Journal of Official Statistics
Vol. 7. No. 1, 1991, pp. 93–103

Miscellanea

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A Swedish Classification Into Social Classes Based on Census Information and Comparable to The British Classification – A Proposal

Petra Otterblad Olausson[1,2] *and Denny Vågerö*[1,2]

Abstract: The Registrar General's (RG) Social Class Classification of the population in England and Wales is frequently quoted in the international sociological and epidemiological literature. We present here an attempt to classify the Swedish population according to the Registrar General's Social Classes. The main purpose of this is to facilitate cross-national comparisons of health statistics, in particular between Sweden and Britain. The classification was applied to all men and women who were economically active and born in Sweden between 1896 and 1940. Information on social and demographic characteristics was obtained from the 1960 census. The 1960 census was chosen because it has been linked to several medical registers such as the Cancer Registry and the Cause of Death Registry for the two decades after 1960.

Key words: Social class; mortality; census.

1. Introduction

A person's social class has been found to affect his/her risk of dying at an early age (Susser, Watson, and Hopper 1985; Black 1980). The Black report on inequalities in health suggested that class differences in health have been eradicated in Sweden, quoting evidence on infant mortality. Later work suggests that this conclusion as far as infants and children are concerned may be premature (Zetterström and Eriksson 1987; Vågerö and Östberg 1989). In contrast to the Black report, two Swedish studies found similarities between Britain and Sweden when comparing health data as well as mortality data (Lundberg 1986a; Vågerö and Lundberg 1989).

We are at present examining whether there are any mortality differences by social

[1] Swedish Institute for Social Research, University of Stockholm, S-106 91 Stockholm, Sweden.
[2] Department of Epidemiology, Institute of Environmental Medicine, Karolinska Institute, Box 60208, S-104 01 Stockholm, Sweden.

Acknowledgements: This work was supported by the Committee for Social Research of the Swedish Health Ministry, research grants F86/111:2 and F85/2025:3.
We would also like to thank Olle Lundberg, Swedish Institute for Social Research, for important remarks and discussions.

class in Sweden. The results indicate that there are, indeed, such differences (Vågerö and Norell 1989; Vågerö and Östberg 1989; Otterblad Olausson 1990). For this purpose we have used the Swedish Cause of Death Registry linked to the 1960 Population Census, here referred to as the Census-linked Death Registry (CDR), (Statistics Sweden 1982a). It has also been used for the recently published Public Health Report (National Board of Health and Welfare 1988). Census data for classification into socioeconomic groups have also been used in analyzing cancer mortality and survival (Vågerö and Persson 1986, 1987).

However, for the purpose of cross-national comparisons, traditional Swedish classifications into socioeconomic groups, social groups, occupational status groups or the like, are not ideal. There may be several solutions to the problem of finding a classification that allows meaningful cross-country comparisons. Here, the question is: Can we create a classification using census data that is suitable for such comparisons?

The Office of Population Censuses and Surveys (OPCS) in London presents health statistics by social class and has done so for several decades (OPCS 1978, 1986). The classification used in England and Wales is here referred to as the Registrar General's (RG) social classes (Registrar General 1971; Leete and Fox 1977; OPCS 1981). It is frequently referred to in the international literature on class and health. Therefore it seemed meaningful to try to classify Swedish data according to Registrar General's Social Classes for the purpose of comparing the magnitude of mortality differences by class in Sweden and in England and Wales. The England and Wales class scheme has been applied in Scotland (West of Scotland Politics of Health Group 1984), Ireland (Ginnety, Kelly, and Black 1985) and Israel (Abramson, Gofin, Habib, Pridan, and Gofin 1982). The classification is, to some extent, comparable also to the classification in Norway and Denmark (Lynge and Jeune 1983).

Since 1971 there have been six classes in the Registrar General's classification. Before then, the social classes IIINM and IIIM formed one class. The present classes are:

I Professional, etc., occupations
II Intermediate occupations
IIIN Skilled non-manual occupations
IIIM Skilled manual occupations
IV Partly skilled occupations
V Unskilled occupations

Students, persons with inadequately described occupations, and members of the armed forces are excluded from the classification.

An attempt to apply the RG social classes to Swedish data has already been made by Lundberg (1986b). Lundberg combined two occupational classifications, namely the Socio-Economic Division (SEI) and the Nordic Occupational Classification (NYK), to assign a random sample of the adult Swedish population to RG social classes. This method was evaluated and found to be valid, both in terms of the resulting class distribution and for analyzing health differences. However, applying Lundbergs's method to 1960 census data presented some problems, since these data did not include the SEI-code. We have therefore adapted that method before applying it to the 1960 Population Census. If this method could be applied to census data, several medical registers, already linked to census data, could be used for international comparisons. Registers connected to census data are: the Cancer Registry, the Cause of Death Registry, the Registry of Malformation, and the Medical Birth Registry.

The RG-classification has been criticized by both sociologists and epidemiologists.

Jones and Cameron (1984) argue that classification of occupations into social classes was carried out with à priori knowledge of mortality in different occupations thereby introducing artefactual class differences in mortality. However, unlike what has been suggested for Britain, we had no à priori knowledge of mortality in different occupational groups in Sweden that could influence our classification. Bland (1979) points out the lack of validation of the class concept. Boston (1980) argues that the application of classification principles may raise practical as well as theoretical problems. Brewer (1984) discusses practical difficulties in the allocation of occupations into social class, and Marshall (1988) describes the classification as sociologically unsophisticated. Some of this criticism is certainly justified. However, as Lazarsfeldt (1939) points out, if class differences exist they could be demonstrated by a number of indicators that are linked to class. He also demonstrated that these indicators to some extent are interchangeable, i.e., regardless of which indicator we choose to define class the resulting class differences would be similar in size and direction. Data from the OPCS Longitudinal Study has shown that this is indeed the case when analyzing class differences in health (Fox and Goldblatt 1982). In spite of the problems inherent in the RG classification it is still widely used, in particular for mortality analysis. A recent, much quoted example is Marmot and McDowall (1986).

2. Principles of Classification

Data on occupation (NYK-code), occupational status, and education constituted the basis of the classification. These variables drawn from the Swedish Population Census 1960 (Statistics Sweden 1965) were combined and analyzed.

The NYK-code is related to the International Classification of Occupations (ISCO) and consists of 292 occupational groups. These occupations are grouped according to similarity of activities. Only occasionally do these take account of the individual's education, occupational status, or branch of industry.

The variable "occupational status" here divides individuals into four groups: manual workers; salaried employees; self-employed persons or farmers without employees; and finally self-employed persons or farmers with employees. A person who assisted, at least half-time, another member of the family in his/her livelihood has been assigned to the same occupational status position as that member of the family. Company directors have been assigned to the group of salaried employees.

Education refers to education after compulsory school (16+) and includes any further education that allows the student to enter university and subsequent university degrees. In the three-digit education code we only refer to the third digit, which is the level of education.

The SEI-classification (Statistics Sweden 1982b) is not included in the 1960 census data. Instead, we have constructed an intermediate variable, corresponding to the SEI-code, from census information on occupational status and education, for each individual. Thus, an occupational status/educational level (hereafter referred to as the OSE-code) was used as a substitute for the SEI-code.

The OSE-code presented here, see Appendix A, is not based upon exactly the same type of data as the SEI-code. In the SEI-code, occupations are classified; we on the other hand, classify individuals. Thus, the education required for an occupation to be classified into a certain SEI-group is the typical education required for that occupation, not, as in the OSE-code, the indi-

vidual's own education. This difference could be of importance and its implications are discussed later in this paper. There is also some difference in the grouping of years of education. A distinction between individuals with no education after compulsory school and individuals with one or two years of such education was not possible.

In combining OSE with NYK, individuals with less than three years of education have been assigned to an RG social class according to the educational level which is most common within each occupation. Entrepreneurs, farmers, and self-employed form groups on the basis of whether they have employees or not. In the SEI-code these groups were separated by number of employees, or farmers by number of hectares of land or forest, or both. Our data did not permit such a distinction. If the entrepreneurs, etc., have more than six years of education after compulsory school they belong to the same group as salaried employees with six or more years of education.

3. Applying the Classification to Census Data

Thus, each individual in the 1960 population census could be assigned to a combination of a NYK-code and an OSE-code. These combinations were classified into RG social classes according to the principles described above. The proposed classification scheme is seen in Appendix B. The number of possible combinations, when combining NYK- and OSE-codes, is 2900. The actual number of combinations was 1235 for this population, since a number of combinations of NYK- and OSE-codes are very unlikely and did in fact not occur at all.

All men and women born in Sweden between 1896 and 1940 who were registered in the 1960 census and who, according to census information, were economically active, were thus classified into RG social classes. Individuals with military occupations or with unidentified occupations were excluded from the classification. The percentage excluded in the census is 0.8%. Thus, the coding includes 2 790 684 individuals.

4. Results

Table 1 demonstrates the resulting distribution by social class, for men and women, in Sweden in 1960.

It was thought that a comparison of the distribution by RG social classes in Sweden and in Britain and a comparison between our distribution with that of Lundberg should enable us to see whether the classification scheme is valid. The criterion for such validity is a similarity in the distributions and where this was not the case the differences should be explainable. Table 1 also includes the social class distribution in England and Wales in 1961. The figures for England and Wales include retired persons, while retired persons are excluded in the Swedish material. Married women in England and Wales are classified according to their husband's social class, while economically active Swedish women are coded according to their own social class, also when they are married.

Generally, the distribution of social classes in Sweden is in accordance with that of England and Wales (Table 1). In Sweden there are fewer individuals in social class I among both men and women. There is a greater proportion of individuals in social class II among men in Sweden than in England and Wales, but a somewhat lesser proportion among women. The percentage assigned to social class III is almost the same, while in social class IV there are fewer individuals in Sweden for both men and women. There are fewer men and more women within social class V than in England and Wales.

Table 1. Distribution of Registrar General's Social Classes in Sweden, economically active men and women aged 20–64 years, and in England and Wales, economically active or retired men and women aged 15–64 years (Percent)

Social class	Sweden		England and Wales[1]		
	Men	Women	Men	Unmarried women*	Married women**
I	2.2	0.6	3.9	1.1	3.4
II	24.7	15.4	14.8	17.2	17.1
IIIN	11.0	34.9			
III(N + M)	54.3	55.9	52.2	56.2	52.4
IIIM	43.3	21.0			
IV	12.7	19.5	20.4	23.0	20.7
V	6.1	8.6	8.7	2.4	6.4

*Classified by own occupation.
**Classified by husband's occupation.
[1]Source: Registrar General, 1971.

In comparing our results with that of Lundberg (Table 2) we found a similar pattern in both studies in particular when considering that they refer to different points in time. Lundberg also noted an unusually large proportion of the Swedish population classified as class II and a small proportion classified as class IV.

According to the criterion we formulated earlier, our method then gives a roughly similar distribution of classes in Sweden and Britain. The two major differences are not seen as artefactual, and furthermore, have been noted earlier in classifying another material using the same principal method (Lundberg 1986b).

Table 2. Distribution of Registrar General's Social Classes in Sweden, economically active men and women aged 20–64 years in 1960 and in Sweden 1981 aged 15–74 years (Percent)

Social class	Sweden 1960 Men and women	Sweden 1981[1] Men and women
I	1.7	3.7
II	22.0	22.9
IIIN	17.9	18.8
IIIM	36.8	32.4
IV	14.7	13.6
V	6.8	8.5

[1]Source: Lundberg 1986b.

5. Discussion and Conclusions

The resulting distribution of social classes in Sweden compared to England and Wales deviates significantly at two points. Firstly, the proportion assigned to social class II among Swedish men is considerably higher than that in England and Wales and secondly, the proportion of men in class IV is considerably smaller. This was not the case among women. The difference might result from the fact that social class II includes farmers, who constituted almost 14% of the Swedish economically active population in 1960 (Statistics Sweden 1965). The corresponding percentage in England and Wales 1961 was 4% (Registrar General 1971). The sample of the population in England and Wales includes individuals from the age of 15, but in the Swedish material only individuals from the age of 20 are included. This would also contribute to the differences, since one can expect that economically active men in the age group 15–19 belong to

the lower classes to a greater extent. Other differences between the two countries are less significant.

A particular problem, mentioned above, is that we use information on the individual's educational level rather than the educational level that today goes with the occupation for classification into social classes. A small proportion of individuals had the educational level that allowed them to be classified into class I. The likely effect of this is that fewer individuals tend to be assigned to social class I in Sweden than in Britain. On the other hand, fewer individuals will also be assigned to social class V, since it was not possible to separate individuals with no education after compulsory school from individuals with one or two years of post-compulsory education. Therefore it is possible that our method would tend to underestimate the size of both class I and class V.

If this is the case the segments of the Swedish population that are so classified may be more extreme and subsequently we may introduce a bias that tends to overestimate class differences in Sweden, for instance when studying mortality. Normally, this would be seen as a problem. However, for the purpose of cross-national comparisons and under the hypothesis that class differences in Sweden are comparatively small, such a bias would not be a serious problem. However, in most cases, it may perhaps be advisable to combine classes I and II and classes IV and V. In doing this, the bias discussed here should be considerably reduced.

In summary, we suggest that the classification scheme proposed here can be used for analyzing mortality by social class in Sweden and in particular, we conclude, for comparing Britain and Sweden in this respect. A first example of such a comparison appeared in Vågerö and Lundberg (1989). We hope that our proposal might facilitate the use of several medical registries for similar studies.

Appendix A

OSE-code according to occupational status and education

Occupational status	Education after compulsory school	OSE-code
Workers	0–2	1
	3–5	2
	6–	3
Salaried employees	0–2	4
	3–5	5
	6–	6
Entrepreneurs, farmers and self-employed, without employees	0–5	7
	6–	8
Entrepreneurs, farmers and self-employed, with employees	0–5	9
	6–	10

Appendix B

Classification scheme of NYK and OSE combinations into RG social classes

CLASS I

NYK	OSE	NYK	OSE	NYK	OSE
001	6, 8, 10	021	6, 8, 10	061	4, 6, 8, 10
002	6, 8, 10	022	6	071	6
003	6, 8, 10	023	6, 8, 10	072	6
004	6, 8, 10	024	6, 8, 10	073	6, 8, 10
005	6, 8, 10	029	6	074	6
006	6, 8, 10	031	6, 8, 10	078	6
007	6, 8, 10	032	6, 8, 10	079	6
008	6	039	6	094	6, 8, 10
009	6, 8, 10	046	6, 8, 10	095	6, 8, 10
011	6, 8, 10	047	6	101	6
012	6	048	6, 8, 10	111	6, 8, 10
013	6, 8, 10	050	6, 8, 10	118	6, 8, 10
019	6	051	6		

CLASS II

NYK	OSE	NYK	OSE	NYK	OSE
001	4, 5, 7, 9	073	4, 7, 9	312	4, 5, 6, 7, 8, 9, 10
002	4, 5, 7, 9	074	4, 5, 7	313	5, 6, 7, 8, 9, 10
003	4, 5, 7, 9	078	4, 5	318	4, 5, 6, 7, 9
004	4, 5, 7, 9	079	4, 5, 7	319	4, 7
005	4, 5, 7, 9	081	4, 5, 6, 7, 8, 9, 10	321	6, 8, 10
006	4, 5, 7, 9	082	4, 5, 6, 7, 8, 9, 10	331	6, 7, 9
007	4, 5, 7, 9	083	4, 5, 6, 7, 9	332	5, 6
008	4, 5, 7, 9	084	4, 5, 6, 7, 8, 9, 10	333	6
009	4, 5, 7, 9	085	4, 5, 6, 7, 8, 9, 10	334	7, 8, 9, 10
011	4, 5, 7, 9	086	4, 5, 6, 7, 8, 9, 10	338	7, 9
012	4, 5	087	4, 5, 6, 7, 8, 9, 10	339	6, 7, 9
013	4, 5, 7, 9	088	1, 4, 5, 6, 7, 8, 9, 10	401	7, 8, 9, 10
019	4, 5	089	1, 4, 7, 9	402	6
021	5	091	4, 5, 6, 7, 8, 9, 10	403	6, 8
022	4, 5, 7	092	4, 5, 6, 7, 9	404	6
023	4, 5, 7, 9	093	4, 5, 6, 7, 9	405	7, 8, 9, 10
024	4, 5, 7, 9	094	4, 5, 7, 9	406	7, 8, 9, 10
031	5, 7, 9	095	4, 5, 7, 9	407	7, 8, 9, 10
032	5, 7, 9	098	4, 5, 6, 7, 8, 9, 10	409	6, 7, 9
039	4, 5	099	4, 6, 8, 10	411	6
040	4, 5, 6, 7, 9	101	4, 5	412	6
041	4, 5	111	4, 5, 9	413	6
044	4, 5	118	4, 5, 7, 9	418	6
046	4, 5, 9	119	4	501	7, 9
047	4, 5, 7, 9	201	6, 8, 10	502	7, 9
048	2, 4, 5, 7, 9	203	6	503	7
050	4, 5, 9	204	6	504	7
051	4, 5	290	6	601	4, 5, 6, 7, 9
052	4, 5, 6, 7, 8, 9, 10	291	6	602	4, 5
053	4, 5, 6	292	6	603	4, 5, 6, 9
054	4, 5, 6, 7, 8, 9, 10	293	6, 8, 10	609	4

CLASS II (Continued)

NYK	OSE	NYK	OSE	NYK	OSE
055	4, 5, 6, 7, 9	294	6, 7, 8, 9, 10	621	6, 7, 9
056	4, 5, 7, 9	295	6, 8, 10	901	5, 6
057	4, 5, 6, 7, 8, 10	296	6	902	5, 6, 7, 9
058	4, 5, 6, 7, 8, 10	298	6	903	5
059	4, 5, 6, 7	299	6	908	5, 6, 7, 9
068	4, 5, 6	301	7, 8, 9, 10	911	5, 6, 7, 8, 9, 10
069	4, 5	302	4, 7, 8, 9, 10	945	4, 5, 6, 7, 9
071	5	309	7, 9		
072	4, 5	311	6, 8, 10		

CLASS IIIN

NYK	OSE	NYK	OSE	NYK	OSE
201	4, 5, 7, 9	321	4, 5, 7, 9	655	4, 5, 6
203	4, 5	331	4, 5	671	1, 2, 4
204	4, 5	332	4	678	4
208	4, 5, 7, 9	333	1, 2, 4, 5	699	1, 4, 5, 7
209	4, 5	334	4	901	1, 2, 4
290	4, 5, 7, 9	338	1, 2, 4, 5	902	1, 4
291	4, 5, 7	339	1, 4, 5	903	4
292	4, 5	421	1, 4, 5, 7	904	4
293	4, 5, 7	441	4	908	4
294	4, 5	621	4, 5	909	4
295	4, 5, 7, 9	641	4	911	4
296	4, 5	642	4	916	4, 5, 6
297	4, 5	643	4	917	9
298	1, 4, 5	644	4	941	7, 8, 9, 10
299	4, 5	649	4	946	4, 5, 6, 7, 8, 9, 10
311	4, 5, 7, 9	651	4, 5, 6		
313	4	654	4, 5		

CLASS IIIM

NYK	OSE	NYK	OSE	NYK	OSE
003	2	745	1, 2, 3, 4, 5, 7, 8, 9, 10	818	1, 2, 7, 9
004	1	749	1, 7	819	1, 2, 7, 9
008	1	750	1, 2, 3, 7, 9	821	1, 2, 7, 9
042	1, 2, 3, 4, 5	751	1, 2, 3, 7, 9	822	1, 2, 7, 9
043	1, 2, 3, 4, 5	752	1, 2, 3, 4, 5, 7, 9	823	1, 2, 7, 9
045	1, 2, 3, 4, 5	753	1, 2, 7, 9	824	1, 2, 7, 9
049	1, 3, 4, 7	754	1, 2, 3, 7, 9	825	2, 7, 9
402	4, 5	755	1, 2, 3, 7, 9	826	1, 2, 3, 4, 5, 7, 9
403	4, 5	756	1, 2, 7, 9	827	1, 2, 3, 4, 5, 7, 9
404	4, 5	757	1, 2, 3, 7, 9	828	7, 9
409	4	758	1, 2, 3, 4, 5, 7, 9	829	1, 7, 9
603	1, 2	759	1, 2, 3, 7, 9	831	7, 9
609	1	761	1, 2, 3, 4, 5, 7, 9	834	1, 2, 3
631	1, 4, 5	764	1, 2, 4, 5, 7, 9	836	1, 2, 7, 9
632	1, 2, 4, 5	766	1	838	7, 9

CLASS IIIM (Continued)

NYK	OSE	NYK	OSE	NYK	OSE
633	1, 2, 3, 4, 7, 8, 9, 10	767	1, 2, 7, 9	839	7, 9
639	4, 7, 9	768	1, 2, 3, 4, 5, 7, 9	850	1, 7, 9
671	5, 7, 9	769	1, 2, 4, 7	851	1, 2, 3, 7, 9
711	1, 2, 4, 5, 7, 9	771	1, 2, 7, 9	552	3, 7, 8, 9, 10
712	1, 2, 7, 9	772	1, 2, 7, 9	853	1, 2, 7, 9
713	1, 2, 7, 9	774	1, 2, 7, 9	854	7, 9
714	1, 2, 7, 9	778	1, 2, 3, 7, 9	855	1, 2, 3, 4, 7, 8, 9, 10
715	1, 2, 3, 4, 5, 7, 9	779	1, 2, 7, 9	856	1, 2, 7, 9
716	1, 2, 3, 4, 7, 9	781	1, 2, 3, 7, 9	857	1, 2, 7, 9
718	1, 2, 7, 9	782	1, 2, 3, 7, 9	858	7, 9
719	1, 2, 7, 9	789	1, 7	871	1, 2, 3, 4
721	1, 2, 4, 7, 9	791	1, 2, 7, 9	872	1, 2, 3, 7, 9
722	1, 2, 4, 5, 7, 9	792	1, 7, 9	873	1, 7
726	1, 2, 7, 9	793	1, 2, 7, 9	874	1, 2, 7, 8, 9, 10
729	1, 7	794	1, 2, 7, 9	875	1, 2, 7, 9
731	1, 2	795	1, 2, 7, 9	876	1, 2, 3, 7, 9
732	1, 7, 9	798	1, 2, 7, 9	912	1, 2, 3, 4, 5, 7, 9
733	1, 2, 7	799	1, 9	914	2, 3, 4, 7
735	1, 2, 7, 9	801	1, 2, 3, 4, 5, 7, 9	915	4, 5
736	1, 2, 3, 7, 9	806	1, 2, 3, 7, 9	917	3, 4, 5, 7
737	1, 2, 3, 7, 9	808	1, 2, 4, 5, 7, 9	918	4, 5
738	1, 2, 7, 9	809	1, 4, 7	919	4, 5
739	1, 9	811	1, 2, 3, 7, 9	921	3, 5
741	1, 2, 4, 5, 7, 8, 9, 10	812	1, 2, 3, 7, 9	941	1, 2, 4, 5
742	1, 3, 7, 9	813	1, 2, 3	944	7, 9
743	1, 2, 7, 9	814	1, 2, 7, 9	947	1, 2, 4, 5, 7, 9
744	3, 4, 5, 7, 8, 9, 10				

CLASS IV

NYK	OSE	NYK	OSE	NYK	OSE
411	1, 2, 4, 5, 7, 9	634	1, 7, 9	854	1, 2, 4, 7
412	1, 2, 4, 5, 7	636	1, 2	858	1, 2, 3
413	1, 2, 4, 5, 7, 9	652	3, 4, 5	881	1, 2, 3, 4, 5, 7, 9
414	1, 2, 4	653	4, 5	904	1, 2
415	1	659	4	908	1, 2
418	1, 2, 4, 5, 7, 9	661	1, 2, 3, 4, 5	909	1
419	1	662	1, 2, 3, 4, 5	914	1
431	1, 7, 9	669	1	918	1, 2
432	1, 4, 5, 7, 9	701	1, 2, 3, 4, 7, 9	919	1
441	1, 2, 3, 7, 9	825	1	921	1, 2, 4
501	1, 2	828	1	931	1, 2, 3, 4, 5
502	1, 2	831	1, 2, 3	933	7, 9
503	1	838	1, 2	942	1, 4, 5, 7, 9
504	1	839	1, 2	943	1, 2, 4, 5, 7, 9
509	1	841	1, 2	944	1, 2, 4
611	1, 2, 4, 7, 9	852	1, 2	949	1, 4, 7

CLASS V					
NYK	OSE	NYK	OSE	NYK	OSE
635	1, 2, 3, 4, 5, 7, 9	882	1, 2, 3, 4	913	1, 2, 3
639	1	883	1, 2, 3	932	1, 2, 3, 7, 9
678	1, 2	888	1, 7, 9	933	1, 4, 5
861	1, 2, 3, 7, 9	889	1, 7	939	1
879	1, 7, 9	899	1, 2, 7, 9		

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Received August 1988
Revised August 1990