCOTICS	TOTAL, NATURAL AND SYNTHETIC NARCOTICS
Indonesia																				
1953	28	-	13	41	0.4	-	-	-	-	0.4	41	161	9	8	-	1	-	-	179	220	220
1954	59	-	43	102	1	-	-	-	-	1	103	287	14	22	-	1	-	-	324	426	427
1955	13	-	12	25	0.2	-	-	-	-	0.2	25	152	3	5	-	-	-	-	160	185	185
Iran																				
1953	25	-	-	25	-	-	-	-	-	-	25	47	40	-	-	-	-	-	87	112	112
1954	24	-	-	24	-	-	-	-	-	-	24	31	2	-	-	-	-	-	33	57	57
1955	33	-	-	33	1	-	-	-	-	1	34	28	19	-	-	-	-	-	47	80	81
Iraq																				
1953	61	-	-	61	10	-	-	-	-	10	71	101	20	-	-	-	-	-	121	182	192
1954	61	-	-	61	8	-	-	-	-	8	69	152	-	-	-	-	-	-	152	213	221
1955	58	-	-	58	21	-	-	-	-	21	79	173	-	-	-	-	-	-	173	231	252
Ireland																				
1953	510	-	-	510	129	68	-	-	17	214	724	272	-	-	-	-	-	-	272	782	996
1954	546	-	-	546	153	68	-	-	17	238	784	222	-	-	-	-	-	-	222	768	1 006
1955	619	-	-	619	155	69	-	-	-	224	843	1 048	-	-	-	-	-	17	1 065	1 684	1 908
Israel																				
1953	485	-	-	485	-	-	-	-	-	-	485	2 758	152	-	-	-	-	-	2 910	3 395	3 395
1954	415	-	-	415	207	-	-	-	-	207	622	5 391	296	118	-	-	-	-	5 805	6 220	6 427
1955	288	-	-	288	161	-	-	-	-	161	449	5 591	173	231	-	-	-	-	5 995	6 283	6 444
Italy																				
1953	314	46	10	370	99	29	11	-	-	139	509	525	283	75	25	29	13	-	950	1 320	1 459
1954	340	12	10	362	52	31	11	10	-	104	466	835	261	67	22	25	29	-	1 239	1 601	1 705
1955	235	12	-	247	66	29	8	-	-	103	350	911	306	50	17	21	24	-	1 329	1 576	1 679
Japan 10/																				
1953	181	-	-	181	0.5	-	-	-	-	0.5	182	818	3	-	-	12	108	-	941	1 122	1 123
1954	177	-	-	177	0.5	-	-	-	-	0.5	178	827	3	-	-	13	208	-	1 051	1 228	1 229
1955	163	-	-	163	0.7	-	-	-	-	0.7	164	776	3	-	-	12	204	-	995	1 158	1 159
Mexico																				
1953	18	-	-	18	7	-	-	-	-	7	25	570	103	7	-	-	10	-	690	708	715
1954	17	-	-	17	10	-	-	-	-	10	27	426	75	14	-	-	10	-	525	542	552
1955	13	-	-	13	6	-	-	-	-	6	19	615	79	14	-	-	10	-	718	731	737

10/ In addition, consumption of dimethylthiambutene, amounting to 3 kg. in 1954 and 4 kg. in 1955 was reported. In terms of an average therapeutic dose of 50 mg, this represents 60,000 and 80,000 doses respectively or 0.7 and 0.9 dose per thousand population.

TABLE C (contd.)

Country and Year	Natural Analgesics				Synthetic Analgesics						TOTAL, NATURAL AND SYNTHETIC ANALGESICS	Natural Anti-tussives								TOTAL, NATURAL NARCOTICS	TOTAL, NATURAL AND SYNTHETIC NARCOTICS
	Morphine (10 mg)	Diacetyl-morphine (5 mg)	Hydromorphone (2 mg)	TOTAL Natural Analgesics	Pethidine (100 mg)	Methadone (10 mg)	Ketobemidone (7.5 mg)	Levorphanol (2 mg)	Phenadoxone (20 mg)	TOTAL, Synthetic Analgesics		Codeine (20 mg)	Dionine (20 mg)	Hydrocodone (5 mg)	Acetyldihydrocodeinone (7.5 mg)	Oxycodone (10 mg)	Dihydrocodeine (30 mg)	Pholcodine (20 mg)	TOTAL, Natural Anti-tussives		
Netherlands																					
1953	277	-	48	325	37	10	-	-	-	47	372	1 701	24	534	13	10	-	-	2 282	2 607	2 654
1954	650	-	141	791	48	9	-	-	-	57	848	1 936	14	283	13	9	-	-	2 255	3 046	3 103
1955	567	-	93	660	48	9	-	-	-	57	717	1 897	23	372	-	9	-	-	2 501	2 961	3 018
New Zealand																					
1953	830	195	-	1 025	498	-	-	-	-	498	1 523	9 062	-	-	-	-	-	-	9 062	10 087	10 585
1954	334	96	-	430	425	-	-	-	24	449	879	7 430	48	-	-	-	-	24	7 502	7 932	8 381
1955	609	-	-	609	487	94	-	-	-	581	1 190	9 902	25	-	-	-	-	47	9 972	10 581	11 162
Norway																					
1953	2 560	-	-	2 560	128	238	40	-	-	406	2 966	2 382	223	714	-	-	-	-	3 319	5 879	6 285
1954	1 887	-	-	1 887	121	29	79	-	-	229	2 116	3 272	236	708	-	-	-	-	4 216	6 103	6 332
1955	2 686	-	-	2 686	145	321	117	-	-	583	3 269	3 051	145	759	-	-	-	-	3 955	6 641	7 224
Pakistan																					
1953	15	-	-	15	0.5	-	-	-	-	0.5	16	3	-	-	-	-	-	-	3	18	19
1954	20	-	-	20	0.7	-	-	-	-	0.7	21	4	2	-	-	-	-	-	6	26	27
1955	38	-	-	38	0.6	-	-	-	-	0.6	39	7	-	-	-	-	-	-	7	45	46
Peru																					
1953	22	-	-	22	7	-	-	-	-	7	29	432	28	-	-	-	-	-	460	482	489
1954	11	-	-	11	7	-	-	-	-	7	18	412	16	-	-	-	-	-	428	439	446
1955	11	-	-	11	7	-	-	-	-	7	18	506	21	-	-	-	-	-	527	538	545
Philippines																					
1953	10	-	-	10	11	-	-	-	-	11	21	71	2	19	-	-	-	-	92	102	113
1954	9	-	-	9	8	-	-	-	-	8	17	82	2	28	-	-	-	-	112	121	129
1955	9	-	-	9	7	-	-	-	-	7	16	69	5	73	-	-	-	-	147	156	163
Poland																					
1953	179	-	-	179	0.4	-	-	-	-	0.4	179	1 919	29	-	-	-	-	-	1 948	2 127	2 127
1954	168	-	-	168	-	-	-	-	-	-	168	1 507	36	-	-	-	14	-	1 557	1 725	1 725
1955	176	-	-	176	2	-	-	-	-	2	178	1 769	86	7	-	7	11	-	1 880	2 056	2 058
Portugal																					
1953	162	70	-	232	10	-	-	-	-	10	233	296	162	23	-	58	-	-	539	771	781
1954	196	69	-	265	8	-	15	-	-	23	288	293	213	46	-	46	-	-	598	863	886
1955	160	91	-	251	11	-	15	-	-	26	277	513	245	23	-	57	-	-	838	1 089	1 115

TABLE C (contd.)

Country and Year	Natural Analgesics				Synthetic Analgesics						TOTAL, NATURAL AND SYNTHETIC ANALGESICS	Natural Anti-tussives								TOTAL, NATURAL NARCOTICS	TOTAL, NATURAL AND SYNTHETIC NARCOTICS
	Morphine (1 mg)	Diacetylmorphine (5 mg)	Hydromorphone (2 mg)	TOTAL Natural Analgesics	Pethidine (100 mg)	Methadone (10 mg)	Phenbemidone (7.5 mg)	Levorphanol (2 mg)	Phenadoxone (20 mg)	TOTAL Synthetic Analgesics		Codeine (20 mg)	Dionine (20 mg)	Hydrocodone (5 mg)	Acetyldihydro-codeinone (7.5 mg)	Oxycodone (10 mg)	Dihydrocodeine (30 mg)	Pholcodine (20 mg)	TOTAL Natural Anti-tussives		
Romania																					
1953	158	24	-	182	-	-	-	-	-	-	182	2 197	191	-	-	-	-	-	2 388	2 570	2 570
1954	197	35	58	290	1	-	-	-	-	1	291	2 832	208	-	-	-	-	-	3 040	3 330	3 331
1955	149	33	55	237	-	-	-	-	-	-	237	3 525	271	-	-	-	-	-	3 796	4 033	4 033
Spain																					
1953	810	-	-	810	3	25	-	-	-	28	838	1 097	424	-	-	56	18	-	1 595	2 405	2 433
1954	223	-	-	223	3	104	-	-	-	107	330	805	209	77	-	38	16	-	1 025	1 248	1 355
1955	217	-	-	217	7	82	-	35	-	104	321	978	292	-	-	35	55	2	1 362	1 579	1 683
Sweden																					
1953	711	390	-	1 101	17	70	130	-	-	217	1 318	10 089	1 485	892	-	209	-	-	12 675	13 776	13 993
1954	624	55	-	679	11	105	111	-	-	247	926	11 963	2 169	554	-	236	-	-	14 922	15 601	15 848
1955	730	28	-	758	14	96	202	-	-	312	1 070	11 898	1 625	578	-	262	-	-	14 363	15 121	15 433
Switzerland																					
1953	697	-	205	902	88	82	137	205	-	512	1 414	4 193	82	574	55	21	7	-	4 932	5 834	6 346
1954	447	-	203	650	79	61	108	-	-	248	898	3 606	122	528	54	20	14	-	4 344	4 994	5 242
1955	502	-	201	703	117	20	107	-	-	244	947	5 456	151	603	54	20	74	-	6 558	7 261	7 505
Turkey																					
1953	31	-	-	31	1	-	-	-	-	1	32	1 307	643	9	-	-	-	-	1 959	1 990	1 991
1954	26	-	-	26	-	-	-	-	-	-	26	1 394	667	9	-	-	-	-	2 070	2 096	2 096
1955	37	-	-	37	-	-	-	-	-	-	37	1 039	-	17	-	-	-	-	1 056	1 093	1 093
Union of South Africa																					
1953	258	61	-	319	96	15	-	-	4	115	434	1 372	72	-	-	-	-	-	1 444	1 763	1 878
1954	283	-	-	283	94	22	-	-	-	116	399	1 523	56	-	-	-	-	22	1 601	1 884	2 000
1955	271	-	-	271	188	15	-	-	-	203	474	1 873	51	-	-	-	-	29	1 953	2 224	2 427
Union of Soviet Socialist Republics																					
1953	461	-	-	461	-	-	-	-	-	-	461	2 614	295	-	-	-	-	-	2 909	3 370	3 370
1954	499	-	-	499	-	-	-	-	-	-	499	3 157	335	-	-	-	-	-	3 492	3 991	3 991
1955	457	-	-	457	-	-	-	-	-	-	457	3 018	312	-	-	-	-	-	3 330	3 787	3 787

TABLE C (contd.)

Country and Year	Natural Analgesics				Synthetic Analgesics						TOTAL, NATURAL AND SYNTHETIC ANALGESICS	Natural Anti-tussives							TOTAL, NATURAL NARCOTICS	TOTAL, NATURAL AND SYNTHETIC NARCOTICS
	Morphine (10 mg)	Diacetyl-morphine (5 mg)	Hydro-morphone (2 mg)	TOTAL Natural Analgesics	Pethidine (100 mg)	Methadone (10 mg)	Ketobe-midone (7.5 mg)	Levorphanol (2 mg)	Phenadoxone (20 mg)	TOTAL Synthetic Analgesics		Codeine (20 mg)	Dionine (20 mg)	Hydrocodone (5 mg)	Acetyl-dihydro-codeinone (7.5 mg)	Oxycodone (10 mg)	Dihydro-codeine (30 mg)	Pholcodine (20 mg)	TOTAL Natural Anti-tussives		
United Kingdom																				
1953	1 587	346	10	1 943	194	185	-	39	41	459	2 402	8 122	147	12	-	-	-	51	8 332	10 275	10 734
1954	1 455	274	10	1 739	235	184	-	39	35	493	2 232	9 465	147	12	-	-	-	222	9 846	11 585	12 078
1955	1 632	383	-	2 015	246	185	-	29	34	494	2 509	10 417	131	8	-	-	-	255	10 811	12 826	13 320
United States of America																				
1953	740	-	291	1 031	423	111	-	44	-	578	1 609	5 766	37	385	-	30	-	-	6 218	7 249	7 827
1954	729	-	217	946	450	142	-	31	-	623	1 569	4 869	36	403	-	43	-	-	5 351	6 297	6 920
1955	545	-	195	740	506	133	-	55	-	694	1 434	5 076	31	542	-	75	-	-	5 724	6 464	7 158
Venezuela																				
1953	73	-	-	73	22	-	-	-	-	22	95	533	83	-	-	-	-	-	616	689	711
1954	107	-	-	107	20	-	-	-	-	20	127	562	36	-	-	-	6	-	604	711	731
1955	87	-	-	87	21	-	-	-	-	21	108	667	130	-	-	-	6	-	803	890	911
Vietnam																				
1953	16	-	-	16	4	-	-	-	-	4	20	363	35	-	-	8	-	-	406	422	426
1954 11/	50	-	-	50	5	-	-	-	-	5	55	267	63	-	-	15	-	-	345	395	400
1955 11/	23	-	-	23	2	-	-	-	-	2	25	112	49	-	-	11	-	-	172	195	197
Yugoslavia																				
1953	165	-	-	165	11	-	-	-	-	11	176	1 504	26	-	8	6	-	-	1 544	1 709	1 720
1954	284	-	-	284	13	35	-	-	-	48	332	2 094	41	-	8	6	-	-	2 149	2 433	2 481
1955	187	-	-	187	23	45	-	-	-	68	255	2 002	34	-	-	-	-	-	2 036	2 223	2 291

11/ Statistics incomplete

Information derived from Tables B and C

26. Within the assumptions indicated and the limitations of the statistics concerned, the foregoing tables throw considerable light on the consumption trends of morphine-like narcotics for medical and scientific purposes. They might perhaps be summed up as follows:

World-wide Statistics, 1948-1955

27. (a) The rate of dosage consumption, i.e. the number of doses consumed per thousand population per annum, of the 15 principal morphine-like narcotics has increased by 40% during the past eight years.

28. (b) The rate of dosage consumption of the 10 natural drugs, as a group, and of the five synthetic drugs, as a group, both increased from 1948 to 1955, the former by 36%, the latter by 415%. 12/

29. (c) The rate of dosage consumption of the 8 narcotics used primarily as analgesics, including 3 natural and 5 synthetic narcotics, decreased by 20% from 1948 to 1955, whereas the rate for the 7 natural narcotics used primarily as anti-tussives increased by 61% during the same period.

30. (d) The rate of dosage consumption of the 3 natural narcotics used primarily as analgesics (morphine, diacetylmorphine, and hydromorphone) decreased by 40% from 1948 to 1955, while the rate for the 5 synthetic drugs used primarily as analgesics, as has been stated, increased by 415%. Despite these percentage changes, the dosage consumption rates of the natural analgesics in 1955 was about 2½ times that of the synthetic analgesics; in 1948, it had been 17 times as large.

31. (e) Dosage consumption of the 5 principal synthetic narcotics constituted 1.4% of the total for the 15 principal narcotics in 1948 and 4.1% in 1955; dosage consumption of the 5 principal synthetic analgesics comprised 5.5% of the total for the 8 principal analgesics in 1948 and 28.6% in 1955.

12/ Since the synthetic narcotics were little used in 1948, this percentage is relatively high; in absolute terms, however, the use of the natural narcotics increased from 1343 to 1829 doses per thousand population, while the similar figures for the synthetic narcotics were 19 and 79. In other words, the dosage consumption rate for the natural narcotics increased more than eight times as much as that for the synthetic narcotics (484 doses against 60) between 1948 and 1955.

32. (f) The rate of dosage consumption of the new natural anti-tussive pholcodine has become significant only in 1954 and 1955; it remains less than 1% that of codeine and less than 10% that of dionine. If pholcodine and dihydrocodeine are considered together with the 5 synthetic narcotics, the consumption of the main new narcotics in 1955 amounted to 101 doses per thousand population, or about 5.3% of the total, as compared to a consumption of 1807 doses for the principal older narcotics, or 94.7% of the total.

33. (g) The use of 10 of the 15 principal narcotics seems to be increasing (codeine, dionine, hydrocodone, pethidine, methadone, dihydrocodeine, pholcodine, ketobemidone, levorphanol, phenadoxone); the use of 4 others seems to be decreasing (morphine, diacetylmorphine, hydromorphone and acetyldihydrocodeinone). No definite trend is evident for the remaining narcotic - oxycodone.

Country-by-country Statistics, 1953-1955

34. In comparing the use of analgesics in different countries, it may be recalled that anti-tussives are often used as analgesics (codeine); contrariwise, analgesics are sometimes used as anti-tussives (methadone) or as spasmolytics (pethidine). Since it is impracticable to distinguish between the quantities used for these different purposes, it is proposed to compare the rate of dosage consumption of morphine, diacetylmorphine and hydromorphone on the one hand, and that of pethidine, methadone, ketobemidone, levorphanol and phenadoxone on the other for the years 1953-1955.

Relative use of Natural and Synthetic Analgesics

35. (a) For 1953, two of the 50 countries studied - Brazil and the Philippines - had a greater dosage consumption of synthetic than natural analgesics; for 1954, one country - New Zealand - was in this category; and in 1955, the dosage consumption of natural analgesics was greater in all 50 countries.

36. (b) Dosage consumption of synthetic analgesics was more than half that of natural analgesics in the following countries during the years indicated:

Australia, 1955
Austria, 1953, 1954, 1955
Brazil, 1953, 1955
Bulgaria, 1955
Canada, 1955
Denmark, 1953, 1954, 1955
Egypt, 1955
Germany, Federal Republic of, 1953, 1954, 1955
Guatemala, 1954
Israel, 1955
Mexico, 1954
New Zealand, 1954, 1955
Peru, 1954, 1955
Philippines, 1953, 1954, 1955
Switzerland, 1953
Union of South Africa, 1955
United States of America, 1953, 1954, 1955

The number of countries in this category has been increasing as follows: 1953, 7; 1954, 9; 1955, 14.

37. In 33 of the 50 countries concerned, more than twice as many doses of natural as of synthetic analgesics were consumed during each of the three years.

38. (c) The countries consuming more than 100 doses of natural analgesics per thousand population over an average of three years are juxtaposed with the countries consuming more than 100 doses of synthetic analgesics in the following tabulation:

Countries consuming 100 doses or more of natural analgesics per thousand population per annum during 1953-1955 (32)	Countries consuming 100 doses or more of synthetic analgesics per thousand population per annum during 1953-1955 (17)
Argentina	
Australia	Australia
Austria	Austria
Belgium	Belgium
Canada	Canada
Chile	
China	
Czechoslovakia	
Denmark	Denmark
Finland	Finland
France	
German Democratic Republic	
Germany, Federal Republic of	Germany, Federal Republic of
Hungary	
Ireland	Ireland
Israel	Israel
Italy	Italy
Japan	
Netherlands	
New Zealand	New Zealand
Norway	Norway
Poland	
Portugal	
Romania	
Spain	

Countries consuming 100 doses or more of natural analgesics per thousand population per annum during 1953-1955 (32) (continued)	Countries consuming 100 doses or more of synthetic analgesics per thousand population per annum during 1953-1955 (17) (continued)
Sweden	Sweden
Switzerland	Switzerland
Union of South Africa	Union of South Africa
Union of Soviet Socialist Republics	
United Kingdom	United Kingdom
United States of America	United States of America
Yugoslavia	

39. (d) The countries consuming more than 500 doses of natural analgesics per thousand population over an average of the three years are juxtaposed with the countries consuming more than 500 doses of synthetic analgesics in the following tabulation:

Countries consuming 500 doses or more of natural analgesics per thousand population per annum during 1953-1955 (14)	Countries consuming 500 doses or more of synthetic analgesics per thousand population per annum during 1953-1955 (4)
Australia	Australia
Belgium	
Canada	
Denmark	Denmark
Finland	
Hungary	
Ireland	
Netherlands	
New Zealand	New Zealand
Norway	
Sweden	
Switzerland	
United Kingdom	
United States of America	United States of America

40. (e) The increase and decrease of the use of natural and synthetic analgesics in specific countries is likewise of considerable interest. For this purpose, the rates of dosage consumption during 1953 have been compared with those for the year 1955 in countries having a consumption of both types of drug. 13/ The figures for 12 countries indicated increasing consumption of the 3 natural analgesics and those for 30 others decreasing consumption; the corresponding figures for synthetic analgesics are: 25, increasing consumption; 16, decreasing consumption.

The rôle of new natural anti-tussives

41. The use of pholcodine and dihydrocodeine seems to be increasing, and it may be of interest to compare the dosage consumption of these drugs in 1955 with the other anti-tussives as a group for the countries where both are used. (The figures refer to the number of doses per thousand population).

	Pholcodine	Dihydrocodeine	Other Anti-tussives
Australia	168	-	8542
Belgium	11	23	8903
Brazil	-	3	1038
Canada	10	-	7529
Colombia	-	29	569
France	233	-	8067
Germany, Federal Republic of	-	166	4885
Hungary	-	177	8569
Ireland	17	-	1048
Italy	-	24	1305
Japan	-	204	791
Mexico	-	10	708
New Zealand	47	-	9925
Poland	-	11	1869
Spain	2	55	1305
Switzerland	-	74	6484
Union of South Africa	29	-	1924
United Kingdom	256	-	10556
Venezuela	-	6	797

13/ Comparability may be to some extent impaired by the sharp changes in the consumption figures, occasioned perhaps by the fact that they represent the movement of drugs from wholesale to retail outlets. Consequently such changes may reflect commercial factors, as well as medical demand, if taken over a short term.

Thus the use of pholcodine amounts to approximately 2-3% of the total dosage consumption of the 7 principal narcotic anti-tussives in Australia, France and the United Kingdom and less than that in the other countries considered above. As regards dihydrocodeine, dosage consumption in Japan amounted to 26% of the total for the 7 anti-tussives, while in Colombia, the Federal Republic of Germany, Hungary and Spain the percentage was between 2 and 5.

42. Although the preceding statistics may throw light on consumption trends, they do not by themselves explain these trends, or even reveal entirely the changes in consumption that have been taking place. The Commission, informed for example of the decreasing use of natural analgesics, may wish to learn to what extent this decrease is occasioned by their replacement by synthetic analgesics or by natural drugs that are primarily anti-tussive, such as codeine and dionine, or by greater caution in the prescription of drugs, or by some other phenomenon. The increased use of narcotic anti-tussives is also of interest, as well as the disparities in the levels of consumption to be observed from country to country. 14/

14/ The PCOB has, from time to time, drawn attention to this question. (Most recently in E/OB/12, pp. 18-19).

B. The manufacture of synthetic and other new narcotic drugs

43. In order to supplement the data on consumption furnished in the preceding section, figures indicating the quantities of each of eight new drugs manufactured during the years 1951-1955 in the various countries concerned and for the world as a whole appear in Table D below. The table covers the following 6 synthetic and 2 natural narcotics: pethidine, methadone, ketobemidone, levorphanol, phenadoxone, alphaprodine, dihydrocodeine and pholcodine.

TABLE D

QUANTITIES OF EIGHT NEW NARCOTICS MANUFACTURED ANNUALLY, 1951-1955, BY COUNTRY

(Information furnished by the Secretariat of the PCOB)

N.I. = No information.

Country	Year	Pethidine	Methadone	Ketobemidone	Levorphanol	Phenadoxone	Alphaprodine	Dihydrocodeine	Pholcodine
		Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg
	1951	17	32 15/	-	-	-	-	-	-
	1952	4	28	-	-	-	-	-	-
Austria	1953	11	4	-	-	-	-	-	-
	1954	10	11	-	-	-	-	-	-
	1955	-	16	-	-	-	-	-	-
	1951	-	9	-	-	-	-	-	-
	1952	9	17	-	-	-	-	7	-
Belgium	1953	10	13	-	-	-	-	12	-
	1954	-	-	-	-	-	-	19	4
	1955	-	10	-	-	-	-	15	2
	1951	-	-	-	-	-	-	-	-
	1952	-	4	-	-	-	-	-	-
Czecho-	1953	6	2	-	-	-	-	-	-
slovakia	1954	10	1	-	-	-	-	-	-
	1955	9	4	-	-	-	-	-	-
	1951	-	31	-	-	-	-	-	-
	1952	-	-	12	-	-	-	-	-
Denmark	1953	-	8	35	-	-	-	-	-
	1954	-	30	24	-	-	-	-	-
	1955	-	-	40	-	-	-	-	-
	1951	-	11	-	-	-	-	-	-
	1952	-	19	-	-	-	-	-	-
Finland	1953	-	17	-	-	-	-	-	-
	1954	-	12	-	-	5	-	-	-
	1955	-	28	-	-	4	-	-	-
	1951	301	-	-	-	-	-	-	49
	1952	300	-	-	-	-	-	-	79
France	1953	180	-	-	-	-	-	-	105
	1954	332	-	-	-	-	-	-	153
	1955	382	-	-	-	-	-	-	250

15/ The statistics refer only to the period May-December, 1951.

TABLE D (contd.)

Country	Year	Pethidine	Methadone	Ketobemidone	Levorphanol	Phenadoxone	Alphaprodine	Dihydrocodeine	Pholcodine
		Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg
German Democratic Republic	1951	-	-	-	-	-	-	-	-
	1952	-	-	-	-	-	-	-	-
	1953	-	-	-	-	-	-	-	-
	1954	-	-	-	-	-	-	3	-
	1955	-	-	-	-	-	-	11	-
Germany, Federal Republic of	1951	1 170	-	-	-	-	-	-	-
	1952	369	-	-	-	-	-	-	-
	1953	730	149 16/	-	-	-	-	169	-
	1954	846	207	-	-	-	-	407	-
	1955	1 177	-	-	-	-	-	420	-
Hungary	1951	-	-	-	-	-	-	-	-
	1952	-	-	-	-	-	-	-	-
	1953	-	-	-	-	-	-	-	-
	1954	-	-	-	-	-	-	52	-
	1955	-	-	-	-	-	-	-	-
Israel	1951	-	-	-	-	-	-	-	-
	1952	-	-	-	-	-	-	-	-
	1953	23	-	-	-	-	-	-	-
	1954	15	1	-	-	-	-	-	-
	1955	28	-	-	-	-	-	-	-
Italy	1951	738	10	-	-	-	-	-	-
	1952	727	17	-	-	-	-	31	-
	1953	588	11	-	-	-	-	22	-
	1954	423	-	-	-	-	-	22	-
	1955	180	3	-	-	-	-	-	-
Japan	1951	-	-	-	-	-	-	-	-
	1952	-	-	-	-	-	-	77	-
	1953	-	-	-	-	-	-	348	-
	1954	-	-	-	-	-	-	540	-
	1955	-	-	-	-	-	-	496	-
Netherlands	1951	499	-	-	-	-	-	2	-
	1952	113	2	-	-	-	-	-	-
	1953	195	2	-	-	-	-	-	-
	1954	401	2	-	-	-	-	5	2
	1955	596	-	-	-	-	-	-	-

16/ The statistics refer only to the period July-December, 1953.

TABLE D (contd.)

Country	Year	Pethidine	Methadone	Ketobemidone	Levorphanol	Phenadoxone	Alphaprodine	Dihydrocodeine	Pholcodine
		Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg
	1951	-	-	-	-	-	-	-	-
	1952	-	-	-	-	-	-	7	-
Poland	1953	-	-	-	-	-	-	1	-
	1954	-	-	-	-	-	-	4	-
	1955	-	-	-	-	-	-	2	-
	1951	-	-	-	-	-	-	-	-
	1952	-	-	-	-	-	-	-	-
Spain	1953	21	-	-	-	-	-	17	-
	1954	4	-	-	-	-	-	15	2
	1955	-	-	-	-	-	-	-	-
	1951	-	-	-	48 [17]	-	-	2	-
	1952	-	49	125	11 [17]	-	-	31	-
Switzerland	1953	-	3	65	6	-	-	23	-
	1954	-	-	-	43	-	-	3	-
	1955	-	71	-	-	-	-	-	-
	1951	2 559	238	-	-	144	-	-	-
United	1952	2 189	181	-	-	38	-	-	N.I.
Kingdom	1953	799	129	-	-	41	-	-	101
	1954	2 480	232	-	-	33	-	-	367
	1955	2 229	139	-	-	37	-	3	307
	1951	6 870	190	-	-	-	7	-	-
United	1952	7 901	64	-	-	-	19	-	-
States of	1953	7 757	54	-	-	-	24	-	-
America	1954	8 034	106	-	4	-	52	-	-
	1955	9 942	165	-	11	-	45	-	-
	1951	-	-	-	-	-	-	-	-
	1952	-	-	-	-	-	-	-	-
Yugoslavia	1953	-	2	-	-	-	-	-	-
	1954	-	6	-	-	-	-	-	-
	1955	-	25	-	-	-	-	-	-
	1951	12 154 [18]	521 [18]	-	-	144	7	2	49 [18]
	1952	11 612 [18]	381 [18]	137	48	38	19	91	79 [18]
TOTALS	1953	10 320 [18]	394 [18]	100	11	41	24	592	206
	1954	12 555 [18]	608 [18]	24	10	38	52	1 040	526
	1955	14 543 [18]	461 [18]	40	54	41	45	1 039	561

17/ Hydrochloride of the drug.

18/ Incomplete.

44. Several other new drugs have been manufactured in small quantities in recent years, including: (i) racemorphan: 1951: 32 kg; 1952: 38 kg; 1953: 31 kg; 1954: 6 kg; 1955: none; (ii) isomethadone: 1951: 6 kg; 1953: 24 kg; (iii) betaprodine: 1951: 9 kg; 1952: 2 kg; (iv) normethadone: 1955: 7 kg (figure incomplete); (v) properidine: 1955: 11 kg; (vi) dimepheptanol: 1951: 1 kg.

P A R T I I I

ABUSE

45. It should be stressed at once that a sharp distinction should be made between the status of the information in this Part and any deductions therefrom and that in the preceding Part. Part II is based on statistics which, while not quite complete, are firmly established and very comprehensive; on the other hand Part III, as is explained more fully below, deals with statistical and other material which is very far from comprehensive and whose quality varies within a wide range. This situation may be explained in part by the fact that the questions dealt with in these sections of the study are often very difficult to evaluate at the national level, and in many instances national authorities lack information or the information available is, in certain respects, defective.

46. Despite the foregoing considerations, the available data on questions likely to be of interest have been included because they may throw some light thereon and because attention is thereby drawn to the gaps in, and shortcomings of, such data. In this connexion, it may be pointed out that reports do not generally indicate explicitly the limitations of the data they contain.

47. The questions dealt with below are as follows: (i) the areas and the incidence of the abuse of synthetic and other new narcotics on the one hand, and the traditional natural narcotics on the other; (ii) the areas and the incidence of addiction to each of the various synthetic and other new narcotic drugs; (iii) the sources from which addicts obtain the synthetic or other new narcotics they use; (iv) the ways in which addicts to synthetic or other new narcotics became addicted; and (v) the correlation of the therapeutic use of a new drug with the development of addiction to it, and vice versa.

48. It should be noted that other aspects of addiction have been dealt with in the paper entitled "Analytical Study on Drug Addiction" (E/CN.7/318). These aspects include: (i) the known incidence of addiction in the various countries and territories, arranged by drug or category of drug used (however, information on specific synthetic narcotics will be found only in the present paper); (ii) the types of institutional treatment available for addicts in the various countries and territories; and (iii) the extent to which the coca leaf is chewed in countries where this presents a public health problem.

49. In this paper, the word "abuse" is used in a comprehensive general sense referring not only to consumption by addicts or persons in the process of becoming addicts, but also to illicit manufacture and all activities by which narcotics are diverted from their normal use, whether by an individual for his own consumption or by an organized group conducting an illicit traffic.

50. It should be mentioned that practically no reports have yet been received of the abuse of the seven natural narcotics placed under international control since 1945, and therefore in the following paragraphs the abuse of natural narcotics (i.e. the traditional ones) is compared directly with that of synthetic narcotics. The explanation of why the newer natural drugs do not seem to have given rise to much addiction as yet may be as follows: three of these drugs - pholcodine, dihydrocodeine[1/] and acetyldihydrocodeine - are moderate-strength narcotics similar to codeine and dionine, and while the first two are in fairly widespread medical use, they would not be very attractive to the addict. The remaining four drugs - metopon, methyldihydromorphine, methyldesorphine and oxymorphone - are strong narcotics, but are made and consumed, if at all, in very small quantities.

A. Extent of the abuse of natural and synthetic narcotics

51. The extent of the abuse of natural narcotics, on the one hand, and of synthetic narcotics on the other, as reported by governments, has been shown in two different ways: first, on a geographical basis, by indicating which countries have reported addiction to and/or illicit activities involving each category of drugs (in Table E), and secondly, on a quantitative basis, by indicating the number of addicts to each category of drug reported by the various countries for which comparative statistical data are available (in Table F). This information, which refers to 83 countries (but not to non-self-governing territories[2/]), covers the years 1954 and 1955;

1/ This drug, although placed under international control in 1951, is not a "new" drug. Due to an oversight at the time of the 1931 Conference, it could not be brought within the scope of the 1931 Convention. Since 1951, its use for medical purposes seems to have been increasing.

A few addicts to dihydrocodeine have been reported by the Federal Republic of Germany.

2/ The data concerning the number of addicts to natural and synthetic narcotics respectively living in non-self-governing territories, as reported by governments, have been reproduced in Tables A - E of the Analytical Study on Drug Addiction (E/CN.7/318).

it is; in general, that made available by governments in reply to the new group of questions in the Form of Annual Reports.[3/] All Annual Reports for these years received on or before 1 March 1957 have been studied.

52. In Table E, the countries reporting addiction to natural and synthetic narcotics respectively have been listed and correlated with those reporting illicit activities with regard to each of these categories of narcotic. In this connexion, the phrase "illicit activities" is used to refer to the multiform acts by which the addict obtains drugs for himself or by which the illicit trafficker supplies the addict, e.g. the falsification of prescriptions, the obtaining of a prescription under false pretences, the theft of narcotics, the unauthorized manufacture, transportation or sale of narcotics.

53. The breakdown between addiction and illicit activities is useful because a certain number of countries furnish information for one phase and not for the other. Furthermore, although the existence of illicit activities may not always indicate the presence of addiction, nor does the presence of addiction invariably signify the existence of illicit activities, the two are usually coupled, and the discovery of one carries with it a fairly strong presumption of the existence of the other in some degree.

54. The character of the data on which Table E is based and as a result the method of classifying countries in groups (which has been adopted for clarity) limit the purposes for which the table may be used. Countries have been grouped solely on the basis of the information they have furnished, no matter how incomplete it may be, and thus conclusions may not be drawn from this table alone. For this purpose, the details - and particularly the respective numbers of addicts and quantities of narcotics seized (so far as such data are available) - are given in subsequent paragraphs and tabulations. As regards addiction, the information in Table E is expanded in Table F and the paragraphs following it. As regards illicit activities, the information in Table E is amplified in Section C, below, which deals with the various sources of addicts' drug supplies.

3/ The new questions on addiction appear in Chapter XII of the Form of Annual Reports for 1954 and in Chapter X of the revised Form of Annual Reports for 1955, (E/NR.1954/Form, E/NR.1955/Form); the new questions on the illicit traffic appears in Chapter XI of E/NR.1955/Form.

TABLE E

REPORTING BY GOVERNMENTS OF ADDICTION TO, AND ILLICIT ACTIVITIES [4] IN, NATURAL AND SYNTHETIC NARCOTICS FOR THE TWO-YEAR PERIOD, 1954-1955

ADDICTION [5]	ILLICIT ACTIVITIES [5]				
	Countries reporting illicit activities in both natural and synthetic narcotics (17)	Countries reporting illicit activities in natural narcotics only (45)	Countries reporting illicit activities but not indicating the nature of the various drugs involved (3)	Countries not reporting illicit activities (7)	Countries furnishing no information (11)
Countries reporting cases of addiction to both natural and synthetic narcotics (32)	Australia Austria Belgium Canada France Germany, Fed. Rep. of Haiti Italy Japan New Zealand Panama Switzerland United States of America Viet-Nam	Argentina Chile Cuba Ecuador Guatemala Iran Ireland Israel Mexico Sudan Sweden Tunisia United Kingdom Venezuela	Finland Norway Poland	Union of Soviet Socialist Republics	

4/ This term includes the falsification of prescriptions or the obtaining of prescriptions under false pretences, the theft of narcotics, and the various phases of the illicit traffic, including illicit manufacture.

5/ In some cases the number of addicts or cases of illicit activities in a country to a particular category of narcotic was very small. For information regarding the extent of addiction and illicit activities, see below (particularly Tables F, H and I and Sections B and C).

T A B L E E (Contd.)

ADDICTION 5/	ILLICIT ACTIVITIES 5/				
	Countries reporting illicit activities in both natural and synthetic narcotics (17)	Countries reporting illicit activities in natural narcotics only (45)	Countries reporting illicit activities but not indicating the nature of the various drugs involved (3)	Countries not reporting illicit activities (7)	Countries furnishing no information (11)
Countries reporting cases of addiction to natural narcotics only (24)	Colombia 6/	Burma 6/ Cambodia Ceylon 6/ China Costa Rica Czechoslovakia Egypt Greece Hungary India Indonesia Iraq Korea, Republic of Laos 6/ Lebanon Morocco Pakistan Philippines Saudi Arabia Thailand Tunisia Turkey Union of South Africa		El Salvador	

6/ No information, 1954-1955; data for 1953 has been used

TABLE E (Contd.)

ADDICTION 5/	ILLICIT ACTIVITIES 5/				
	Countries reporting illicit activities in both natural and synthetic narcotics (17)	Countries reporting illicit activities in natural narcotics only (45)	Countries reporting illicit activities but not indicating the nature of the various drugs involved (3)	Countries not reporting illicit activities (7)	Countries furnishing no information (11)
Countries reporting cases of addiction to synthetic narcotics only (2)	Denmark Luxembourg				
Countries not indicating drugs of addiction used (2)		Portugal Spain			
Countries reporting no known cases of addiction (6)		Dominican Republic Hashemite Kingdom of Jordan Yugoslavia		Albania Ethiopia Romania	
Countries furnishing no information (17)		Bolivia Brazil Netherlands Peru		Bulgaria German Democratic Republic	Afghanistan Honduras Iceland Liberia Libya Nepal Nicaragua Paraguay Syria Uruguay Yemen

55. Table F contains the available information on the number of known addicts to natural and synethetic narcotics respectively received by 1 March 1957 from countries where addiction to both categories of drug was known to exist side by side. Of the 83 countries under consideration at present, 32 have indicated the existence of addiction to both natural and synthetic narcotics within their borders; however, only 18 of these countries have furnished statistical data thereon. These data have been included in the table, while non-statistical information on the extent of addiction to natural and synthetic narcotics in the other 14 countries concerned immediately follows the table.

56. In the paper "Analytical Study on Drug Addiction"[7/], the difficulties regarding the interpretation of the statistical data on drug addiction have been described. They fall into two categories - administrative and statistical. The administrative difficulties arise from (i) the differing legal and administrative practices of governments and the diverse character of national conditions and of addiction itself, as a result of which the degree to which governments become aware of and register addicts differs; (ii) the fact that the extent to which governments keep track of addicts after their initial identification varies; and (iii) the fact that there is no statistically-reproducible criterion of what constitutes an addict. Also, statistical practices involved in maintaining the registers or in submitting data on addiction are inconsistent as between one country and another, e.g. the registers may or may not contain among the addicts persons who receive large doses of drugs regularly to relieve pain, or the length of time addicts who have disappeared remain in the registers may be 5, 10 or 25 years.

57. In order to make the meaning of the figures as clear as possible, footnotes explaining the bases on which they were compiled (in so far as this has been indicated by governments) have been included. Owing to the gaps and to the lack of comparability between the available statistics, the incidence of addiction to synthetic and natural narcotics cannot be calculated for the world as a whole.

7/ E/CN.7/318, paras. 5-11

TABLE F

NUMBER OF KNOWN ADDICTS TO NATURAL AND SYNTHETIC NARCOTICS 1954 AND 1955, AS REPORTED BY GOVERNMENTS[8]

Country	1954		1955	
	Natural	Synthetic	Natural	Synthetic
Argentina	206[9],	6[9]	4[9]	2[9]
Australia	104[10]	15[10]	95[10]	14[10]
Austria	1 383[11]	170[11]	1 468[11]	173[11]

---

[3] Only countries furnishing statistics on the incidence of addiction to both categories of narcotic have been included in this table. For purposes of comparison, it may be useful to give figures furnished by several countries which have reported addiction to natural but not to synthetic narcotics. In the following listing, the year and the number of addicts reported appear after the name of of the country or territory concerned. Burma (1953, 58 412), Cambodia (1954, 2 017) Hong Kong (1955, 9 005), India (1955, 17 353), Iraq (1954, 312), Republic of Korea (1955, 3 900), Singapore (1955, 15 000), Thailand (1954, 18 826), and Turkey (1954, 819). In some cases, these figures are incomplete.

[9] Calculated on the basis of percentages; includes 212 addicts registered during the period 1944-54. Cases of addiction to cocaine were omitted.

[10] The figures are incomplete. They include (a) complete data on known addicts for Queensland, Tasmania and Western Australia; (b) similar data for 1954 only for Southern Austrlia; (c) data for addicts registered in 1954 only for Victoria; and (d) no data for New South Wales. Some States included figures for opium smokers, while others did not. In New South Wales, 433 opium smokers and 214 addicts to manufactured drugs had come to notice during the period 1935-1954, and six new names were added in 1955; although there was no breakdown between users of natural and synthetic narcotics, morphine and pethidine were mentioned as the drugs mainly used by addicts.

[11] The figures include large-scale therapeutic users of narcotics; the total number of addicts was estimated at 200-300. 31 persons in 1954 and 10 in 1955 used various other narcotic drugs, which were not identified.

T A B L E F (contd.)

NI = No information

Country	1954		1955	
	Natural	Synthetic	Natural	Synthetic
Belgium	118[12]	71[12]	107[12]	52[12]
France	N.I.	N.I.	71	12
Germany, Federal Republic of	1 778[13]	1 425[13]	2 367[13]	1 840[13]
Ireland	N.I.	N.I.	1	3
Israel	32[14]	7[14]	N.I.	N.I.
Italy	N.I.	N.I.	43[15]	37[15]
Japan	796[16]	151[16]	640[16]	32[16]

[12] The figures indicate number of addicts discovered by pharmacy inspectors during the year in question; not all pharmacies are inspected annually.

[13] In 1954, there were 1 779 persons using two or more drugs simultaneously. About 50% used natural and synthetic substances together, and about 25% natural substances solely and the remaining 25% synthetic substances solely. In 1955, a breakdown of the latter two groups was given and has been included in the figures. 899 persons took both categories of drug simultaneously.

[14] There were 70 registered addicts. In addition to those listed above, there were 19 who used two or three drugs simultaneously, and twelve for whom there was no information. It does not appear that hashish addicts had been included in these figures. In 1955, the number of addicts had increased to 73, but no breakdown by category of drug was given.

[15] In addition there were 72 addicts for whom the type of drug used was not given. Only addicts reported in 1955 are included in these figures.

[16] 8 700 addicts were registered during 1946-1955. The figures reflect the annual registrations for 1954 and 1955. In addition, 46 persons used "other drugs" in 1954, and 25 in 1955.

TABLE F (contd.)

Country	1954		1955	
	Natural	Synthetic	Natural	Synthetic
New Zealand	38	25	N.I.	N.I.
Poland	93	1	N.I.	N.I.
Sweden	107	23	N.I.	N.I.
United Kingdom	261[17]	51[17]	241[17]	94
United States of America	22 528[18]	1 515[18]	10 492[19]	390[19]
Union of Soviet Socialist Republics	N.I.	N.I.	371[20]	18[20]
Venezuela	103	3	22[21]	3[21]
Viet-Nam	11 179	-	[22]	[22]

17/ 1954 figures were calculated on the basis of percentages, which included both sole use and use in combination with other narcotics. Users of opium and cannabis were not included for 1954 or 1955.

18/ Calculated on the basis of percentages. They represent the addicts that had been counted by January 1953.

19/ Addicts registered in 1955 only.

20/ Calculated on the basis of percentages. The synthetic drug used by addicts was promedol.

21/ Only the figures for addicts to manufactured drugs were given; these had remained unchanged from 1954.

22/ The number of opium addicts was estimated to be 20 000. There is some illicit use of pethidine together with manufactured drugs of natural origin, e.g. morphine oxycodone.

58. As a supplement to the foregoing figures, the non-statistical data on addiction to natural and synthetic drugs are given below for other countries reporting the existence of both types of addiction within their borders. The information has been obtained from the Annual Reports of the countries concerned for the years indicated.

59. Canada (1955): Although diacetylmorphine was reported to be the principal drug of addiction, especially among the 2 708 known criminal addicts, morphine, pethidine and methadone were chiefly used by the 493 known therapeutic addicts and by the 224 known addicts belonging to the medical or related professions. It was mentioned that some addicts who used to obtain their narcotics from the illicit traffic were obtaining methadone by doctors' prescriptions.

60. Chile (1954, 1955): Methadone, pethidine and morphine solutions were the manufactured drugs reported to be mainly used by addicts, 75 of whom had been put under supervision by 18 October 1954. One opium smoker was registered during 1955, and there was coca-leaf chewing by workers in the northern part of the country.

61. Cuba (1954, 1955): It was reported that morphine and cannabis were the drugs mainly used by addicts. Synthetic narcotics had not been responsible for much addiction, and pethidine and methadone were named as the synthetics most often encountered. It had been found that cocaine and diacetylmorphine were not commonly used, and there was practically no addiction to codeine and dionine. Opium-smoking was sporadic.

62. Ecuador (1954): There were 14 known addicts, and the narcotics generally used were reported to be morphine and pethidine.

63. Finland (1955): The number of addicts was estimated at 200-300, and morphine and methadone were mentioned as the drugs mainly used.

64. Guatemala (1955): There were 11 known addicts who in the main used morphine and pethidine.

65. Haiti (1954, 1955): The number of drug addicts was estimated at more than 30, and morphine, pethidine and ketobemidone were mentioned as the drugs most commonly used.

66. Iran (1954, 1955): Thirteen morphine addicts were reported in 1954, while 3-4 additional addicts were registered in 1955. In that year, pethidine and "stabmidone" (probably methadone) were reported as the manufactured drugs principally used by addicts. The number of opium addicts was estimated at 1 500 000.[23/]

23/ E/OB/11, p.8.

67. Mexico (1955): 89% of the 206 known addicts in Mexico were reported to use cannabis, and only 5.7% of them took it in conjunction with a synthetic narcotic. There was no indication of the breakdown among the 11% who used manufactured drugs alone.

68. Norway (1955): There were estimated to be 500-550 addicts who mainly used natural drugs and occasionally employed synthetic narcotics.

69. Panama (1954): Pethidine was the narcotic drug most generally used; some opium smokers were also reported.

70. Sudan (1955): Pethidine and morphine were reported to be used on a small scale. There was also hashish smoking.

71. Switzerland (1954, 1955): Seizure reports indicated some abuse of pethidine, methadone, ketobemidone, and levorphanol. Natural drugs such as opium, morphine, heroin, etc., were also mentioned.

72. Tunisia (1955): There was one known case of pethidine addiction. There was not yet a system for registering addicts, although a draft scheme was under consideration. Opium, morphine, diacetylmorphine and cannabis were reported to be the drugs mainly used by addicts.

B. Extent of addiction to the various synthetic narcotics

73. To indicate the extent to which the various synthetic narcotics are reported to be favoured by addicts, the same procedure has been followed as in Section A above, i.e. the question is considered first on a geographic basis and then on a quantitative one. The available information on these points appears in Tables G and H below, and the two tabulations should be studied together. Only the countries furnishing statistical data have been included in Table H, but non-statistical material has been summarized in the paragraphs following it. In addition to the 34 countries reporting addiction to synthetic narcotics, data has been included for the five territories which have reported addicts to these narcotics, in order to complete the information in Tables A - E of the "Analytical Study on Drug Addiction".[24/]

24/ E/CN.7/318; in this connexion, see para. 12.

T A B L E G

ADDICTION TO INDIVIDUAL SYNTHETIC NARCOTICS, 1954-1955, AS REPORTED BY GOVERNMENTS

Country or territory	Pethidine	Methadone	Keto-bemidone	Levor-phanol	Others
Argentina	X		X		
Australia	X	X			
Austria	X	X			
Belgium	X	X	X	X	
Canada	X	X			
Chile	X	X			
Cuba	X	X			
Cyprus	X	X			
Denmark	X	X			
Ecuador	X				
Federation of Rhodesia and Nyasaland	X	X			
Finland		X			
France	X				
Germany, Federal Republic of	X	X	X	X	X 25/
Guatemala	X				
Haiti	X		X		
Iran	X				
Ireland	X				
Israel	X				
Italy	X	X			
Japan					X 26/
Luxembourg	X 27/	X 27/	X		
Malta	X				
Mexico 28/					

25/ Racemorphan.

26/ Dimethylthiambutene.

27/ Drugs of pethidine and methadone groups.

28/ The synthetic narcotics used were not identified.

T A B L E G (contd.)

Country or territory	Pethidine	Methadone	Keto-bemidone	Levor-phanol	Others
New Zealand	X	X			
Norway	X	X	X		
Panama	X				
Poland	X				
Sudan	X				
Sweden		X	X		
Switzerland	X	X	X	X	
Trinidad and Tobago	X				
Tunisia	X				
Uganda	X				
Union of Soviet Socialist Republics					X 29/
United Kingdom	X	X		X	X 30/
United States of America 31/	X	X 31/			
Venezuela	X				
Viet-Nam	X				

29/ Promedol.

30/ Phenadoxone.

31/ No information was furnished on addiction to synthetic drugs other than pethidine, but it is probable that since methadone was reported to have been illegally prescribed, it, too, was used by addicts to some extent.

74. The data in the foregoing table may be summarized as follows: 34 of the 39 countries and territories concerned reported addiction to pethidine; 18, addiction to methadone; 8, addiction to ketobemidone; 4, addiction to levorphanol; and 1 each, addiction to dimethylthiambutene, phenadoxone, promedol, and racemorphan. It may be noted that while addiction to pethidine and methadone has appeared in almost all parts of the world, the data indicate that addiction to ketobemidone, levorphanol and other synthetic narcotics (except for dimethylthiambutene in Japan) has rarely been discovered outside Europe. 32/

75. Table H gives the incidence of addiction to the various drugs in statistical terms, in so far as such figures have been made available by governments. Since statistics have been furnished by but 16 of the countries and territories concerned, other relevant information throwing light on the extent to which each of the drugs is used by addicts in the 23 remaining countries and territories follows the table.

76. It should perhaps be mentioned that the general comments with regard to the nature of statistics on addiction, which preceded Table F above, apply equally in the present instance.

32/ As will be seen in Table H and the paragraphs following it, the number of addicts reported - with some exceptions - is small, particularly in non-European countries.

TABLE H

INCIDENCE OF ADDICTION TO INDIVIDUAL SYNTHETIC NARCOTICS, 1954-1955, AS REPORTED BY GOVERNMENTS

N.I. = No information.

Country or territory		Pethidine	Methadone	Ketobemidone	Levorphanol	Other drugs
Argentina	1954	6 [33/]	N.I.	N.I.	N.I.	N.I.
	1955	1 [39/]	N.I.	1 [33/]	N.I.	N.I.
Australia	1954	11 [34/]	6 [34/]	-	-	-
	1955	9	7	-	-	-
Austria	1954	16 [35/]	154 [35/]	-	-	-
	1955	13 [35/]	160 [35/]	-	-	-
Belgium	1954	23 [36/]	48 [36/]	-	-	-
	1955	19 [36/]	30 [36/]	1	2	-
Cyprus	1954	5 [37/]	2 [37/]	-	-	-
	1955	N.I.	N.I.	N.I.	N.I.	N.I.
France	1954	1[illegible] [33/39/]	-	-	-	-
	1955	12 [39/]	-	-	-	-
Gemany, Fed. Republic of	1954	568	603	156	98	- [38/]
	1955	558	673	165	103	12 [38/]
Ireland	1954	-	-	-	-	-
	1955	3	-	-	-	-

33/ The figure was calculated on the basis of percentages.

34/ One addict was addicted to a combination of morphine, pethidine and methadone; this case has been included under both headings. In one or two other cases, the use of pethidine or methadone was combined with that of a natural narcotic.

35/ See footnote 11/ to Table F.

36/ See footnote 12/ to Table F.

37/ Includes one addict who used both pethidine and methadone.

38/ Racemorphan.

39/ The figure covers addicts reported in 1955 only.

TABLE H (contd.)

Country or territory		Pethidine	Methadone	Ketobemidone	Levorphanol	Other drugs
Israel	1954	7	-	-	-	-
	1955	N.I.	N.I.	N.I.	N.I.	N.I.
Italy	1954	N.I.	N.I.	N.I.	N.I.	N.I.
	1955	32 [39]	5 [39]	-	-	-
Japan	1954	N.I.	N.I.	N.I.	N.I.	151 [39] [40]
	1955	N.I.	N.I.	N.I.	N.I.	32 [39] [40]
Malta	1954	-	-	-	-	-
	1955	1	-	-	-	-
New Zealand	1954	24	1	-	-	-
	1955	N.I.	N.I.	N.I.	N.I.	N.I.
Sweden	1954	-	10	13	-	-
	1955	N.I.	N.I.	N.I.	N.I.	N.I.
Trinidad and Tobago	1954	1	-	-	-	-
	1955	N.I.	N.I.	N.I.	N.I.	N.I.
Tunisia	1954	-	-	-	-	-
	1955	1	-	-	-	-
Uganda	1954	1	-	-	-	-
	1955	-	-	-	-	-
United Kingdom	1954	54 [33]	N.I.	N.I.	N.I.	N.I.
	1955	64	21	-	2	7 [41]
Union of Soviet Socialist Republics	1954	-	-	-	-	-
	1955	-	-	-	-	16 [42]
Venezuela	1954	2	-	-	-	-
	1955	2	-	-	-	-

[40] Dimethylthiambutene.

[41] Phenadoxone.

[42] Promedol.

7. Other countries, which furnished no specific figures, gave some indication of the extent of addiction to the various synthetic narcotics. In several of these countries the addicts to these drugs seemed to be as numerous, or even more numerous, than the addicts to natural narcotics. In Denmark, pethidine and methadone were reported to be the drugs mainly used by addicts. In Finland, methadone was mentioned as one of the two narcotics mainly employed by the estimated 200-300 addicts (the other was morphine). It was reported that in Luxembourg synthetic narcotics were used by choice, and especially pethidine, methadone and ketobemidone. The first two of these, together with morphine, were mentioned as the drugs most widely used by addicts in Chile. Morphine and pethidine were said to be the manufactured drugs principally used in Ecuador and Guatemala. In Panama, pethidine was given as the manufactured drug most generally employed by addicts.

78. Elsewhere, synthetic narcotics were reported to be employed by a considerable segment of the addict population. In Canada, for example, although the 2708 criminal addicts mostly preferred and used diacetylmorphine, there was reported to be a preference for pethidine and methadone among the 493 therapeutic addicts and the 224 addicts associated with the healing professions. In addition, there had been considerable use of methadone by some criminal addicts who found it easier to obtain from licit sources. In Haiti, the abuse of pethidine and ketobemidone was mentioned. Addiction to pethidine was reported from Iran in 1955. There were several addicts to pethidine and methadone who were arrested for forging prescriptions in Switzerland; and a similar case involved prescriptions for ketobemidone and levorphanol. In the United States of America, 457 addicts to pethidine were admitted for treatment to the Public Health Service Hospital at Lexington, Kentucky, during the three-year period 1950-1953 [43/]. The illegal prescription of methadone to addicts was also reported.

79. In a third group of countries, minor use of synthetic narcotics by addicts has been reported. In Cuba and in the Federation of Rhodesia and Nyasaland, some addiction to pethidine and methadone was indicated. It was stated that pethidine, methadone and ketobemidone were occasionally used by addicts in Norway, while in 1954 there was reported to be one pethidine addict in Poland. In the Sudan, pethidine was abused on a small scale, and the same drug was also mentioned as having given rise to some addiction in Viet-Nam.

43/ WHO Technical Report Series, No.95, pp.13-16.

C. Sources of the synthetic narcotics used by addicts

80. Four aspects of this question may be mentioned: (i) the extent to which addicts are supplied lawfully by means of doctors' prescriptions or unlawfully by fraud, theft or purchase from the illicit traffic; (ii) whether addicts mostly obtain their own supplies or resort to the illicit trafficker; (iii) whether the same or different channels are used for obtaining natural and synthetic narcotics; and (iv) whether illicit manufacture plays a role in supplying the addict with synthetic narcotics.

81. The available data on this question received by 1 March 1957 has been summarized below. However, the Form of Annual Reports does not specify that the data on the sources of drugs used by addicts should be submitted separately for natural and synthetic narcotics, and it is the exception rather than the rule for governments to do so.[44/] Thus much of the data on aspects (i)[45/] and (ii) refer to both natural and synthetic narcotics. In order to supplement them, the relevant data on illicit traffic and other illicit activities have been collected from the Annual Reports, from the reports on individual cases of illicit traffic of international importance submitted under Article 23 of the 1931 Convention, from the reports of the International Criminal Police Organization, and from other available sources.

82. The information for aspects (iii) and (iv) is even more fragmentary. As regards the different channels used for obtaining natural and synthetic narcotics, the distinction is seldom made in the reports. Some of the sparse information regarding illicit manufacture may require some clarification (in this connexion, see the data for Italy and Japan below).

83. The following listing sets forth the available data for each of the 35 countries reporting addiction to or illicit activities in synthetic narcotics, covering in each case, so far as possible, the aspects described above. For purposes of convenience, the countries reporting addiction to, but not illicit activities in, synthetic narcotics have been marked with an asterisk; only one country reported illicit activity (on a small scale) but not addiction to these substances.

84. * Argentina: Registered addicts were reported to receive their drugs from licit sources.

44/ This point is referred to in E/CN.7/318/Add.1 outlining certain proposed changes in Chapter X of the Form of Annual Reports.

45/ With regard to the data on point (i), it is sometimes difficult to determine whether the narcotics lawfully supplied are given as part of a course of treatment.

85. Australia: It was stated that the situation differed from state to state. In some states, addicts were supplied with narcotics on the basis of medical prescriptions; in others, they were believed to supply themselves from licit sources by illicit means. There had been small seizures of pethidine and methadone, but it was not indicated whether these were effected in connexion with minor diversions from the licit channels or following technical violations of the narcotics law by wholesalers, pharmacists, etc.

86. Austria: It was indicated that addicts' supplies were obtained as a rule from pharmacies, mostly on authentic prescriptions. Forged prescriptions and prescriptions obtained from physicians under false pretences were also used. It was reported that the number of persons obtaining narcotics by way of the illicit traffic must have been very small; only 10 ampoules of methadone were seized in 1954 and 396 ampoules in 1955.

87. Belgium: Registered addicts were said to be supplied with narcotics by physicians. Certain addicts tried to obtain additional supplies by forging prescriptions, six instances of this having been discovered in 1955. 145 ampoules of methadone were confiscated.

88. Canada: Although the illicit traffic in diacetylmorphine was described as considerable, synthetic drugs had not yet appeared in this traffic. Some criminal addicts were reported to have tried to obtain prescriptions for methadone from physicians. Medical and professional addicts, many of whom used pethidine and methadone, obtained their requirements from legal supplies. The police had from time to time effected seizures of small quantities of pethidine and methadone, in one instance from the addict-wife of a suspected pedlar; false prescriptions were involved in other cases.

89. * Chile: No information.

90. Colombia: In 1953, 109 grammes of pethidine, together with other narcotic drugs, were mentioned as having been stolen from a Bogota pharmacy and not recovered.

91. * Cuba: The 20 persons undergoing treatment received their drugs (usually morphine) by medical prescription. The number of persons receiving drugs from illicit sources could not be given.

92. Denmark: In 1953, a special committee appointed by the Ministry of the Interior reported that by far the most important source of addicts' drug supplies were sales against genuine or forged medical prescriptions. The Committee was

also under the impression that addicts were to a considerable extent being supplied through genuine prescriptions. There was known to be an illicit traffic in methadone which was almost entirely supplied by means of false and genuine prescriptions (the latter being obtained under false pretences).

93. * Ecuador: Some addicts received drugs from licit sources, while others obtained them from illicit stocks. Addicts under treatment received gradually reduced doses of narcotics.

94. Finland: Most of the narcotics used by addicts were reported to be obtained in a legal way, but a part of these supplies went into the illegal trade.

95. France: In 1955, 39 addicts obtained their drugs from licit sources, 18 from illicit ones, and 11 from both simultaneously. Ten ampoules of pethidine obtained by means of multiple prescriptions constituted the only seizure of synthetic narcotics during that year.

96. Federal Republic of Germany: It was stated that 3,215 of the registered addicts, or 63%, obtained their drugs on authentic medical prescriptions, while 1,891, or 37%, obtained drugs by illicit means from licit sources. Seizures of pethidine (1954, 35 grammes, 1955, 2.2 grammes), methadone (1954, 13.9 grammes, 1955, 0.7 gramme), levorphanol (1954, 1.8 grammes, 1955, 0.007 gramme) and ketobemidone (1954, 8.2 grammes) were reported. There was, however, no indication of illicit manufacture, and these supplies had been obtained either by theft or prescription from licit sources.

97. * Guatemala: Registered addicts were reported to receive their narcotics from licit sources.

98. Haiti: Known addicts were said to be provisioned from licit sources; instances of forged and unnecessary prescriptions also came to light.

99. * Iran: It was indicated that addicts to manufactured drugs were supplied by licit means, e.g. by medical prescription.

100. * Ireland: The three known addicts to pethidine were under medical treatment.

101. * Israel: In 1955, 58 addicts were mentioned as receiving drugs from licit sources by authentic medical prescriptions, while 15 were suspected of obtaining drugs from illicit sources. It was explained that each addict was connected with a certain pharmacy where he received his daily dose by a prescription from one of the district officers of the Ministry of Health.

102. Italy: It was stated that drug addicts were normally supplied by regular medical prescriptions, and only in a few instances did they obtain their drugs by forged or stolen prescriptions or prescriptions obtained irregularly.

103. There was reported to have been some illicit manufacture of pethidine. The International Criminal Police Organization indicated that 1,000 ampoules of pethidine of local illicit manufacture had been seized in Milan in 1954. In addition, 100 ampoules purchased in Milan had been seized in Naples, 570 grammes of undetermined origin - a relatively large quantity - in Alessandria, and 22 grammes, stolen from a local shop, in Turin. In 1955, however, there was only one seizure of synthetic narcotics, involving 21 ampoules of methadone[46/].

104. Japan: In 1955, 66 physicians and nurses, who were addicts and had received drugs from licit sources, were discovered; they were said to have purchased drugs for medical purposes from narcotic wholesalers by licit means. Physicians reported 121 new addicts during the year, who had received or attempted to receive narcotics from them on false pretences. In addition, 510 addicts who obtained drugs from the illicit traffic were apprehended.

105. This traffic involved, among others, the new synthetic narcotic dimethylthiambutene, which had been placed under control as from 31 March 1954. Numerous seizures, totalling 754 grammes of powder and 43,878 ampoules, were effected in 1954, and 243 grammes and 54,427 ampoules in 1955. It was reported that much of this dimethylthiambutene had reached the illicit traffic from licitly-manufactured supplies created before controls were imposed. There was unconfirmed information that the drug had also been manufactured illicitly and that supplies had been smuggled into the country since that time[47/]. In one instance, a newly established pharmaceutical firm had put up 1 kg of dimethylthiambutene hydrochloride in ampoule form and retailed 80,000 ampoules under a trade name as an "effective sedative and anti-spasmodic, not containing narcotics." Only 16,933 of these ampoules were recovered. The number of persons arrested in connexion with this drug rose from 10% of the 2,139 persons held on narcotics charges in 1954 to 23% of the 1,986 persons held in 1955.

46/ This seizure was mentioned among the specific cases described in the advance copy of Chapter XI of the Annual Report for 1955 (E/CN.7/R.5/Add.14), but was not referred to in the table of seizures in the Chapter XI embodied in the Annual Report (E/CN.7/R.5/Add.14/Corr.1).

47/ However, the observer of Japan at the Commission's eleventh session stated that "There was no evidence of illicit manufacture and import". (E/CN.7/SR.314, p.17).

106. In addition, 385 grammes of pethidine hydrochloride and 33 tablets were seized in the office of a pharmaceutical firm employee who claimed he had obtained them before the drug had been placed under control.

107. Again, 22.8 grammes of a drug called "dorantin" (probably pethidine) was found in a private home. There was no indication of its origin.

108. Luxembourg: All the known addicts were reported to be supplied from licit sources and as a general rule by authentic medical prescriptions. A few isolated cases, involving forged prescriptions, had been discovered.

109. * Mexico: The Government assumed that the registered addicts received their drugs from illicit sources. There had been no seizures of synthetic narcotics in 1954 and 1955.

110. New Zealand: Provision had been made in the Dangerous Drugs Regulations[48/] for controlling the supply of narcotic drugs to addicts and for restricting them to one prescriber and one chemist. 67 of the 70 addicts in the country received their drugs in this way. Three addicts obtained drugs by illicit means; one, for example, had attempted to procure pethidine in quantities beyond his allotment by adopting a false name.

111. Norway: In 1953, it was reported that practically all drug addicts were receiving narcotics on prescription, and that there had only been rare cases of forged prescriptions. Usually, the health authorities arranged with a local physician to supply drugs in diminishing quantities to each addict. In 1954, the number of forged prescriptions increased, and in 1955 the burglarising of pharmacies to obtain narcotics was mentioned.

112. Panama: The forging of prescriptions to secure drugs was reported in 1954.

113. Poland: It was stated that psychiatric institutes provided substitutes or tapering doses of narcotics for known addicts.

114. * Sudan: No information.

115. * Sweden: No illicit traffic in any kind of narcotic drug was reported.

116. Switzerland: The addicts considered as sick persons were said to receive the doses they needed from an official doctor or from a doctor designated by the authorities. Several cases in which pethidine, methadone, ketobemidone and levorphanol were obtained by forged prescription had been reported.

48/ E/NL.1952/44, section 56.

117. * Tunisia: No information.

118. * Union of Soviet Socialist Republics: Known drug addicts were not attached to particular pharmacies or clinics for the supply of a definite drug "ration", but were usually treated in psychiatric institutions.

119. * United Kingdom: The 335 known addicts in the United Kingdom received their narcotics from licit sources, and there was very little illicit traffic in manufactured drugs.

120. United States of America: Small confiscations of pethidine and methadone were reported in 1954 and 1955. One case involved a physician who had issued prescriptions for 10,320 methadone tablets for addicts. Another concerned a pharmacist who was selling pethidine illicitly. In still another instance, quantities of both drugs were found in the possession of four addicts who had engaged in an armed robbery of a pharmacy.

121. * Venezuela: Registered drug addicts could obtain narcotics by means of a permit issued by the Ministry of Public Health and Social Welfare.

122. Viet-Nam: Pethidine confiscations, involving 35.3 grammes, were reported in 1955.

123. The only generally available indication of the extent of the rôle played by the illicit traffic as a source of the drugs used by addicts is that given by the quantities seized. For this reason, the seizures of five synthetic drugs have been drawn up in tabular form. In addition, in order to facilitate a comparison between seizures of synthetic and natural narcotics, the available data on total world seizures of those narcotics most often found in the illicit traffic have been expressed in terms of therapeutic doses.

124. Table I summarizes the data on seizures of synthetic narcotics for the years 1954 and 1955 by country and for the world as a whole. It should be borne in mind that some of the cases included may have been technical seizures from licensed handlers who failed to observe proper precautions for safeguarding the drugs in question or who were found to have committed other minor irregularities.

Key: cc = cubic centimetres
amp = ampoules
tabl = tablets

T A B L E I

SEIZURES OF SYNTHETIC NARCOTICS, 1954-1955, AS REPORTED BY GOVERNMENTS

Weights given in grammes

Country		Pethidine	Methadone	Ketobemidone	Levorphanol	Dimethylthiambutene
Australia	1954	2	-	-	-	-
	1955	4.1	0.33	-	0.006	-
Austria	1954	-	10 amp	-	-	-
	1955	-	396 amp	-	-	-
Belgium	1954	-	145	-	-	-
	1955	-	-	-	-	-
Canada	1954	3 cc 49/	4 tabl	-	-	-
	1955	3 amp 49/	- 50/	-	-	-
Denmark	1954	-	51/	-	-	-
	1955	-	52/	-	-	-
France	1954	10 amp 53/	-	-	-	-
	1955	-	-	-	-	-
Germany, Fed. Rep. of	1954	35	13.9	8.2	1.8	-
	1955	2.197	0.693	-	0.007	-

49/ The seizure of one of these ampoules was reported by the International Criminal Police Organization (E/CN.7/310, para. 29); Chapter XI of the Annual Report of Canada for 1955 refers to four cases concerning pethidine (E/CN.7/R.5/Add.8, p. 4).

50/ Chapter XI of the Annual Report of Canada for 1955 refers to two cases concerning methadone.

51/ An important case of theft involving methadone was reported (E/CN.7/292, para. 108).

52/ There seemed to be a large demand for methadone in the illicit trade. Cases connected with this trade and also of theft and prescription forgery were referred to (E/CN.7/R.5/Add.20, pp. 1-3).

53/ Reported by the International Criminal Police Organization (E/CN.7/293, p. 23).

T A B L E I (contd.)

Country		Pethidine	Methadone	Ketobemidone	Levorphanol	Dimethylthiambutene
Italy	1954	(597 (1 100 amp [54] (10 phials	-	-	-	-
	1955	-	21 amp [55]	-	-	-
Japan	1954	(408 (33 tabl	-	-	-	(754 (43 878 amp
	1955	-	-	-	-	710.9
New Zoaland	1954	-	-	-	-	-
	1955	[56]	-	-	-	-
Switzerland	1954	[57]	[57]	-	-	-
	1955	70 amp [57]	[57]	5 amp	20 tabl	-
United States of America	1954	170	28	-	-	-
	1955	255	28	-	-	-
Viet-Nam	1954	-	-	-	-	-
	1955	35 3	-	-	-	-
TOTALS:	1954	1 212	186.9	8.2	1.8	754
	1955	296.6	29.023	-	0.013	710.9
p l u s:	1954	(3 cc (1 110 amp (10 phials (33 tabl	10 amp 4 tabl	-	-	43 878 amp
	1955	73 amp	417 amp	5 amp	20 tabl	-

54/ The seizures of 1 100 ampoules and 22 grammes of pethidine were reported by the International Criminal Police Organization (E/CN.7/293, p.27).

55/ This seizure was mentioned among the specific cases described in the advance copy of Chapter XI of the Annual Report for 1955 (E/CN.7/R.5/Add.14), but was not referred to in the table of seizures in the Chapter XI which formed part of the Annual Report (E/CN.7/R.5/Add.14/Corr.1).

56/ There was one conviction for the illegal procuring of pethidine (E/CN.7/R.5/Add.10, p.2).

57/ In both 1954 and 1955, illegal purchases of pethidine and methadone were reported, in addition to the seizure of pethidine mentioned in the table (E/NS/1955/Summary 10, p.34; E/CN.7/R.5/Add.9, pp.2-3).

125. The foregoing totals (in Table I) expressed in terms of therapeutic doses would be as follows:

Drug		Doses[58]	Ampoules[59]	Tablets[59]	Total[60]
Pethidine	1954	12 120	1 110	33	13 263
	1955	2 966	73	-	3 039
Methadone	1954	18 690	10	4	18 704
	1955	2 902	417	-	3 319
Ketobemidone	1954	1 093	-	-	1 093
	1955	-	5	-	5
Levorphanol	1954	900	-	-	900
	1955	7	-	20	27
Dimethylthiambutene	1954	15 080	43 878	-	58 958
	1955	14 218	-	-	14 218

58/ Calculated on the basis of (i) the quantities of the drugs seized and given in measures of weight and (ii) the dosages set forth in Tables B and C.

59/ The exact number of mg in each ampoule or tablet is not known, but each unit was assumed to contain one average dose of the drug concerned.

60/ In addition, 3 cubic centimetres and 10 phials were seized which could not be included in the dosage calculations.

126. The natural manufactured narcotics most often encountered in the illicit traffic are morphine and diacetylmorphine. Seizures of these narcotics during 1954[61] and 1955[62], expressed in terms of doses were as follows:

Drug		Total number of doses [58]
Morphine	1954	7 946 200
	1955	20 883 800[63]
Diacetylmorphine	1954	21 719 400
	1955	27 464 200[63]

D. Sources of addiction

127. The importance of learning how addicts obtain their supplies of drugs is matched by the need to determine the causes of addiction, usually by investigating the circumstances in which individuals became addicted. This question, and especially the desirability of obtaining statistical data on the causes of addiction, was emphasized at the last session of the Commission[64]. Such information, however, is hard to obtain, and because it is often based on the addict's word it is also difficult to evaluate.

61/ The figures were taken from E/2891, Annex VII.

62/ Data based on government reports.

63/ If supplementary data furnished to the PCOB by the Governments of Lebanon and Syria are taken into account, these figures would have to be increased to 49 683 800 doses of morphine and 27 664 200 doses of diacetylmorphine. (E/OB/12, Table XI).

64/ In this connexion, attention may be drawn to statements made by the representatives of France, Turkey, the United Kingdom and Yugoslavia (E/CN.7/SR.305, passim).

128. In the following listing, the number of cases resulting from therapeutic treatment has been compared with the number arising in other circumstances, lumped together. The difficulties in furnishing a breakdown of the non-therapeutic cases are well-known, and the Study Group on Treatment and Care of Drug Addicts convened by WHO in November 1956 has included the origin and development of addiction among the subjects recommended for further study[65].

129. Again, the available information does not distinguish between addicts to natural and synthetic narcotics, but the overall figures sometimes throw light on the origins of addiction to synthetic narcotics, especially, for example, if all or most addictions are of therapeutic or non-therapeutic origin. Furthermore, the data in paragraphs 123-126 above indicate that the newer drugs are less available in the illicit traffic[66], and in any event it might be expected that the percentage of therapeutic addicts would be higher in the case of synthetic narcotics than in that of the natural narcotics.

130. Information regarding the 33 countries that have reported addiction to synthetic narcotics appears below:

Countries where therapeutic addictions are more numerous[67] (14):

Argentina (7-0), Australia (48-0, 69 unknown), Austria, Belgium (116-42), Finland, France (38-24), Federal Republic of Germany (66.3% - 33.7%), Guatemala (4-0, 7 unknown), Iran, Luxembourg (all), New Zealand (60-5, 5 unknown), Panama, Switzerland (practically all), Union of Soviet Socialist Republics.

Countries where non-therapeutic addictions are more numerous[68] (8):

Canada, Ecuador, Ireland, Israel (40-20, 13 unknown); Japan (662-7, 28 unknown), Mexico, United States of America.

Other countries where addictions are partly therapeutic, partly non-therapeutic (2):

Denmark, Sweden (67-67, 13 unknown).

Countries furnishing no information (9):

Chile, Cuba, Haiti, Norway, Poland, Sudan, United Kingdom, Venezuela, Viet-Nam.

65/ E/CN.7/320, p.12.

66/ The relatively low seizure rate of synthetic as compared to natural narcotics would seem to confirm this, as well as much of the data given in the preceding section.

67/ In each case the first figure indicates the number of therapeutic addictions, and the second the number of non-therapeutic cases.

68/ In each case the first figure indicates the number of non-therapeutic addictions, and the second the number of therapeutic cases.

E. Question of the correlation between licit use and the incidence of addiction

131. At the last two sessions, the question has been raised whether there might not be some connexion between the use of a new narcotic in medical practice and the development of addiction to it, and also whether the extent to which such drugs were used medically was related to the incidence of addiction. In 1954, the representative of France, for example, expressed the opinion that "the number of addicts could be estimated in proportion to the use of narcotic drugs in a given country". Attention has also been drawn to the possibility that addiction is more likely to result from the use of new drugs because physicians often do not take the same precautions in prescribing them[69/].

132. In order to see whether it throws any further light on this question, the data on consumption appearing in Part II has been juxtaposed with the data on addiction given in the preceding sections of Part III. Of course, in this connexion, account has to be taken of the limitations of the addiction statistics which have already been mentioned and which must qualify any inferences that may be drawn from them.

133. The relevant data are shown in three separate tabulations. Table J correlates the reports of addiction with the data on medical use for each of five synthetic narcotics; Table K correlates the data on medical use with the reports of addiction for the same drugs; and Table L correlates the per capita medical use of these drugs with addiction rates calculated or estimated on the basis of the reports received. Table J contains data for the 50 countries for which medical use has been tabulated; Table K covers those of the 50 countries in which addiction to synthetic narcotics has been reported; and Table L gives information with regard to the 25 countries which report both medical use of, and addiction to, synthetic narcotics.

69/ E/CN.7/SR.272, pp.7-9; E/CN.7/SR.276, pp.6-7; E/CN.7/SR.304, pp.9-10. See also Ch. Vaille and G. Stern: "A Note on Synthetic Narcotics" in Bulletin on Narcotics, Vol. VIII, No.3, July-September 1956, pp.28-29.

134. In Table J below, the available material on the extent to which medical use involves addiction has been set forth for the five synthetic narcotics, pethidine, methadone, ketobemidone, levorphanol, and phenadoxone. In order to simplify the presentation, only three different levels of use have been distinguished, i.e. less than 50 doses per thousand population per annum averaged over the three-year period 1953-1955 (X), between 50 and 200 dozes (XX), and more than 200 dozes (XXX).

135. The information furnished by governments on addiction for the two-year period 1954-1955 has been divided into four categories: (i) there were one or more known addicts to the drug (P); (ii) there were no known addicts (-); (iii) although no complete statistical breakdown by drug was given, the drug in question was not mentioned as being used by addicts (-71); and (iv) no information (N.I.).

TABLE J

CORRELATION OF KNOWN ADDICTION TO THE PRINCIPAL SYNTHETIC NARCOTIC DRUGS, AS REPORTED BY GOVERNMENTS, WITH THEIR MEDICAL USE

Key: X = Average of 0-50 doses per thousand population per annum averaged for 1953-1955 period.

XX = Average of 50-200 doses per thousand population per annum averaged for 1953-1955 period.

XXX = Average of more than 200 doses per thousand population per annum averaged for 1953-1955 period.

P = Addiction known to be present, 1954-1955.

- = No known addicts.

N.I. = No information

Country[70]	Pethidine		Methadone		Ketobemidone		Levorphanol		Phenadoxone	
	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction
Argentina	X	P	-	[71]	X	P	X	[71]	-	[71]
Australia	XXX	P	XX	P	-	[72]	-	[72]	X	[72]
Austria	X	P	XX	P	-	-	-	-	-	-
Belgium	XX	P	XX	P	X	P	-	P	-	[72]
Brazil	X	N.I.	X	N.I.	-	N.I.	-	N.I.	-	N.I.
Bulgaria	X	N.I.	-	N.I.	-	N.I.	-	N.I.	-	N.I.
Canada	XXX	P	XX	P	-	[71]	X	[71]	-	[71]
Ceylon	X	-	-	-	-	-	-	-	-	-
Chile	X	P	X	P	-	[71]	-	[71]	-	[71]
Colombia	X	-	-	-	-	-	-	-	-	-
Czechoslovakia	X	-	X	-	-	-	-	-	-	-

70/ There was no medical use of any of the five drugs in China, Romania and the Union of Soviet Socialist Republics.

71/ No complete statistical breakdown of addicts by drug was given, but this drug was not mentioned as having given rise to addiction.

72/ Information on addiction is incomplete.

TABLE J (contd.)

Country[70]	Pethidine		Methadone		Ketobemidone		Levorphanol		Phenadoxone	
	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction
Denmark	XXX	P	XXX	P	XXX	[71]	-	[71]	-	[71]
Egypt	X	-	-	-	-	-	-	-	-	-
Finland	X	[71]	XXX	P	X	[71]	-	[71]	X	[71]
France	XX	P	-	-	-	-	-	-	-	-
Germany, Dem. Rep.	X	N.I.	-	N.I.	-	N.I.	-	N.I.	-	N.I.
Germany, Fed. Rep. of	XX	P	XX	P	X	P	X	P	-	-
Greece	X	-	-	-	-	-	-	-	-	-
Guatemala	X	P	-	[71]	-	[71]	-	[71]	-	[71]
Hungary	X	-	-	-	-	-	-	-	-	-
India	X	-	X	-	-	-	-	-	-	-
Indonesia	X	-	-	-	-	-	-	-	-	-
Iran	X	P	-	-	-	-	-	-	-	-
Iraq	X	-	-	-	-	-	-	-	-	-
Ireland	XX	P	XX	-	-	-	-	-	X	-
Israel	XX	P	-	-	-	-	-	-	-	-
Italy	XX	P	X	P	X	-	X	-	-	-
Japan	X	[71]	-	[71]	-	[71]	-	[71]	-	[71]
Mexico	X	N.I.[73]	-	N.I.[73]	-	N.I.[73]	-	N.I.[73]	-	N.I.[73]
Netherlands	X	N.I.	X	N.I.	-	N.I.	-	N.I.	-	N.I.

[73] The synthetic narcotics to which there is addiction were not indicated.

T A B L E J (contd.)

Country 70/	Pethidine		Methadone		Ketobemidone		Levorphanol		Phenadoxone	
	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction
New Zealand	XXX	P	X	P	-	-	-	-	X	-
Norway	XX	P	XX	P	XX	P	-	71/	-	71/
Pakistan	X	-	-	-	-	-	-	-	-	-
Peru	X	N.I.	-	N.I.	-	N.I.	-	N.I.	-	N.I.
Philippines	X	-	-	-	-	-	-	-	-	-
Poland	X	P	-	71/	-	71/	-	71/	-	71/
Portugal	X	N.I.	-	N.I.	X	N.I.	-	N.I.	-	N.I.
Romania	X	-	-	-	-	-	-	-	-	-
Spain	X	N.I.	XX	N.I.	-	N.I.	X	N.I.	-	N.I.
Sweden	X	-	XX	P	XX	P	-	-	-	-
Switzerland	XX	P	XX	P	XX	P	XX	P	-	71/
Turkey	X	-	-	-	-	-	-	-	-	-
Union of South Africa	XX	-	X	-	-	-	-	-	X	-
United Kingdom	XXX	P	XX	P	-	-	X	P	X	P
United States of America	XXX	P	XX	P	-	71/	X	71/	-	71/
Venezuela	X	P	-	-	-	-	-	-	-	-
Viet-Nam	X	P	-	71/	-	71/	-	71/	-	71/
Yugoslavia	X	-	X	-	-	-	-	-	-	-

136. In summarizing the table, the cases where the data on addiction are missing or grossly defective may be ignored. If this is done, there are only two instances where the medical use of any of the five drugs at a rate of more than 50 doses per thousand population is not accompanied by at least one case of addiction. However, lower rates of medical use are much less frequently accompanied by known addicts as in the following tabulation:

Drug	Number of countries reporting medical use of 50 doses per thousand population or less	Number of these countries reporting cases of addiction	Number of these countries not reporting cases of addiction
Pethidine	23	8	15
Methadone	7	3	4
Ketobemidone	4	3	1
Levorphanol	3	2	1
Phenadoxone	4	1	3

137. It is, of course, impossible to say how far the frequent absence of reported cases of addiction to synthetic narcotics having a relatively minor medical use is due to the limitations of the statistics on addiction.

138. In Table K below, the process is reversed, and the extent to which reports of addiction are accompanied by medical use is explored. Only the countries reporting addiction to one of the five synthetic drugs under consideration and for which dosage figures were available have been included in this table, and in cases where there was not reported to be any addiction to the drug concerned, the comparison has naturally not been made.

T A B L E K

CORRELATION OF MEDICAL USE OF THE PRINCIPAL SYNTHETIC NARCOTIC DRUGS WITH ADDICTION TO THEM AS REPORTED BY GOVERNMENTS

Country	Pethidine		Methadone		Ketobemidone		Levorphanol		Phenadoxone	
	Addiction	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction	Med. Use	Addiction	Med. Use
Argentina	X	X			X	X				
Australia	X	X	X	X						
Austria	X	X	X	X						
Belgium	X	X	X	X	X	X	X	-		
Canada	X	X	X	X						
Chile	X	X	X	X						
Denmark	X	X	X	X						
Finland			X	X						
France	X	X								
Germany, Fed. Rep. of	X	X	X	X	X	X	X	X		
Guatemala	X	X								
Iran	X	X								
Ireland	X	X								
Israel	X	X								
Italy	X	X	X	X						
New Zealand	X	X	X	X						
Norway	X	X	X	X	X	X				
Poland	X	X								
Sweden			X	X	X	X				
Switzerland	X	X	X	X	X	X	X	X		
United Kingdom	X	X	X	X			X	X	X	X
United States of America	X	X	X	X						
Venezuela	X	X								
Viet-Nam	X	X								

139. The data show that countries rarely report addiction to new drugs not in medical use within their borders. In only one case, that of levorphanol in Belgium, was there addiction unaccompanied by medical use. Of course, it is possible that if fuller information on addiction were available, other exceptions might come to light.

140. Table L below juxtaposes the calculated rates of medical consumption for five synthetic narcotics - taken this time as a group - with the calculated or estimated addiction rates for the same drugs. The medical consumption rates have been expressed in two ways - as a numerical average and in terms of three levels, i.e. less than 100 doses per thousand population averaged over the three-year period 1953-1955 (X), between 100 and 500 doses (XX), and more than 500 doses (XXX). Although, in a few cases, addiction rates have also been calculated in terms of the number of addicts per million population, the information available for this purpose is so incomplete that they may best be considered in terms of levels. Three such levels have been used, i.e. less than one addict per million population (X), between one and 10 addicts (XX), and more than 10 addicts (XXX). Where possible, the addiction rate has been calculated, but in other cases the available data (indicated in each case by a footnote) have been utilized to estimate the level or levels of the addiction rate in the country concerned. The limitations of this method are obvious, but since the bases on which the estimates were made have been included, each estimate may be judged on its merits.

TABLE L

CALCULATED RATES OF MEDICAL USE OF FIVE SYNTHETIC NARCOTICS JUXTAPOSED WITH CALCULATED OR ESTIMATED ADDICTION RATES

KEY TO LEVELS OF MEDICAL USE:

X = Less than 100 doses per thousand population per annum

XX = 100-500 doses per thousand population per annum

XXX = More than 500 doses per thousand population per annum

KEY TO LEVELS OF ADDICTION RATE:

X = Less than 1 addict per million population

XX = 1-10 addicts per million population

XXX = More than 10 addicts per million population

Country	Rate of Medical Use		Rate of Addiction	
	(Doses per thousand population) 1953-55 average	Level	Level	(Known addicts per million population)
Argentina	59	X	X	less than 1
Australia	659	XXX	XX	2 74/
Austria	220	XX	XX 75/	
Belgium	165	XX	XX	7
Canada	299	XX	XXX 76/	
Chile	36	X	XX 77/	

74/ Since there were no data for certain states, this figure is, if anything, too low.

75/ The following factors were taken into account: (1) the Government estimated 100-200 addicts among the 1 641 large-scale users of narcotics, or a ratio in the vicinity of 10%; (2) there were 173 regular users of synthetic narcotics among the 1 641 users; (3) the 1955 population of Austria was 6 974 000.

76/ The following factors were taken into account: (1) the 493 known therapeutic addicts and the 224 known addicts belonging to the healing profession were reported to use morphine, pethidine, and methadone chiefly; (2) there were also some methadone users among the 2 708 criminal addicts; and (3) the 1955 population of Canada was 15 601 000.

77/ The following factors were taken into account: (1) methadone, pethidine and morphine were reported to be the drugs principally used by the 75 addicts under supervision; (2) the 1955 population of Chile was 6 761 000.

TABLE L (contd.)

Country	Rate of Medical Use		Rate of Addiction	
	(Doses per thousand population) 1953-55 average	Level	Level	(Known addicts per million population)
Denmark	1 579	XXX	XXX [78]	
Finland	428	XX	XXX [79]	
France	66	X	XX [80]	
Germany, Fed.Rep.of	325	XX	XXX	35
Guatemala	45	X	X or XX [81]	
Iran	0.3	X	X	less than 1
Ireland	225	XX	XX	1
Israel	123	XX	XX	4

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[78] The following factors were taken into account: (1) there were estimated to be 600 addicts in Copenhagen alone; (2) pethidine and methadone were mentioned as the principal drugs of addiction; (3) the population in 1955 was 4 439 000.

[79] The following factors were taken into account: (1) the number of addicts was estimated at 200-300; (2) morphine and methadone were reported to be the principal drugs of addiction; (3) the 1955 population was 4 241 000.

[80] The following factors were taken into account: (1) 52 cases of pethidine addiction were discovered during 1946-1948 and the first nine months of 1949 (see Vaille, Ch., and Stern, G. "Drug Addiction: Medical and social aspects in France" in Bulletin on Narcotics, Vol.VI, No.2, May-August 1954, pp.1, 9; (2) during the years 1950-1952, 154 new addicts and 145 recidivists to all types of narcotics were discovered; (3) in 1953, 16% of the new addicts, or 10 of them, used pethidine, together with 5 of the recidivists; in 1954, 23% of the new addicts, or 13 of them, used pethidine, together with 3 of the recidivists; and in 1955 17% of the new addicts, or 9 of them, used pethidine, together with 3 of the recidivists; (4) there was no mention of addiction to other synthetic narcotics; (5) the population of France in 1955 was 43 274 000.

[81] The following factors were taken into account: (1) there were 11 known addicts; (2) morphine and pethidine were reported to be the principal drugs of addiction; (3) the 1955 population was 3 263 000.

T A B L E L (contd.)

Country	Rate of Medical Use		Rate of Addiction	
	(Doses per thousand population) 1953-55 average	Level	Level	(Known addicts per million population)
Italy	115	XX	XX or XXX [82]	
Mexico	8	X	X or XX [83]	
New Zealand	509	XXX	XXX	12
Norway	406	XX	XX or XXX [84]	
Poland	0.8	X	X	less than 1
Sweden	259	XX	XX	3
Switzerland	335	XX	Insufficient information	
United Kingdom	482	XX	XX	2
United States of America	632	XXX	XXX	12
Venezuela	21	X	X	less than 1
Viet-Nam	4	X	Insufficient information	

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[82] The following factors were taken into account: (1) 32 new addicts to synthetic narcotics were discovered in 1955; (2) seizures of these substances during the period 1954-1955 have been higher than those for most other countries; (3) the 1955 population was 48 016 000.

[83] The following factors were taken into account: (1) 5.7% of the 206 known addicts (i.e. 11 or 12) used cannabis in conjunction with a synthetic narcotic; (2) 10.6% of the known addicts (i.e. 22 or 23) used manufactured drugs exclusively (no breakdown between natural and synthetic narcotics being indicated); (3) the 1955 population was 29 600 000.

[84] The following factors were taken into account: (1) there were estimated to be 500-550 addicts; (2) natural drugs were used in the main and synthetic drugs "occasionally"; (3) the population in 1955 was 3 425 000.

PART IV

INTERNATIONAL ACTION

141. International action in the field of synthetic and other new narcotic drugs has assumed two forms, as follows: (a) the formulation and adoption of measures for establishing international control over such substances and for increasing its scope insofar as necessary to minimize their abuse; and (b) the collection and analysis of information needed by international organs in order to carry out this responsibility. Each of these aspects is considered below.

A. Measures taken to minimize the abuse of synthetic and other new narcotic drugs

142. These measures include (1) a multilateral treaty in force and a draft treaty (the Single Convention) under consideration by the Commission; and (2) recommendations to governments by the international bodies principally concerned, i.e. the Council, the Commission, PCOB, DSB and the Expert Committee.

1. Treaty measures

143. The first major step taken to bring synthetic narcotics[1/] under full international control was the conclusion of the 1948 Protocol. This treaty applies to all substances "liable to the same kind of abuse and productive of the same kind of harmful effects as the drugs specified in article 1, paragraph 2, of the Convention of 13 July 1931" except those to which the 1931 Convention applies and except raw, medicinal or prepared opium, coca leaf and cannabis (Indian hemp).[2/]

144. The 1948 Protocol provides that the drugs to which it has been applied should fall under one or the other of the two control regimes set forth in the 1931 Convention for the drugs to which that treaty applies.[3/] Thus the same control provisions are, in general, applied to synthetic and natural narcotics.

145. There are, however, certain differences in the procedures set forth in the two instruments for bringing new drugs under control, the more important of which may be summarized as follows:

1/ Most narcotic drugs derived from opium or coca leaf fall within the scope of the 1931 Convention. Exceptions include dihydrocodeine and acetyldihydrocodeine which were brought under international control by means of the 1948 Protocol.

2/ Article 1, para. 1, and Article 4.

3/ Article 1, para. 2.

146. (a) Circumscription of substances: The 1931 Convention limits the substances to which it may be applied to two chemical groups, i.e. products obtained from either the phenanthrene alkaloids of the opium poppy or from the ecgonine alkaloids of the coca leaf; the 1948 Protocol, as has been seen, permits any drug which is similar in its effects or its liability to abuse to be brought under control. Furthermore, only newly-developed drugs, i.e. drugs not in use for medical or scientific purposes on 13 July 1931, can be brought under control by means of the 1931 Convention; the 1948 Protocol contains no such limitation.[4/]

147. (b) Automatic prohibition of therapeutically and scientifically useless substances suspected of having addiction-producing properties: The 1931 Convention prohibits the trade in, or manufacture for trade of, any substance falling within its scope until the government concerned has found that it possesses medical or scientific value; there is no corresponding provision in the 1948 Protocol.[4/]

148. (c) Temporary control: If, under the 1931 Convention, a government authorizes trade in, or manufacture for trade of, any substance falling within its scope, that substance immediately comes under the control regime provided by the Convention, e.g. manufacture must be limited to medical and scientific needs; its use must be controlled; and the system of import certificates and export authorizations must be applied, unless the government concerned finds that it is not addiction-producing or convertible into an addiction-producing drug. The 1948 Protocol provides that the Commission may place a new drug under provisional control.[5/]

149. (d) Timing of the notification of a drug: Under the 1931 Convention, a party must notify any new drug coming within its scope as soon as trade or manufacture for trade is commenced. Under the 1948 Protocol, parties have undertaken to notify a narcotic only when they consider that the drug has similar "harmful effects" and liability to abuse; on the other hand, once the liability to abuse has been established, the government concerned has undertaken to notify it if there is any possibility of future use for medical or scientific purposes.[6/]

4/ Article 11, para. 1, of the 1931 Convention; article 1, para. 1, of the 1948 Protocol.

5/ Article 11, para. 1, of the 1931 Convention; article 2 of the 1948 Protocol.

6/ Article 11, para. 2, of the 1931 Convention; article 1, para. 1, of the 1948 Protocol.

150. (c) Procedure for determining which control regime is to be applied to drugs: The 1931 Convention provides that all drugs found by WHO to be addiction-producing should fall under the stricter of the two principal control regimes and that the decision as regards which of these regimes should be applied to drugs convertible into addiction-producing drugs should be referred to a committee of three experts "competent to deal with the scientific and technical aspects of the matter". One expert is appointed by the government that submitted the notification, one by the Commission, and the third by the other two.[7] The 1948 Protocol provides that WHO should decide which of two different control regimes should apply to such drugs.

Provisions in the Second Draft of the Proposed Single Convention

151. It may be of interest to compare the foregoing provisions with those that the Commission has decided to recommend for inclusion in the Single Convention, and which now appear in the Second Draft (E/CN.7/AC.3/7 and Corr.1) of that treaty. It is provided that the differing procedures for bringing drugs under international control of the 1931 Convention and the 1948 Protocol should be combined in one procedure having the following features:

152. (a) Circumscription of substances: Any substance that is liable to similar abuse and productive of similar ill-effects as the drugs to which the Convention applies would fall within the scope of the Single Convention.[8]

153. (b) Automatic prohibition of therapeutically and scientifically useless substances suspected of having addiction-producing properties: There would be no provision for the automatic prohibition of such substances.[9]

154. (c) Temporary control: Alternative provisions have been proposed. One follows the procedure of the 1948 Protocol, by which the Commission is empowered to impose temporary controls, while the other is similar to that of the 1931 Convention and provides that a notifying party should apply temporary controls at once and that other

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7/ Article 11, paras. 3 and 4, of the 1931 Convention; article 1, paragraph 2, of the 1948 Protocol. Because of the close parallelism between the two treaties, it may perhaps be held that the framers of the 1948 Protocol did not intend that addiction-producing drugs, in the sense that that term was applied in the 1931 Convention, should be made subject to the milder control regime.

8/ E/CN.7/AC.3/7, para. reference 63.

9/ But see below other measures providing for the prohibition of certain drugs.

parties should apply such controls as soon as they have received a copy of the notification in question.[10]

155. (d) Timing of the notification of a drug: The procedure of the 1948 Protocol has been retained, except that an alternative provision is being weighed which would require governments to notify any substance which they considered liable to similar abuse, regardless of whether or not they foresaw its use for medical or scientific purposes. WHO would also have the same right as governments to notify a drug.[11]

156. (e) Procedure for placing a drug under international control and for determining the control regime to be applied to it: Any decision to place a drug under control, or to remove it from control or to change the control regime to be applied to it, would first require the positive recommendation of WHO and then a decision of the Commission. There is also a provision under consideration by which the Council would be enabled to review such decisions.[12]

157. In addition to the procedural changes, the Commission has proposed new control measures which are especially designed to deal with problems arising from the large number of new drugs of synthetic origin. The more important of these measures are described below:

158. (a) Prohibition: There are alternative clauses providing for the mandatory or the recommendatory prohibition of certain narcotic drugs except for small amounts for use in scientific experiments. Drugs falling under this provision would be listed in a schedule annexed to the treaty, and additions or deletions from the schedule would be made by the procedure referred to under (e) above. The treaty would stipulate that narcotic drugs whose liability to be abused and to produce ill-effects was found to be particularly great, should be added to the schedule unless this liability was offset by certain substantial therapeutic advantages.[13]

10/ E/CN.7/AC.3/7, para. references 66, 67.

11/ Ibid., Article 3, para. references 63, 70.

12/ Ibid., Article 3, para. references 64, 68, 69 and 103.

13/ E/CN.7/AC.3/7, para. references 55, 56, 65.

159. (b) Control of non-narcotic intermediary materials: Parties would undertake to use their best endeavours to apply such supervisory measures as practicable to substances not falling under the Convention that might be used for the illicit manufacture of narcotic drugs; an alternative version limits the substances to those which might be used for the illicit manufacture of synthetic narcotics.[14/]

160. (c) Industrial use of narcotic drugs: Parties would not be required to apply the provisions of the treaty to narcotic drugs commonly used in industry for non-medical or non-scientific purposes provided that (a) they were denatured in such a way that they were no longer liable to abuse and that the active elements could not be recovered; and (b) statistics and possibly estimates were furnished of the quantities of each drug used for this purpose.[15/]

161. (d) Identification of narcotic drugs: The Second Draft of the Convention provides that all packages containing a narcotic drug should have on their interior wrappings a clearly visible double red band, and there was also a provision for the use of international non-proprietary names to be adopted by WHO.[16/]

2. Recommendations to governments

162. In addition to treaty measures, international action with regard to synthetic and other new narcotics has also taken the form of measures recommended to governments by the international bodies principally concerned. These measures are described below under the following headings: (a) acceptances of the 1948 Protocol; (b) exercise of strict national control; (c) provisional control measures; (d) identification of packages containing synthetic narcotics; (e) use of non-proprietary names; (f) limitation of estimates to scientific and medical needs; (g) control of intermediary products; (h) suppression and prevention of illicit manufacture; (i) measures for limiting the number of new narcotics; (j) dissemination of information to the medical and allied professions; and (k) encouragement of scientific research. Some of these recommendations were expressed as referring only to synthetic narcotics; some to both natural and synthetic narcotics.

14/ Ibid., para. reference 58.

15/ E/CN.7/AC.3/7, para. references 59-61.

16/ Ibid., para. references 525, 527; see also para. references 499 - 501 and 509 - 511.

163. Summaries of the information received up to 1 March 1957 from governments on the implementation of the recommendations of the Council and the Commission have also been included in cases where it seemed useful to do so.

(a) Acceptances of the 1948 Protocol

164. The Council,[17] the Commission,[18] the PCOB[19] and the DSB[20] have, at various times, urged governments to become parties to the 1948 Protocol as soon as possible. The present position as regards the Protocol is as follows:

165. Since May 1952 (when Council resolution 436 G (XIV) was adopted), six countries - Greece, Iraq, Ireland, Luxembourg, Pakistan, Philippines and Switzerland - which had signed the Protocol subject to acceptance, deposited their instruments of acceptance with the Secretary-General. One country - Spain - signed without reservation as to acceptance;[21] and another country - Morocco - declared it considered itself bound by the Protocol.[22]

166. Thus the number of States which have accepted the 1948 Protocol, or declared themselves to be bound thereby, now stands at 48, including the following countries:

Afghanistan
Albania
Australia
Austria
Belgium
Burma
Byelorussian Soviet Socialist Republic
Canada
Ceylon
China
Czechoslovakia
Denmark
Egypt
Ethiopia
Finland
France
Greece
India
Indonesia
Iraq
Ireland
Israel
Italy
Japan
Laos
Lebanon
Luxembourg
Mexico
Monaco
Morocco
Netherlands
New Zealand
Norway
Pakistan
Philippines
Poland
Saudi Arabia
Spain
Sweden
Switzerland
Turkey
Union of South Africa
Union of Soviet Socialist Republics
United Kingdom
United States of America
Vietnam
Yemen
Yugoslavia

17/ By resolutions 436 G (XIV), 548 H I (XVIII) and 588 D I (XX).

18/ By resolution III of Annex II, E/2891, (Report of the eleventh session).

19/ In E/OB/7, p.11; E/OB/10, p.17, and E/OB/12, p.20.

20/ In E/DSB/12, p.11 and E/DSB/14, p.6.

21/ ST/LEG/3, pp.VI-35 to VI-38.

22/ E/CN.7/317, para. 5.

167. The following 22 States which signed the Protocol subject to acceptance have still to deposit their instruments of acceptance with the Secretary-General:

Argentina	Ecuador	Paraguay
Bolivia	Guatemala	Peru
Brazil	Honduras	Romania
Chile	Liberia	San Marino
Colombia	Liechtenstein	Ukrainian Soviet Socialist Republic
Costa Rica	Nicaragua	Venezuela
Dominican Republic	Panama	Uruguay
El Salvador		

168. In considering the relatively limited participation in the 1948 Protocol, the PCOB and DSB noted[23] that a number of States not yet parties to that treaty nevertheless used synthetic narcotics, had extended national control measures to a varying number of them, furnished estimates and statistics in their regard, and were Members of the United Nations and Parties to the 1931 Convention. These States were the following:

Argentina, Bolivia, Brazil, Bulgaria, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Hungary, Iceland, Iran Jordan, Panama, Paraguay, Peru, Portugal, Romania, Thailand, Uruguay and Venezuela.

169. Three Governments have furnished information on the steps which they have taken to accept the Protocol: Argentina reported that a law approving the instrument of "ratification" was passed by the Senate at the end of 1954.[24] Chile indicated that the Protocol had been accepted in principle by the public health authorities and was going through the last stages of the constitutional procedure for its "ratification".[25] The Federal Republic of Germany stated that its acceptance was being prepared.[26]

(b) Exercise of strict national control

170. The necessity for strict control of synthetic narcotics at the national level has been stressed by the Council in three resolutions, as follows: (i) 436 G (XIV), which "requests the Secretary-General to draw the attention of governments to the desirability .... of exercising strict control over the manufacture and therapeutic use of these

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23/ E/OB/12, pp.19-20, E/DSB/14, p.6.

24/ E/CN.7/306, para. 130. In a further communication it was stated that the Argentine Republic had "acceded" to the 1948 Protocol and complied with its provisions (E/CN.7/317, para.127). In this connexion, see para. 167 above.

25/ E/CN.7/317/Add.1, Annex A.

26/ E/CN.7/306/Add.1, para.137.1. The Council, by resolution 626 C (XXII), invited the Federal Republic of Germany to adhere to the 1948 Protocol.

substances"; (ii) 548 H I (XVIII) which "calls the attention of all governments to the necessity for strict control over the possession, manufacture, import and export of, trade in, and use of synthetic narcotics"; and (iii) 588 D I (XX) requesting the Secretary-General to invite the governments concerned to report on the steps taken in pursuance of 548 H (XVIII).

171. Replies dealing specifically with this point were received from 27 countries; they indicated that in those of the countries where synthetic narcotics were used, they were under national control. In some cases it was stated that the control measures were the same as those applied to natural narcotics, while in one country stricter controls were reported to be exercised over synthetic narcotics.[27/]

(c) Provisional control measures

172. In 1949 the Expert Committee urged governments to watch substances having a structure similar to pethidine or methadone with extreme care, and to take appropriate action immediately on the discovery of the addiction-producing properties of any of them; it also recommended "that provision should be made in any new convention whereby substances of a particular chemical type, analogues of which have been proved to be habit-forming, could be placed under control until such time as they are shown not to be habit-forming."[28/] By resolution 246 G (IX), the Council requested the Secretary-General to transmit this recommendation of the Expert Committee to all governments.

173. In 1953 the Expert Committee again urged governments to watch carefully compounds having a similar chemical configuration and belonging to the same chemical group as others known to be addiction-producing, since until the contrary had been proved, they must be suspected of having addiction-producing properties. It further urged that upon the discovery of such properties in any of them, appropriate action should be taken immediately.[29/]

174. The Council adopted three other resolutions on this matter, i.e. (i) resolution 436 G (XIV) requesting the Secretary-General to draw the attention of governments to the

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27/ E/CN.7/255, passim; E/CN.7/289/Add.1, para.131.1; E/CN.7/306, paras.130, 137; E/CN.7/306/Add.1, para.137.1; E/CN.7/317, paras. 127, 142; E/CN.7/317/Add.1, Annex A; and E/CN.7/SR.253, p.11.

28/ Official Records of the WHO, No.19, Section 8.

29/ WHO Technical Report Series, No.76, Section 4.1.

desirability of bringing all synthetic drugs under national legislations on narcotic drugs as soon as they appeared; (ii) resolution 548 H I (XVIII) recommending that, pending the decision of the WHO with regard to drugs notified to the Secretary-General under the 1948 Protocol, governments should provisionally submit the substances concerned to the narcotics regime and, in particular, to the system of import certificates and export authorizations provided for in the 1925 Convention; and (iii) resolution 588 D I (XX) requesting the governments concerned to report on the steps taken in pursuance of resolution 548 H I (XVIII).

175. The PCOB, in 1951, expressed the opinion that "all synthetic narcotic drugs immediately on their appearance should be made subject to the domestic legislation governing narcotic drugs."[30/]

176. The Commission, at its eleventh session, urged "governments to pay special attention to the emergence of any new narcotic drugs and to ensure that no new drug which is, or seems likely to be, addiction-producing, is permitted to be placed on sale without control, even though the WHO may not have pronounced upon its addiction-producing quality."[31/]

177. The following Governments furnished specific data on this question. Australia reported that a close watch was kept over all new drugs placed on the market, including those in respect of which the imposition of international control was still pending. A legislative amendment was being considered authorizing prohibition of the export of narcotic drugs in respect of which international control was pending. In Belgium, the Narcotics Service took particular care that no new narcotic drug was put on the pharmaceutical market before it was placed on the schedule of addiction-producing products. In Ceylon, no new narcotic drug was to be imported or put on the market without prior sanction. The Director of the National Health Service of Chile was empowered to place any drug found to be addiction-producing under narcotics control. The authorities in Finland had paid special attention to new drugs which might be addiction-producing. In a Bill awaiting action, there was a provision that such new drugs could be controlled in the same way as the narcotic drugs already falling under the international treaties. The Government of France stated that every new analgesic had to undergo tests of its addiction-producing properties before the licence that was

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30/ E/OB/7, pp.10-11

31/ E/2891, Annex II, resolution III.

required for the marketing of any new medicine could be granted; and the same tests were required for other products which were similar to recognized narcotic drugs in their chemical structure.

178. The legislation of Luxembourg allowed synthetic narcotics to be brought under control as soon as they appeared. In the Netherlands, special attention was given to the emergence of new narcotic drugs, in co-operation with the wholesale firms, and the placing on sale of such drugs was subjected to close control. Norway reported that all "factory-made" pharmaceutical preparations had to be authorized by the Director of Health before they could be placed on the market. The import of any new synthetic narcotic notified to the Secretary-General was provisionally prohibited in Turkey until after the substance concerned was found to be a narcotic, after which it was placed under national control.

179. In the Union of Soviet Socialist Republics, the release of new drugs for manufacture and use in medical practice required special authorization by the Scientific Council of the Ministry of Health issued after pharmacological (including animal) and clinical tests. Where a substance was found to have narcotic properties capable of causing addiction, or a chemical structure closely resembling a known narcotic drug, authorization to use it was usually accompanied by an order placing it under control. The United Kingdom authorities indicated that if the available evidence were not sufficient to impose statutory controls in advance of any decision by the WHO, the Government would arrange control by administrative measures and in particular would endeavour to ensure that the drug was not exported without the express consent of the government of the importing country.[32/]

(d) Identification of packages containing synthetic narcotics

180. The Council, by resolution 436 G (XIV), requested the Secretary-General to draw the attention of governments to the desirability of ensuring that all packages containing synthetic narcotic drugs were clearly marked with a double red line for identification purposes.

181. The following comments relating to this recommendation were received: In Belgium manufacturers of synthetic narcotic drugs were required to affix a label with a double red line on the containers of these products, including proprietary medicines containing

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32/ E/CN.7/255, p.4; E/CN.7/306, para.130; E/CN.7/317, paras.127, 142; E/CN.7/317/Add.1, Annex A; and E/NR.1955/Summary, para. 256.

such drugs, and the Government made suggestions as to a uniform presentation for the lines. In Colombia, the labels of such medicaments as pethidine, methadone and preparations thereof had to bear the words "narcotic drug, habit-forming". Czechoslovakia likewise required a distinct marking of narcotics and preparations containing narcotics. In Haiti, steps were being taken to give effect to this recommendation. In the United States of America, the labels on containers of new drugs were to bear a warning as to the habit-forming quality thereof.[33/]

182. In addition, several other governments commented on this proposal in their replies to a questionnaire prepared by the Secretary-General pursuant to Council resolution 505 C (XVI). The Governments of China, Egypt, France, Greece, India, Iran, Japan, the Netherlands[34/] and Yugoslavia supported the plan to mark packages containing synthetic narcotics distinctively, e.g. with a double red line. On the other hand, the Governments of Canada, Federal Republic of Germany, Switzerland and the United Kingdom did not consider that this measure was needed.[35/]

(c) Use of non-proprietary names

183. In 1951 the PCOB suggested that in order to facilitate control, governments should only employ as the customary names for synthetic narcotic drugs the international non-proprietary names given them by the WHO in its International Pharmacopoeia. It was urged that this practice should be followed in national pharmacopoeias, faculties of medicine, medical prescriptions, labels on packages, import and export licences, relevant national and international statistics and estimates, etc.[36/]

184. The DSB, in the same year, likewise expressed its belief that the national and international control of synthetic narcotic drugs would be facilitated if governments employed the international non-proprietary names.[37/]

185. The Commission, at its ninth session in 1954, requested "the Secretary-General to draw the attention of governments to the desirability of citing, whenever possible, the international non-proprietary names of drugs proposed by the WHO (in conjunction with scientific or trade names, if so desired) in their Annual Reports and related documents."[38/]

33/ E/CN.7/255, passim; E/CN.7/306/Add.1, para. 138.1; E/CN.7/317, paras.128, 142.

34/ The Netherlands suggested that this measure should be applied to all narcotic drugs.

35/ E/CN.7/277, Section (D)(3); E/CN.7/277/Adds.1,2. Information regarding Council resolution 505 C (XVI) may be found in Section B below.

36/ E/OB/7, p.11.

37/ E/DSB/9, p.11.

38/ E/2606, Annex B.

186. The Council, by resolution 548 B II (XVIII) noted with appreciation the work of the WHO in selecting international non-proprietary names for narcotic drugs, and expressed the view that in order to ensure effective narcotics control, it was highly desirable to simplify and speed up the existing slow and complicated procedure for selecting such names for newly-developed narcotics.

187. In 1954 the Expert Committee suggested that the procedure for choosing non-proprietary names for new narcotic drugs might be quickened if (i) a government having information concerning a drug which might lead to a notification under international narcotics conventions were to take steps to suggest non-proprietary names for that substance, and (ii) a government having prepared a notification for transmittal to the Secretary-General were to send simultaneously to the Director-General of the WHO information thereon, together with suggested non-proprietary names.[39/]

188. In 1956 the Expert Committee suggested that the WHO consider the appropriateness of again drawing the attention of governments both to the foregoing means for quickening the procedure and to alternative proposals whereby the government concerned might request the WHO to propose an appropriate non-proprietary name if it could not, or had not, suggested one at the time of notification. In the absence of such a request, the WHO should on its own initiative devise a proposed non-proprietary name.[40/]

189. At its tenth session in 1955 the Commission adopted a resolution recommending again that governments should, in documents concerned with the implementation of the international treaties on narcotics, use wherever possible the non-proprietary names proposed by the WHO, in addition to the chemical or proprietary names, or both, if desired.[41/]

190. A number of countries have indicated their willingness to employ the non-proprietar names proposed by WHO, and most of them have stated that these names were already in use. These countries include Australia, Austria, Belgium, Canada, Chile, Ethiopia, Finland, France, Federal Republic of Germany, Guatemala, India, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Philippines, Romania, Switzerland, United Kingdom and United States of America.[42/]

39/ WHO Technical Report Series, 1955, 95, Section 10.

40/ WHO Technical Report Series, 1957, 116, Section 12.

41/ E/2768/Rev.1, Annex B, V.

42/ E/CN.7/306, para.146; E/CN.7/306/Add.1, para.146.1; E/CN.7/317, para.131.

(f) Limitation of estimates to medical and scientific needs

191. The Council, by resolution 436 G (XIV) requested the Secretary-General to draw the attention of governments to the desirability of limiting their estimates for synthetic narcotics to medical and scientific requirements. Belgium, Czechoslovakia and Luxembourg stated that their estimates were limited exclusively to medical and scientific requirements.[43/]

192. The DSB has frequently called attention to the overestimations of governments of their needs for most of the principal narcotics, including pethidine.[44/]

(g) Control of intermediary products

193. Information on resolution 548 H I (XVIII) of the Council dealing with this subject is given in Section B, below.

(h) Suppression and prevention of illicit manufacture

194. In 1951 the PCOB expressed the opinion that measures for the suppression of clandestine manufacture should be strengthened. Reference was made to the point that the raw materials for synthetic narcotic drugs were not themselves narcotics and were used for many other purposes, and thus their movement could not be controlled in the same way as that of opium and the coca leaf - the raw materials for natural narcotic drugs.[45/]

195. At the Commission's eleventh session, in connexion with the WHO's decision not to place levallorphan under international control, it was pointed out that although that drug was not dangerous of itself, a manufacturer of levallorphan would have availa the technical skill, the chemicals, and equipment for making the narcotic drug levorphanol.[46/]

196. The Commission therefore decided to draw the attention of governments to the dangers which might arise from the fact that levallorphan was not under international control, and to recommend that they take steps to guard against the illicit manufacture of levorphanol whenever levallorphan was manufactured.[47/]

43/ E/CN.7/255, passim.

44/ The overestimation of pethidine was mentioned in each of the DSB's last four statements. (E/DSB/11, p.9; E/DSB/12, p.9; E/DSB/13, pp.8-9; E/DSB/14, pp.8-9).

45/ E/OB/7, p.11.

46/ E/2891, para.73.

47/ E/2891, Annex III, para.11.

197. Information has been received from a number of governments concerning this matter. In France, neither the manufacture nor the use of levorphanol or levallorphan was authorized. In Australia, Belgium, China, Finland, India, the Netherlands, New Zealand, the Philippines, Portugal and Romania, levallorphan was not manufactured; for some of these countries it was specifically stated that the drug was also not imported. In Ceylon, levorphanol was not manufactured and was to be gazetted as a dangerous drug. Pakistan was considering this recommendation.[48/]

(i) Measures for limiting the number of new narcotics

198. These recommendations have either referred to individual drugs or aimed at establishing a general principle on which decisions to limit the number of new narcotics might be based. Two new drugs - ketobemidone and phenomorphan - have been the object of special recommendations to governments, and two resolutions referring to the question of limitation in general terms have been adopted.

199. Resolution 548 H II (XVIII) of the Council, after calling attention to the particularly dangerous addiction-producing properties of ketobemidone, urged governments to prohibit the manufacture, import and export of this drug, its salts, its preparations, and preparations of its salts. 35 governments have replied[49/] to this resolution, either directly or in their annual reports and the positions they have taken may be summed up as follows:

Countries adhering to a policy of prohibiting ketobemidone (21)

Australia, Austria, Brazil, Cambodia, Canada, Chile, China, El Salvador, Ethiopia, Finland[50/], France, India, Japan, Luxembourg, Mexico, New Zealand, Saudi-Arabia, Union of South Africa, United Kingdom, United States of America, Venezuela.

Countries not importing or manufacturing ketobemidone[51/] (5)

Costa Rica, Israel, Republic of Korea, Turkey, Union of Soviet Socialist Republics.

48/ E/CN.7/317, para.144; E/CN.7/317/Add.1, Annex A.

49/ E/CN.7/289, para.133; E/CN.7/289/Add.1, para.133.1; E/CN.7/306, para.131; E/CN.7/317, para.120; E/NR.1955/Summary, paras. 479, 498.

50/ Countries reporting consumption of ketobemidone during one or more of the years 1953, 1954, 1955 (see Table C above). The PCOB reported that Argentina and Finland were not among the eight countries where ketobemidone was consumed in 1955. In addition to the countries marked with an asterisk in the foregoing listing, these consuming countries included in 1955 Italy, Portugal and Sweden (E/OB/12, p.14).

51/ The policy of these countries regarding prohibition was not indicated in their observations on Council resolution 548 H II (XVIII).

Countries not adhering to a policy of prohibiting ketobemidone (4):

Belgium,[50] Denmark,[50] Norway,[50] Switzerland[50].

Countries considering the question (5):

Argentina,[50] Federal Republic of Germany,[50] Iraq, Netherlands, Pakistan.

200. The Commission at its eleventh session requested the Secretary-General to bring to the attention of governments the views of the Expert Committee regarding the particularly dangerous properties of phenomorphan (3-hydroxy-N-phenethylmorphinan) and the desirability of avoiding its manufacture, import and export, unless it could be shown to have a definite therapeutic advantage.[52]

201. A number of countries have furnished the following information on this recommendation. In Australia, consideration was to be given to the placing of special restrictions on phenomorphan in the event that its import was contemplated. As for Belgium, this drug was not included in the estimates, and the question of its import did not arise; in China, it was neither manufactured nor used. It had not been imported into or manufactured in Finland. In France, neither the manufacture nor the use of phenomorphan was authorized; in India, the drug was not manufactured or imported. In the Netherlands, special attention was being paid to the dangers of this drug. In Norway, the Ministry of Social Affairs would keep a close watch over this drug. Pakistan was considering this recommendation. Portugal had taken note of its dangerous properties, though it was not manufactured or imported. Romania had taken note of the dangerous character of phenomorphan.[53]

202. By resolution 588 E (XX), the Council invited members of the medical and related professions to study the desirability and possibility of prohibiting the manufacture and use of such synthetic narcotics as they did not consider indispensable to public health.

203. The Commission at its eleventh session recommended that governments prohibit, except for medical or scientific research including controlled clinical experiments, the manufacture, distribution and use of such new narcotic drugs as in their opinion were not indispensable to public health, i.e. had no specific medical value not obtainable from existing drugs. It also urged governments to prohibit the export of

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52/ E/2891, Annex III, para.12.

53/ E/CN.7/317, para.145; E/CN.7/317/Add.1, Annex A.

any drug to a country that had notified its desire through the Secretary-General that this should not be done, provided that a reasonable amount might be exported to that country for medical and scientific needs on the formal request of the importing government if the request were accompanied by an import certificate and named a government department as recipient of the consignment.[54/]

204. Many governments have furnished comments on the foregoing recommendations which may be summarized as follows: Austria replied that the question of prohibiting the production and use of a particular narcotic drug could be considered only when adequate experience in the medical use of the substance concerned was available and if it were found to be particularly addiction-producing while having no special advantages over other less dangerous compounds. In Belgium, the law did not empower the Government to prohibit the import, export or manufacture of a drug, but legislation giving the Government the power to prohibit particularly dangerous narcotics was under consideration. The Narcotics Service had been acting to dissuade pharmaceutical firms from importing synthetic narcotics not yet used in the country.

205. Synthetic drugs were not used or manufactured in China, the only exception being a certain amount of pethidine imported for military purposes. In 1954 the representative of Egypt had stated that the manufacture of synthetic narcotics was not authorized in his country; in 1956 he added that their use was controlled particularly by import restrictions, and only pethidine, methadone and levorphanol were admitted. In Finland, the Central Medical Board had warned manufacturers on dispensing preparations containing synthetic narcotics, and in certain cases had even banned their manufacture. Under a new law, the authorities were to have increased powers to prohibit the manufacture, distribution and use of narcotics that were not necessary to public health.

206. All synthetic narcotics, with the exception of pethidine, were prohibited in France, the policy recommended by the Commission having been applied since 1946. Exports of these substances were subject in any case to the procedure established by the

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54/ E/2891, Annex II, resolution III. In 1955, the Commission had proposed that the Council should recommend to governments prohibition of the production and use of such synthetic narcotic drugs as they did not consider indispensable to public health. The Council is still seized of this question (E/2768/Rev.1, Annex A, resolution III B; Council resolution 588 D II (XX)).

1925 Convention whereby imports had to be duly authorized by the importing countries. In 1956 the representative of Greece reported that the only synthetic narcotic authorized in his country was pethidine. Among measures planned by the General Directorate of Public Health of Guatemala was the careful study of every new synthetic narcotic drug. Only those that answered a therapeutic need or that could be advantageously substituted for others already in use were to be authorized.

207. No synthetic narcotics were manufactured in India, and in 1954 the representative of India had informed the Commission that only limited quantities of pethidine and methadone were being imported. In 1955 the representative of Iran stated that synthetic narcotics were not manufactured in his country and that the only ones imported were pethidine and ketobemidone. The Government of Italy was to study the possibility of limiting the production and use of synthetic narcotic drugs to those which were absolutely indispensable to public health.

208. The representative of Mexico said in 1955 that although the Mexican Sanitary Code did not prohibit synthetic narcotics, the Public Health Council was empowered to prohibit the manufacture and use of any substance constituting a danger to public health. The Netherlands replied that difficulties would be encountered in deciding whether a drug was indispensable or not. Countries could control imports of narcotics by means of the international trade procedure of the 1925 Convention. There was no manufacture of synthetic narcotics in Norway, but if it should take place in future, the Director of Health could refuse to authorise substances which, vis-à-vis the similar ones already on the market, possessed no special medical value.

209. In 1955 the representative of the Union of Soviet Socialist Republics informed the Commission that the manufacture of synthetic narcotics of no particular therapeutic value was, except for scientific purposes, prohibited. In 1956 the representative of the United Kingdom had reiterated his country's opposition to the idea of prohibition in the field of synthetic narcotic drugs. The medical profession in the United States of America was not inclined to use a new synthetic narcotic drug in general practice unless it considered it to have some therapeutic advantage over other drugs already in use. Therefore, when physicians accepted and used a new synthetic drug, they did so because they believed it to be indispensable to public health. The representative of the United States informed the Commission in 1955 that manufacturers in his country had, in some cases, been compelled to destroy part of the synthetic

substances manufactured by them because the medical profession had considered their therapeutic value to be inadequate.[55]

(j) Dissemination of information to the medical and allied professions

210. The Council, by resolution 548 H I (XVIII) invited all governments to consider the possibility of carrying out a systematic campaign among the members of the medical profession with a view to alerting them to the dangers of addiction inherent in the use of synthetic narcotics and to the necessity on their part for exercising great care in prescribing such drugs. In resolution 588 E (XX), the Council again recommended that governments should, when appropriate, warn members of the medical and related professions of the special dangers to public health that might be caused by any new narcotic drug placed on the market.

211. In 1954 the Expert Committee urged the Director-General of WHO to bring to the attention of governments and the medical profession throughout the world, by whatever means he deemed appropriate, the dangerousness of the addiction potentiality of pethidine, and the need for the same care in its use as in that of morphine.[56]

212. The Commission at its eleventh session invited governments to make the medical and allied professions aware of the special dangers to public health, if any, of any new narcotic drugs which might be placed on the market.[57]

213. The following information has been received from governments on this question: In Australia, where necessary, the Department of Health took action to ensure that the medical and allied professions were made aware of the dangers associated with new narcotic drugs. In Austria, the attention of the medical profession was on occasion drawn to the dangers of narcotic drugs, and in particular doctors had recently been warned of the dangerous nature of pethidine. Members of the medical and allied professions in Belgium were warned of the particular dangers of narcotic drugs by the special labelling of their containers. The authorities in Canada were continuously drawing the attention of medical practitioners to the addictive properties of all

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55/ E/CN.7/289/Add.1, para.131.1; E/CN.7/306/Add.1, para.138.1; E/CN.7/317, paras.128, 142; E/CN.7/317/Add.1, Annex A; E/CN.7/SR.235, pp.3, 7; E/CN.7/SR.275, pp.7, 10, 12, 15-16; E/CN.7/SR.306, p.7; E/CN.7/SR.307, p.15; Annual Report of Belgium for 1955

56/ WHO Technical Report Series, No.95, Section 7.3.2.

57/ E/2891, Annex II, resolution III.

narcotics, and particularly the newer ones, by correspondence, interviews, lectures, and articles in medical periodicals. The authorities in Ceylon informed the medical and allied professions of new narcotics introduced on the market. In Chile, recommendations were sent to the medical profession warning it of the danger of prescribing these drugs. In Finland, knowledge of the danger caused by new narcotic drugs had been spread among the medical profession by means of lectures and publications. In order to throw light on the subject, amongst other things, a special congress in which the Northern countries participated had been held in Helsinki in 1954. The Central Medical Board was in constant touch with the leading Finnish pharmacologists regarding this matter. The Federal Chamber of Medicine in the Federal Republic of Germany published in 1955 an article on "Guiding Principles concerning the Dangers and Control of Drug Addiction".

214. In India, the necessary instructions had already been issued to the members of the medical profession through the Indian Medical Association. The editors of the appropriate medical journals in Ireland had been furnished with a comprehensive statement on this subject for publication. The Government of Italy stated it would warn the members of the medical and related professions of the dangers of new synthetic narcotics. The Government of Luxembourg suggested that attention should be drawn to the advertising to the medical profession carried on by certain manufacturing firms. This advertising often denied all danger of habituation, even if the narcotic drug concerned had been officially classified as addiction-producing. Attention was drawn to the need for action against such practices. In the Netherlands, no official notification on this subject was given to the members of the medical profession. In New Zealand, when a change was made in the laws relating to narcotic drugs, members of the medical and pharmaceutical professions were advised through the New Zealand Medical Journal and the Pharmaceutical Journal of New Zealand.

215. In Norway, orientation on new narcotics was given through professional periodicals on the basis of experience in the use of those substances. Such orientation was regarded as most important because the side-effects of the substances were not sufficiently known to the medical profession as long as their use was relatively limited. Occasionally such information was given to doctors in circular letters from the Health authorities. In the Philippines, the co-operation of the medical and related associations was to be sought to warn their members of the dangers that might be caused by new narcotic drugs coming on the market.

216. The Government of the United Kingdom replied that the dangers attending the use of either natural or synthetic drugs of strong addictive properties were generally recognized by the medical profession, and it did not consider that a systematic campaign to alert members of that profession to the dangers of synthetic drugs in particular was necessary at that time. In the United States of America the Bureau of Narcotics instructed the manufacturers of new synthetic analgesics to include in the introductory descriptive material circulated to the medical profession statements concerning their addictive properties.[58/]

(k) Encouragement of scientific research

217. The Commission at its eleventh session urged governments to encourage scientists throughout the world to continue their research for analgesics which were free from addiction-producing properties.[59/]

218. In their comments on this question, the Government of France stated that it had been encouraging scientists to pursue their research to reach this goal, and as a result, pholcodine had been developed and myrophine (myristyl ester of benzylmorphine) was being tested; and the Government of Norway expressed its belief that scientists continued to pursue their research in this field without being urged to do so by governments, but that the latter could facilitate their task by providing them with the best possible working conditions.[60/]

58/ E/CN.7/306, paras. 130-138; E/CN.7/306/Add.1, para.138.1; E/CN.7/317, paras.127, 128, 142; E/CN.7/317/Add.1, Annex A.

59/ E/2891, Annex II, resolution III.

60/ E/CN.7/317, para.142.

B. The programme of studies on synthetic narcotics

219. In 1953 the Council, by resolution 505 C (XVI), established a programme of studies on synthetic narcotics in which governments, the WHO and the United Nations Secretariat were invited to participate. By increasing the fund of available information on certain aspects of the development and use of synthetic narcotics, this programme has served in the evaluation and weighing of control measures for these substances.

220. As indicated in the paper "The problem of synthetic drugs"[61] giving the background of this question, the chief purpose of the programme was to throw light on two questions: (1) the definition or circumscription of drugs to which provisional measures of control or prohibition should apply pending a decision whether the drug in question should be placed under international control and the provisional control measures to be applied; and (2) the nature of the control measures to be applied to synthetic narcotics. It was also mentioned that the suitability of measures for dealing with the problems in this field might depend on an evaluation of the extent to which natural narcotic drugs, on the one hand, and synthetic narcotic drugs, on the other, were likely to be used medically. The addiction liability, as reflected in clinical tests, in the discovery of addicts, and in the development of illicit traffic, would likewise be an important consideration.

221. Resolution 505 C (XVI) placed the information to be gathered for these purposes under two classifications: medical and technical (to be compiled by the WHO in consultation with the United Nations Secretariat); and administrative and economic (to be requested from governments).

1. Studies of medical and technical factors

222. The WHO and United Nations Secretariats have prepared three studies under Council resolution 505 C(XVI), and the fourth study, which will complete the present series, is expected to be available at the twelfth session. These studies, several of which deal with both natural and synthetic morphine-like analgesics, are entitled as follows:

I. Synthetic substances with morphine-like effect - Chemical aspects.[62]

II. Synthetic substances with morphine-like effect - Relationship between chemical structure and analgesic action.[62]

61/ E/CN.7/259/Rev.1.

62/ WHO Bulletin, 1954, 10, pp.1003-1038; 1955, 13, pp.937-998; 1956, 14, pp.353-402. They also appeared as United Nations documents under the symbols E/CN.7/268, E/CN.7/299 and E/CN.7/311.

III. Synthetic substances with morphine-like effect - Relationship between analgesic action and addiction liability with a discussion of the chemical structure of addiction-producing substances.[62]

IV. Synthetic substances with morphine-like effect - Clinical experience; Potency, Side-effect, Addiction Liability.[63]

The first of these studies (published in 1954) gave, so far as possible for each synthetic narcotic, its empirical and structural formula, its proposed international non-proprietary name, other names by which it was known, the pharmacopoeias in which it had been incorporated, and as many of the methods of synthesis as could be located. These methods of synthesis were sought in the technical literature, patent specifications and personal communications, but, as might be expected, it was not easy to find all the methods being utilized.

223. Since the methods of synthesis indicate the starting materials, they furnish information with regard to the possibility of controlling intermediary materials which was contemplated in Council resolution 548 H I (XVIII).

224. The second of the studies and a part of the third (published in 1955 and 1956 respectively), summarize scientific knowledge on the question of a relationship between the chemical structure of morphine-like substances on the one hand, and their analgesic activity and addictive liability on the other.

225. At its second session in January 1950, the Expert Committee expressed its belief that there was "a particular arrangement of atoms within the molecule which is responsible for the addiction properties of the drug. In the present state of our knowledge it is not possible to say what part of the molecule of a drug is responsible for its addiction properties. Nevertheless, it is known that certain drugs, having in the main, a common structure, produce in some degree a similar addiction. Therefore other substances which have a similar structure must be liable to suspicion as being

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62/ WHO Bulletin, 1954, 10, pp.1003-1028; 1955, 13, pp.937-938; 1956, 14, pp.353-402. They also appeared as United Nations documents under the symbols E/CN.7/268, E/CN.7/299 and E/CN.7/311.

63/ This paper is being issued as E/CN.7/325

addiction-producing.... [In addition,] probably new compounds of different structure will be developed which are also addiction-producing. Therefore, the question of the relation of chemical structure to addiction-producing properties must remain open"[64/]

226. In seeking to throw light on this question, the authors of the second study utilized two techniques: (1) to compare the structural patterns of the molecules of the various narcotic drugs in order to discern, if possible, common characteristics; and (2) to examine the variations in analgesic activity produced by various modifications in the chemical structure of each drug. All known types of substance having morphine-like effect were investigated.

227. It was found that the following chemical features seemed to stand out for known compounds possessing morphine-like analgesic activity:

(a) a tertiary nitrogen, the group on the nitrogen being of not more than moderate size;

(b) a central carbon atom, none of whose valences were connected with hydrogen

(c) a phenyl group, or a group isosteric with phenyl, which was connected with the central carbon atom;

(d) when the central carbon atom was connected with the nitrogen by a two-carbon chain, maximum activity was produced.[65/]

228. It was added that compounds possessing the foregoing chemical features, including many among the groups of so-called "morphine-like" analgesics, might not exhibit morphine-like analgesic action, and therefore the presence of such features could not be made the basis for prediction of analgesic action; on the other hand, all known substances justifying the characterization of morphine-like analgesics possessed these features.

64/ WHO Technical Report Series, No.21, Section 6.4. The possibility of using a chemical criterion for placing drugs under control was suggested by Professor H. Fisher in 1948 (E/OB/3/Rev.1 and E/DSB/5/Rev.1, p.4); the difficulties which this procedure might involve were set forth by Vaille and Stern in "Le Problème des stupéfiants synthétiques" in La Presse Medicale, 16 May 1951, pp.670-671. The difficulties mentioned in this article included (i) the lack of definite knowledge on the relationship between the chemical features of a substance and its physical effects on man; (ii) the difficulty of defining a chemical group; and (iii) administrative problems connected with controlling large numbers of substances.

65/ WHO Bulletin, 1955, 13, pp.995-996; 1956, 14, pp.394-395.

229. It was likewise mentioned that the euphorigenic, analgesic and physical-dependence-producing properties of morphine and morphine-like agents were all antagonized to some extent by N-allylnormorphine and other similar morphine antagonists.[65/]

230. The authors of the study stated that it was still not possible to indicate what part of the molecule of a drug was responsible for its addiction-producing properties.[65/]

231. Again, it was concluded that to the extent that there was a parallelism in the intensity of the physical-dependence-producing property and analgesic activity of the morphine-like drugs, the chemical features possessed in common by substances producing a morphine-like analgesic effect might also be considered characteristic of compounds having a morphine-like addiction liability.[65/]

232. The question of the relationship between analgesic potency and addiction liability was the principal subject of the third of the joint World Health Organization/United Nations studies, which contained a quantitative evaluation of both properties for a wide variety of morphine-like substances. These data were then examined for possible clues to relationship between analgesic action and addiction liability.

233. It was explained that the intensity of the analgesic activity of each substance was expressed in terms of the dose required to produce a significant analgesic effect in 50% of the animals (mice) used, and the duration of analgesic action, in minutes averaged for all affected experimental animals; the data were obtained under the conditions of a specific laboratory procedure. Although data relating to man would have been better for purposes of comparison, it was pointed out that comparable figures for man had been obtained under controlled conditions in relatively few instances. It was also shown that usually, but not in all cases, the orders of analgesic effectiveness of various substances in mice and man were reasonably close to one another.

234. It was likewise explained that the data on physical dependence potency were expressed in terms of the amount of a drug which produced a suppressive effect on morphine abstinence phenomena in man, or an addiction-sustaining effect equal to that of 50 mg. of morphine. Although addiction has three components - tolerance, psychic dependence and physical dependence - it was held that the unmistakable proof of addiction lay in the demonstration of physical dependence and that such dependence was shown by the development of a typical abstinence syndrome.

65/ WHO Bulletin, 1955, 13, pp.995-996; 1956, 14, pp.394-395.

235. The figure for duration of physical dependence effect was derived from observations on the abstinence syndrome that followed abrupt withdrawal of the drug after it had been substituted for morphine. It represented the interval in hours between the last time the drug had been administered and the moment when the abstinence phenomena[66] reached 50% of their maximum intensity. Many difficulties were encountered in reducing physical dependence activity to a single figure.

236. The data on physical dependence were derived from observations on post-addicts at the National Institute of Mental Health Addiction Research Center located at Lexington, Kentucky, United States of America. The figures obtained, although the most homogeneous data available on this question, covered a great deal of individual variability. It was felt that these differences in the data, as well as the uncertainty with regard to species differences inherent in any comparison of data from experiments on animals and man qualified any inferences that might be drawn from the information given.

237. In so far as possible, the intensity and duration of both the analgesic and the physical dependence properties were obtained for a large number of substances, including 30 opium derivatives, 15 substances of the morphinan type, 8 of the pethidine type, 4 of the hexamethyleneimine type, 19 of the methadone type and 2 of the dithienylbutenylamine type.

238. Both sets of intensity data (but not the sets of duration data) were tabulated in such a way as to facilitate the comparison between analgesic effectiveness and addiction liability. First, the effectiveness of each substance was placed in a direct ratio to that of morphine (morphine equalling 100), both as regards analgesic and physical dependence activity. Second, the order of intensity was established for both properties, the most effective substance being 1, the next 2, and so on.

239. When this had been done, it was found that there was a general similarity in the order of effectiveness of the two properties; however, notable exceptions were discovered. In seven cases the analgesic effectiveness seemed definitely to exceed physical dependence potency (oxycodone, betaprodine, the alphaprodine analogue in

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66/ Abstinence phenomena were measured in terms of the Himmelsbach point-scoring system which assigns arbitrary values to 14 different signs of physical dependence (abstinence phenomena), e.g. yawning, perspiration, tremor, weight loss, fever, etc. The sum of these values as observed in a particular case permits a semi-quantitative estimate of the intensity of the abstinence syndrome.

the hexamethyleneimine series, phenadoxone, betachloromorphide, alphameprodine, dihydrocodeinone enol acetate, and alphaprodine).[67] In six other cases, the physical dependence potency seemed to exceed notably analgesic effectiveness - methadone, dihydromorphine, alphaisomorphine, betadextro-4,4-diphenyl-6-dimethylamino-3-acetoxyheptane, levomethorphan and racemethorphan.

240. In presenting these exceptions, the authors mentioned certain possible explanations, i.e. alphaprodine, oxycodone, and phenadoxone were poorer analgesic agents in man than in mice, relative to morphine; the physical dependence figure for betachloromorphide was uncertain; and the physical dependence figures for the acetoxyheptane compound and for methadone were small because of their prolonged addiction-sustaining action. They concluded, however, that the possibility that some of the exceptions represented a real dissociation of the two properties under consideration could not be excluded.

241. In this connexion, the authors referred to certain substances for which analgesic action had been demonstrated in the laboratory but for which no addiction-sustaining effect had been found in the work at the Addiction Research Center. These substances included beta-dl-4,4-diphenyl-6-dimethylamino-3-heptanol (in animals, it has one-third the analgesic potency of morphine), 1-methyl-4-phenyl-4-carbethoxyhexamethyleneimine (produces a useful degree of analgesic effect in man), and nalorphine (produces, according to reports received, an analgesic effect in man equivalent to that of morphine, although such activity had not been detected in laboratory tests). In the first two cases, however, a parallel decrease in analgesic and addiction-producing effectiveness might be assumed, determination of the latter being impracticable because of toxic side-effects produced by the large doses necessary; therefore, the absence of an addiction liability was, for practical purposes, real. As regards nalorphine, it antagonized morphine and precipitated an abstinence syndrome instead of substituting for it and maintaining the addiction; it seemed to represent a complete dissociation of analgesic action and physical dependence property.

67/ These exceptions were examined in detail by Vaille and Stern in "A Note on Synthetic Narcotics" in Bulletin on Narcotics, Vol VIII, No.3, pp.25-26. It was pointed out that they may result in part from species differences or from incomplete information.

242. The authors summarized their findings as follows:

> "The parallelism between the order of intensity of analgesic action and that of physical dependence production may indicate a relationship between these two properties, but, at the same time, the exceptions suggest the possibility that the two properties are independent. Our present knowledge does not permit clarification of these points." 68/

2. Studies of administrative and economic factors

243. Resolution 505 C (XVI) of the Council asked governments represented on the Commission and other important drug-manufacturing countries to comment on various questions related to the control of synthetic narcotics. The replies were duly compiled and issued 69/. This information (which was compiled in 1954), while somewhat out of date, is still a valuable collection of governmental policy statements on synthetic narcotics. The following governments stated their positions: Belgium, Canada, China, Egypt, France, Federal Republic of Germany, Greece, India, Iran, Italy, Japan, Mexico, Netherlands, Switzerland, United Kingdom, United States of America and Yugoslavia.

244. The following topics were covered by this compilation: (1) the extent to which synthetic analgesics, and particularly synthetic opium alkaloids, were replacing or were likely to replace their natural counterparts; (2) whether the manufacture of a synthetic narcotic was desirable only if it presented economic or therapeutic advantages; (3) the government's attitude towards provisional control measures for new drugs and towards the various methods of circumscribing the substances likely to be addiction-producing; (4) the extent to which prohibition should be applied to synthetic narcotics; (5) the government's views on new control measures for synthetic narcotics and on certain control measures applied to natural narcotics, which were of doubtful utility for synthetic narcotics. 70/

68/ WHO Bulletin, 1956, 14, p.399. Vaille and Stern, op.cit. pointed out that further research was needed and suggested that "it would be wiser to take it as a general rule that there is a relative parallelism between analgesic action and the physical dependence potency."

69/ E/CN.7/277 and Adds.1-2.

70/ In its discussions on the provisions to be included in the Single Convention, the Commission considered some of these questions. Many of the decisions taken at that time have been referred to Section A.1 above.

245. In 1954, the Council, by resolution 548 H I (XVIII), invited governments to study the desirability of exercising the requisite measure of supervision over certain intermediary products, e.g. diphenyl-acetonitrile, which occur in the manufacture of synthetic narcotics, or of prohibiting their manufacture.

246. Two drug-manufacturing countries have furnished information with regard to this proposal. The Federal Republic of Germany reported that it was studying the possibility of exercising supervision over such intermediary products. The United Kingdom replied that such supervision would be impractical, since these intermediates were synthetic reagents, widely used in organic chemistry (not merely in the production of narcotic drugs), and neither prohibition nor control of their manufacture would be feasible in the conditions obtaining in that country.[71]

247. In addition, Chile indicated that diphenyl-acetonitrile had not been encountered, and Turkey that it was not considered necessary to exercise control over intermediary products since synthetic narcotics were not manufactured.[71]

71/ E/CN.7/289/Add.1, para.131.1; E/CN.7/306, para.130; E/CN.7/317, para.127. The attitudes of governments regarding the possibility of controlling the raw materials from which synthetic narcotics are manufactured will be found in E/CN.7/277 and Adds.1-2, Section (D) (5).