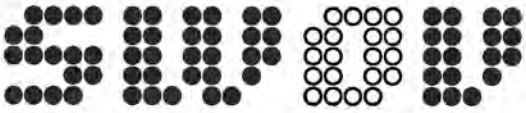
**Annual Report for 1971**



**Institute for**
**Road Safety Research SWOV**

**Stichting**
**Wetenschappelijk Onderzoek**
**Verkeersveiligheid SWOV**

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Deernsstraat 1
Voorburg 2119
The Netherlands

**Contents Annual Report for 1971**

## Introductory



The introductory to our Annual Report for 1970 stated that good communication between the authorities and SWOV was of prime importance. An endeavour was made in 1970 to safeguard this communication when Interdepartemental project groups were set up by the authorities; in 1971 there were such project groups for nearly all current applied research projects.

The inter-disciplinary nature and especially the purpose and functional subdivision of road safety research has obviously had implications for SWOV's organisational structure. The purpose of SWOV's road safety research clearly distinguishes two categories:
1. Research aimed at solving a practical problem and/or indicating possibilities and making recommendations for measures by the authorities (policy-oriented applied research).
2. Research aimed primarily at obtaining more knowledge in order to facilitate the solution of practical problems (theoretical research).
SWOV's research potential can thus be subdivided into two categories: one concerned with policy-oriented applied research and one with theoretical research. In both of these, research projects can be divided into pre-crash, crash and post-crash projects which, in the applied research category, has resulted in the formation of two separate research departments. In these departments, there is a multidisciplinary staff. This provides the biggest possible built-in guarantee that problems will indeed be approached and tackled at all levels from different disciplines. This new-style structure of SWOV's became operative on 1st January 1972. As such rather sweeping changes in the organisational structure obviously cannot be effected in a matter of days, part of the reorganisation was already introduced in Autumn 1971. Besides the old classification, in this Annual Report for 1971 the new categories are indicated in an abbreviated form: TPRC (Theoretical research, Pre-crash projects), APRC (Applied research, Pre-crash projects) and ACPC (Applied research, Crash and Post-crash projects).

In conformity with our Charter SWOV has to 'distribute information on road safety obtained by scientific research'. This information can be obtained from our own research or research in other countries and also from work requisitioned from third parties.
In the course of the years a wider public has felt an increasing need to be informed of SWOV's research results. It has become advisable to make essential parts of our scientific publications more widely known. Possibilities have been sought and found of getting information dealt with by various publicity media.

Lastly, attention is drawn to the important part played by the SWOV's documentation research. This involves constant and continuous work by a permanent staff. The range of subjects which the SWOV

deals with is in fact so highly specialised and spread over such a number of scientific disciplines that there is no other institution in the Netherlands able to meet the continuous need for selected information from world-wide literature. This was the reason why SWOV started setting up its own library and documentation department in 1965.

Th. J. Westerhout,
Chairman of the Council

## Members of the Council



The Council was organised as follows at 31th December 1971:

Th. J. Westerhout, Chairman

Th. van der Meer, Deputy Chairman, on the recommendation of the Nederlandsche Vereeniging De Rijwiel- en Automobielindustrie RAI (Netherlands Association of Bicycle and Automobile Industry RAI)

J. Volmuller, Secretary
on the recommendation of the Minister van Onderwijs en Wetenschappen (Minister of Education and Sciences)

J. D. J. Idenburg, Treasurer
on the recommendation of the Nederlandse Vereniging van Automobiel Assuradeuren (NVVA) (Netherlands Association for Automobile Insurance NVVA)

C. A. Kuysten
on the recommendation of the Koninklijke Nederlandsche Toeristenbond ANWB (Royal Dutch Touring Club ANWB)

J. W. Tops
on the recommendation of the Minister van Verkeer en Waterstaat (Minister of Transport and Waterways)

O. P. F. M. Cremers
on the recommendation of the Nederlandse Wegverkeers- en vervoersfederatie Centraal Overleg (Netherlands Federation of Transport Organisations 'Centraal Overleg')

G. Dekker, surgeon
on the recommendation of the Koninklijke Nederlandsche Maatschappij tot Bevordering der Geneeskunst (Royal Netherlands Medical Association)

W. J. van Eijkern
on the recommendation of the Minister van Justitie (Minister of Justice)

Th. M. J. de Graaf
on the recommendation of the Vereniging van Nederlandse Gemeenten (Netherlands Association of Local Authorities)

P. Siderius
on the recommendation of the Minister van Volksgezondheid en Milieuhygiëne (Minister of Public Health and Environmental Hygiene)

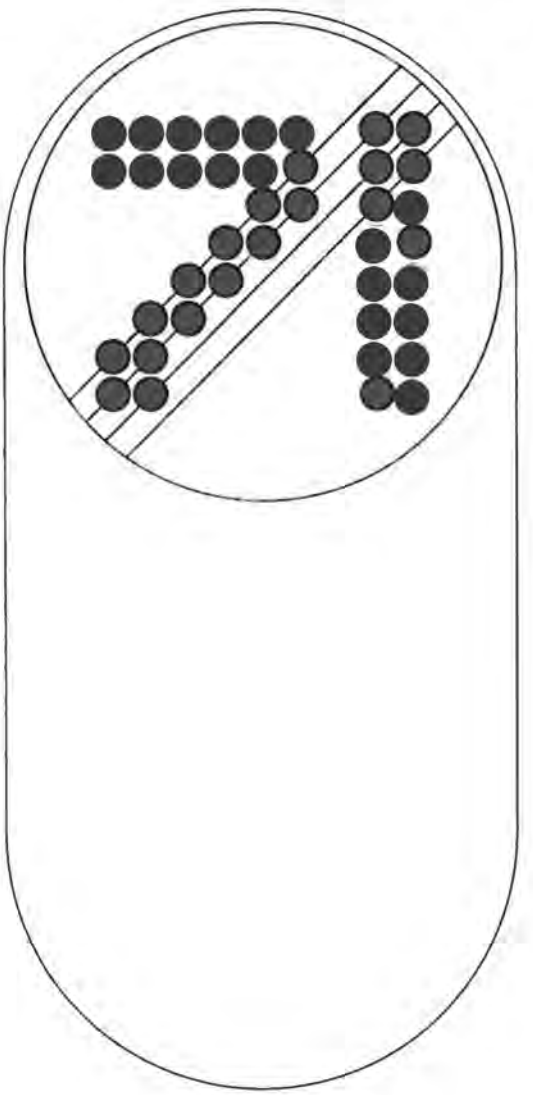
H. Zandvoort
on the recommendation of the Vergadering van Hoofden van Provinciale Waterstaatsdiensten (Joint Directors of the Provincial Bureaus of Public Works)

In personal quality:

H. A. W. Nijveld
Hoofd van de Economisch Technische Afdeling van de Centrale Organisatie TNO (Head of the Economic Technical Department of the Central Organisation for Applied Scientific Research TNO)

The six members first mentioned are forming the Executive Committee.

The bureau is directed by E. Asmussen



**Traffic-flow models (TPRC)**
Road and traffic regulations are mostly based on fairly general criteria of hazards (accident data) on the one hand and of traffic-flow (traffic-volume data, level of service) on the other, while there is no sufficiently clear connection between these various criteria. It is intended to improve this by recording, analysing and mathematical modelling of:
a. volume, density and speed data on the one hand and accident data on the other, and
b. more microscopic, process-wise traffic-flow variables, i.e. sorting and elaborating the data as in a.
The research will have to provide information as a basis for ascertaining and predicting movement variations interfering with safety and traffic flows.
In 1971 a start was made on a literature study concerning traffic-flow models for traffic arteries, and the specification of measurement variables such as road types, traffic conditions, times and places. At the same time the collection of accident data was commenced. This was based on existing literature, consultation of specialists, processing of preliminary measurements able to supplement existing data.

**Cybernetic vehicle-control model (TPRC)**
Cybernetic research is based on the notion that the driver and his vehicle together form a complete system, a man-machine system, and that such systems can only produce an optimal performance if the characteristics of the human operator (as the controller in the system) and the vehicle (as the controlled element) are mutually adjusted. The ultimate purpose of such research is to obtain models defining the behaviour of the driver-vehicle combination. A knowledge of such models makes it possible, for instance, to assess the limits within which the combination forms a stable system and shows the effect of extraneous disturbances and the effect of elimination of or change-over to other sources of information used in driving. The preliminary search of available literature showed that it relates mainly to fundamental research and to applications in aviation and space travel. Research within traffic conditions, of course, links up with this, yet is quite distinct if only because of the specific way in which the driver is supplied with and assimilates visual and other information. The literature study, theoretical analysis and specification of partial elements (dynamic characteristics of the human controller and his vehicle) are continuing.

**Road safety in dusk and darkness (APRC)**
The object of this research is to obtain better information on the effect of lighting systems on road safety in dusk and darkness. It is so extensive that it may take many years before there is really any question of a better understanding of the overall problems of visibility, perceptibility and recognisability after dark as related to road accidents.
It proved necessary to divide the overall problem into a number of problems, the research priorities for which will be decided in consultation with the principal (in an Interdepartemental project group). In order to take stock of the problems, compilation of a comprehensive descriptive report was commenced.

**Fog (APRC)**
In 1971 two parts of an interim report on a number of aspects of the effect of fog on road safety were completed for internal circulation. Part of the material from these reports has been put in the form of an article. A concluding publication is in course of preparation.

**Colour of headlights (APRC)**
In 1971 an initial draft was prepared of a comprehensive literature study on the advantages and disadvantages (if any) of yellow headlights. A finalised version is in course of preparation. After its completion, the principal conclusions will be presented to the Interdepartemental project group on Vehicle Perceptibility.

**General characteristics of retroflectors (APRC)**
The work on the construction of measuring equipment at Karlsruhe University was so greatly delayed that there is little purpose in instructing the university to undertake further research. Another consideration in this is that the SWOV is at present interested in the characteristics of retroflectors used in practice rather than the fundamental characteristics of retroflectors in general.

**Road-surface reflection (APRC)**
The Working party on Lighting and Road-surface Textures of the Road Construction Study Centre is investigating, under SWOV's chairmanship, whether there is any general correlation between functional properties of road surfaces (light reflection, friction), structural properties (constitution, construction) and surface texture. The work is being done with the cooperation of KEMA, Arnhem, the Eastern Road Construction Laboratory, Twello, the State Road Laboratory, Delft, and Philips' Lighting Laboratory, Eindhoven. There are international contacts with other laboratories via the OECD and the CIE (Commission Internationale de l'Eclairage).

**Analysis of the driving task (TPRC)**
So far, thinking on human functioning in road traffic has often been based on analogies with reference to a limited number of more or less specific practical cases and more or less realistic views on human functioning. Consequently the solutions applied cannot always be uniform and optimum. It seems justified to assume that this can be improved by analysing the driving task in such a way that a relation is established between general behaviour models relevant to driving behaviour and the possibilities of practical application.
This approach analyses driver behaviour, split into the road user's perception, information processing, decision making and response processes on which his behaviour is based.

The research comprises both theoretical preparation – at SWOV's bureau – and experimental contract research by the Institute for Perception RVO-TNO, Soesterberg (Driver Behaviour Department, principal Prof. J. A. Michon; Psychology Department, principal Dr. A. F. Sanders).
Research into analysis of the driving task has a number of part projects:
a. choice of destination and means of transportation;
b. route selection;
c. manoeuvre selection;
d. vehicle operation.
A systematic review and an inventory of the various part projects were completed this year.

As regards manoeuvring behaviour two projects have been formulated, relating to:
1. Perception of other vehicle's movement characteristics (presence, lateral and longitudinal position, existence of movement, speed of movement, existence of a collision course).
2. Perception of the vehicle's own movement (lateral position), course and speed.
Research into these two projects will cover a period of five years. The results bear importance for practical problems related to vehicle lighting and road marking and lighting.
Macroscopic aspects (see Traffic-flow models project) and vehicle operation (see project on Cybernetic vehicle-control model) are dealt with elsewhere as separate projects.

**Standards for driving/Driver instruction (TPRC)**
In various situations (industry, traffic, sports) and with regard to various criteria (productivity, safety), training and experience are considered as important aspects. Consequently, value is attached to instilling the necessary skills by means of efficient training methods. This, of course, also applies to driver instruction. Research on this subject consists of the following part projects:
1. Comparison of driver license examination performance with accident rates.
2. Inventory of driver instruction aids.
3. Task-analytical description of the required skills.
4. Inventory of general learning principles and methods relevant for instruction.
5. Inventory of programmes and possibilities for emergency training.
6. Construction of a general driving performance judgement system.
Priority has been given to subjects 3, 4 and 5.

**Vehicle perceptibility (APRC)**
This research relates to all visible exterior indications (including retroflectors) of all categories of vehicles in conditions when lights have to be used. As part of this project, reports had been published on Reflectorised registration plates, Red warning triangles, Side lights and low-beam headlights in built-up areas.
There was a need for more knowledge on perception of vehicle's movement characteristics after dark. For this purpose, exploratory laboratory research was contracted out, a provisional committee was set up and a literature study and problem analysis were made.

In 1971 an Interdepartemental project group was set up which formulated the terms of reference 'to formalise research already carried out and to give instructions for further research'.

In this research special attention will be paid to the following points:
1. Investigation of the need for separating vehicle categories from the road safety aspect.
2. Depending on the results of this investigation, specification of what categories should be defined.
3. Examination of the extent to which various movement aspects (for instance emergency braking) might require extra indications.
4. Descriptions of the functional requirements for vehicle light connections in order to minimise their incorrect use.

5. Formulation of the requirements for indications (e.g. the nature of the indications, maximum and minimum intensities, position, colour etc.).
Prior to these subjects, an investigation will be made regarding indications for bicycles visible to other road users.

**Roadside survey on drinking and driving (APRC)**
This research concentrates on the following points:
1. Determining the long time effect of the proposed change in Article 26 of the Netherlands Road Traffic Act by comparing the results of drinking and driving surveys before and after the change.
2. Suggesting supplementary measures that might increase road safety as concerns drinking and driving.
3. Collection of data on the value of breath analysis for scientific research purposes.

Following an initial survey in 1970, a second was made in September, October and November 1971, in which information was again collected for ten succesive week-ends covering about 2500 drivers. Assistance was given by the police, the Royal Dutch Touring Club ANWB, the Central Laboratory TNO, N.V. v/h Ned. Stichting voor Statistiek, the Army Medical Inspectorate and Dijkzigt Hospital, Rotterdam.
Processing and analysis of the data from both enquiries has meanwhile been commenced, in collaboration with N.V. v/h Ned. Stichting voor Statistiek and the Central Computing Institute of Leyden State University.

**Breath analysis methods (APRC)**
During the two measurement periods of the Roadside survey on drinking and driving, the latter of which was concluded in 1971, results were obtained with two totally different analysers, relating to:
a. precision and accuracy of the principles of these analysers;
b. sources of error influencing the above points;
c. reliability of the analyser components;
d. requirements attributable to the special circumstances in which breath analysers are used.
The results of working with conventional breath analysers (chemical analysis methods) and suggestions for improvement will be produced as a report as part of the Drinking and driving project.

**Symposium on psychological aspects of driver behaviour**
From 2nd to 6th August 1971 a Symposium on psychological aspects of driver behaviour was held in Noordwijkerhout, The Netherlands, under the auspices of NATO, and organised by the SWOV. The object of the Symposium was to improve the communication between the field of driving task research, human performance theory and research applied to the design of vehicle and road, and driver education.
The Symposium was attended by research workers from Australia, Canada, Great Britain, Finland, Israel, Italy, the Netherlands, the United States, Western Germany and Sweden.
The papers presented to this Symposium will be published in two volumes: Volume I Driver behaviour (29 papers) and Volume II Applied research (22 papers) by the Institute for Road Safety Research SWOV, P.O. Box 71, Voorburg 2119, The Netherlands, price Dfl. 75,—.

**Tyres, road surfaces and skidding accidents (APRC)**
The Working party for this comprehensive research had already been split into a number of sub-parties.
Sub-party I: Preparatory work on experimental multi-factor research took place from early 1970 to mid-1971. The research proper consists in principle of a complete statistical test programme for experimental research in which not only tyre and road-surface factors but also a number of other factors are investigated to ascertain their part in the distribution of the friction coefficients that are to be measured. The first phase was carried out in Autumn 1971 and the results are now being analysed. This will be the basis for further phases.
Sub-party II: The literature research showed that gaps exist in knowledge of braking power distributions in private cars and how these may change owing to load differences and weight transference during braking. The existing literature is being kept up to date; a start has been made on preparations for experimental research.
Sub-party V: There was further collection and processing of data on the relationship between accident rates (i.e. the number of accidents per car-kilometer) for (truck) drivers and the skidding resistance of road surfaces.

**Roadside obstacles (ACPC)**
Work continued on statistical accident research, consisting of processing available reference material in order to ascertain the scope and nature of the problem, and on scheduling roadside obstacles. Further literature research was also carried out.
For the Rijkswaterstaat Working party on Roadside Safety Structures some ad hoc tests were made with lighting columns, roadside telephones and impact attenuator systems.

**Roadside safety structures (ACPC)**
After completion of the research in 1970 by publication of the Roadside Safety Structures report, it was decided to provide a comprehensive scientific Statement on the research. The results may be seen at the SWOV library (only in Dutch).

**Safety structures on bridges (ACPC)**
The ad hoc experiments for the Rijkswaterstaat Working party on Safety Structures on Bridges, in order to find the most efficient structures, provided enough material, in addition to the party's internal reporting, for a report to be compiled.

**NATO-CCMS accident analysis (ACPC)**
The purpose of the above investigation is to arrive at an internationally accepted system of traffic accident analysis by means of experimental research. Accident analysis in many countries in the past have partly overlapped. In many cases, their results were not properly comparable and sometimes even seemed contradictory. This caused much confusion and may have unnecessarily delayed the introduction of safety measures.
The NATO Committee on the Challenges of Modern Society (CCMS) has given the impetus for arriving at an internationally accepted method of road-accident analysis. Twelve countries are now taking part in this investigation. In the Netherlands, the work has been entrusted to the SWOV. In the period August 1971 to Spring 1972 the data as agreed beforehand, of at least fifty accidents will be collected by the Netherlands.
The research will end with a symposium on accident analysis.

**Vehicle characteristics of importance in reducing the severity of accidents (ACPC)**
As regards the subject of safety belts which is given high priority in this research; the collected accident data and the enquiries regarding the use of safety belts will be produced as reports.
The statistical accident research referred to in previous annual reports was completed on 1st January 1971. It was carried out by the Research Institute for Road Vehicles TNO (IW-TNO), Delft, the Institute of Biomechanics and Rehabilitation of the free University, Amsterdam, the College of Automobile Technology, Apeldoorn, and the SWOV.

**Crash helmets for moped riders (ACPC)**
The object of this research is to draw up both safety and wearability standards. It consists of the following parts:
1. Preparation of a list of functional requirements.
2. Collection of data for precisely defining these requirements.
3. Ascertaining whether products can be made to satisfy these requirements.
4. Drawing up a test programme to determine whether a product is up to standard.
5. Collecting data and indications for giving information on the wearing of crash helmets by moped riders.

Statistics were collected on the number and nature of accidents and injuries, the mechanism of injury occurrence, the variation in these two aspects depending on the mode of road usage and driver characteristics, the limits of tolerance of the human head and the positive and negative effects of wearing crash helmets. This work was done by the Medical Records Association (SMR), Utrecht and the SWOV.
An inventory of existing helmets and face protectors and the standards these satisfy was made by the Research Institute for Road Vehicles TNO. An enquiry among moped riders made at the end of 1970 by the N.V. v/h Nederlandse Stichting voor Statistiek at the request of SHELL Nederland Verkoopmaatschappij N.V. provided the opportunity to include a series of extra questions about the possession and use of mopeds and crash helmets and any objections to the compulsory use of crash helmets. The resulting data have meanwhile been analysed by the SWOV for the Interdepartemental project group on Crash Helmets for Moped Riders. Measurements were also made at a number of times and places to ascertain to what extent moped riders wear helmets.
The Interdepartemental project group set up an ad hoc group to draw up test standards for moped riders' crash helmets based on available knowledge, at the earliest possible date. These will be ready at the beginning of 1972.

**Submerging vehicles (ACPC)**
The experimental research was finalised and, together with the descriptive research already carried out, resulted in a final report completed at the years' end (only available in Dutch). The results led to the formulation of recommendations relating to (road) conditions, vehicles and the occupants' behaviour.
In the final stage of the research, the question arose of how many people in the Netherlands can swim. This is a major factor in the chances of escape and survival. As no representative data were available on this subject in the Netherlands, a question about this was included in an already projected enquiry. The results will become available in a publication entitled Swimmers in the Netherlands (only available in Dutch).
The Foundation Film and Science prepared an instructional film, making use of films made for analysing the results. This film will be available from the Foundation Film and Science, Hengeveldstraat 29, Utrecht, The Netherlands.

**Railway level crossings (ACPC)**
This work was divided into two parts: general research and complementary research.
The general part, including a literature study, can be ended with an interim report now being compiled.
The complementary part relates to the improvement of existing safety installations and the design of new ones. The description of the existing conditions is now complete. Pending the results of consultations in the Interdepartemental project group on Railway Level Crossings, the literature is meanwhile being kept up to date.

**Priority rules (APRC)**
The lack of a concrete formulation of the problem made it almost impossible to undertake planned research. In 1971, therefore, an Interdepartemental project group was set up to formulate the problem in concrete terms. The compilation of available literature, plus some further investigations, is now being produced as a descriptive report as a basis for discussions in the Interdepartemental project group.
A number of contributions were written for the OECD Report on Road Safety at Junctions which appeared at the end of 1971.

**Speed limits outside built-up areas (APRC)**
The investigation already described in previous years have been carried out and a final report has been made (only available in Dutch).
A speed-limits system can have a favourable effect on road safety, provided it fits into a complex of regulations. The great variety of roads firstly necessitates classifying these in a limited number of categories. These must be easy for road users to recognise, and the roads in each category must meet the expectations which the category creates. The consultations with the authorities arising from this report are not yet complete.
Supplementary research will still have to be done into the influence of police enforcement (compliance with the speed limits) and classification of roads in categories. In consultation with the Interdepartemental project group the supplementary research will also relate to specific speed limits.

**Pedestrian safety (APRC)**
A study of the literature and the inventory of regulations in the Netherlands and abroad relating to pedestrian safety in built-up areas are now being processed and completed and will lead to the compilation of a descriptive report for the Interdepartemental project group.
A number of constributions were also made for the OECD Research Group on Pedestrian Safety.

## Statistics and Documentation Department



### Collection of reference data

The purpose of this research is to obtain fuller information on the absolute extent and the relativity of road-traffic safety in all their aspects.
The SWOV's work as a research institute and as an adviser to the authorities makes it necessary to have the fullest and most reliable knowledge possible of the extent of traffic safety. It is moreover necessary, for a sound long-term research policy, to possess the fullest possible knowledge of the trends in various aspects of traffic safety. The statistics indicating their extent play a major part in preparing any concrete planned research so that the problem can be properly formulated.
Since one of the objects is to study this trend, the above-mentioned research is in fact continuous. The research proper therefore consists of continuous collection, processing and analysis of reference data on traffic accidents, number of vehicles, driving performance, traffic structures, driving speeds, personal characteristics and road users' quantifiable behaviour and characteristics. Use is made, inter alia, of the following scheduling methods:
1. Watching and analysing national and international traffic and road accident statistics.
2. Random sample roadside measurements and observations.
3. Making or arranging for enquiries among road users.

### Integrated records of traffic accidents

A start has been made on a report regarding the position and development of traffic accident records.

### Insurance companies' accident records

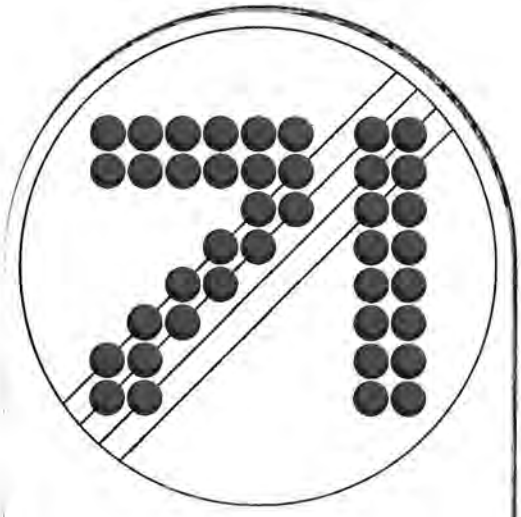
The report on this study started in 1969 and its results were being finalised at the year. This information will lead to a report on Claim Forms and Accident Records.

### Medical records

Further work was done on processing the information from the project launched in 1969 in co-operation with the Rotterdam Municipal & Health Department, the police and a number of hospitals.

## Reports, publications and papers





In 1971 the following reports, publications and papers have been published:

Verkeersongevallen en obstakels. Ir. F. C. Flury. Verkeerstechniek 22 (1971) 1 : 34 t/m 35.*

Tunnel lighting in Europe. D. A. Schreuder. Paper presented at the 50th Annual Meeting Highway Research Board, Washington D.C., 18–22 January 1971.

De integratie van elektronische hulpmiddelen in het verkeer. Ir. E. Asmussen. In: Wegverkeer en elektrotechniek; Verslag van het kongres gehouden ter gelegenheid van het 13de lustrum van de Electrotechnische Vereeniging te Delft op dinsdag 23 maart 1971. Blz. 118 t/m 158. Electrotechnische Vereeniging Delft, 1971.*

Mogelijkheden voor het verhogen van de waarneembaarheid in het duister van de achterzijde van de fiets(er). P. C. Noordzij, psychol. drs., D. J. Griep, psychol. drs. en R. Maas. Verkeerstechniek 22 (1971) 5 : 237 t/m 242.*

Snelheidsbepalingen en politietoezicht. P. Mattie en J. H. Kraay, soc. drs. Delikt en delinkwent 1 (1970/1971) 7 : 345 t/m 400 (mei 1971).*

Niet-nuchter rijden: Ongevallenkans, prestatievermindering en maatregelen. D. J. Griep, psychol. drs. Verkeerstechniek 22 (1971) 6 : 315 t/m 320.*

Autoverlichting binnen de bebouwde kom. Dr. Ir. D. A. Schreuder. In: Dagen van de verlichting – 1970. Belgische Vereniging voor verlichtingskunde, Brussel, 1971.

Analyse van de rijtaak 1. Systeemanalytische gezichtspunten. D. J. Griep, psychol. drs. Verkeerstechniek 22 (1971) 6 : 303 t/m 306.*

Analyse van de rijtaak 2. Waarnemingsaspecten van het manoeuvregedrag. D. J. Griep, psychol. drs. Verkeerstechniek 22 (1971) 7 : 270 (=370) t/m 278 (=378).*

Analyse van de rijtaak 3. Besliskundige aspecten van het manoeuvregedrag. D. J. Griep, psychol. drs. Verkeerstechniek 22 (1971) 8 : 423 t/m 427.*

Elektronische hulpmiddelen in het verkeer. ir. E. Asmussen en H. van der Klei. Verkeerstechniek 22 (1971) 8:415 t/m 418.*

The coding and transmission of information by means of road lighting. D. A. Schreuder. Paper presented at the International Symposium on psychological aspects of driver behaviour, Noordwijkerhout, 2–6 August 1971.

Some problems in the design of improved vehicle rear lighting configurations. R. Roszbach. Paper presented at the International Symposium on psychological aspects of driver behaviour, Noordwijkerhout 2–6 August 1971.

Non sober driving: Accident liability performance decrement and countermeasures. D. J. Griep research psychologist. Paper presented at the OECD International Symposium on countermeasures to driver behaviour under influence of alcohol and other drugs London, 22–23 September 1971.

Description of a SWOV pilot study on integral registration in hospitals of road traffic accidents. Dr. J. H. Aarts, Medical advisor SWOV. Paper presented at the OECD International Symposium on countermeasures to driver behaviour under the influence of alcohol and other drugs, London, 22–23 September 1971.

De representativiteit van Amsterdam voor onderzoek Veiligheid voetgangers. J. H. Kraay, soc. drs. Verkeerstechniek 22 (1971) 10 : 498 t/m 504.

Moet boom langs de weg verdwijnen? Botsingen tegen obstakels, een analyse van beschikbare ongevallencijfers. A. Blokpoel en H. van der Klei. Wegen 45 (1971) 10 : 671–279 t/m 671–284.*

Het verkeer: Veilig en onveilig. J. C. A. Carlquist: In J. van Kley (ed.). Het kan verkeren, Uitzicht op de problemen van de weggebruiker. Blz. 18 t/m 32. Stichting Televisie Academie Teleac, Utrecht, 1971.*

Measurement of multi-stage change over time in safety campaigns. M. J. Koornstra, Research advisor SWOV. Paper presented at the International Conference on the design of road safety campaigns, Rome, 13–16 October 1971.

A pilot study for the project Pedestrian safety in built-up areas. J. H. Kraay, Sociologist. Paper presented at the NATO-CCMS conference, Brussels, 24 September 1971.

Evaluation of a number of measures for increasing pedestrian safety. J. H. Kraay, Sociologist Paper presented at the NATO-CCMS conference, Brussels, 24 September 1971.

A modification of the method for the appraisal of glare in street lighting. W. Adrian and D. A. Schreuder. Paper presented at the 17th Session of the Commission Internationale de l'Eclairage, Barcelona, September 1971.

Analyse van de rijtaak 4. Routekeuze en -geleiding. D. J. Griep, psychol. drs. Verkeerstechniek 22 (1971) 11 : 539 t/m 542.*

Aanduiding van snelheidsbeperkingen. Mej. A. Kranenburg. Verkeerstechniek 22 (1971) 11 : 538 t/m 559.*

Rijden bij mist. H. van der Klei. Autokampioen 63 (1971) 49 : 2891 t/m 2895.*

Tunnel entrance lighting – A comparison of recommended practice. D. A. Schreuder. Lighting Research and Technology 3 (1971) 4 : 274 t/m 278.

Autoverlichting binnen de bebouwde kom. Dr. Ir. D. A. Schreuder. Verkeerstechniek 22 (1971) 12 : 583 t/m 591.*

Auto's te water; Een beschrijving van descriptief en experimenteel onderzoek verricht in opdracht van de Minister van Sociale Zaken en Volksgezondheid. SWOV (A. A. Vis). Rapport 1971–1. Stichting Wetenschappelijk Onderzoek Verkeersveiligheid SWOV, 1971. 65 blz., geïll.*

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